

## THE LEVEL OF READINESS OF SCIENCE AND ELEMENTARY MATHEMATICS STUDENTS REGARDING THE CONCEPT OF VECTORS

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### Abstract

The aim of this study was to determine the level of readiness of Science and Elementary Mathematics students regarding the concept of vectors. The study was conducted with a total of 86 first-year students attending the Science Education (N=42) and Elementary Mathematics Education (N=44) Departments of a public university in northern Turkey. The study data were collected using a test with four open-ended questions on conceptual knowledge and application. The obtained study data were analysed using the descriptive analysis method. The study results indicated that both the science students and the elementary mathematics students had limited understanding of the concept of vector, and that they were consequently unable to define this concept accurately. When defining vectors, the science students associated one or several of its properties with those of a directed line segment, and mainly considered them as symbolic arrow or illustration. Their understanding of the properties of vectors was limited to addition and subtraction. It was also noteworthy that the science students properly used the vector for modelling in chemistry-related courses. Elementary Mathematics students, on the other hand, not only used the concept of directed line segment when defining vectors, but also used other mathematical concepts such as line segment and line. In addition, they perceived vectors as a concept mainly belonging to the field of physics, and also attempted to attach meanings and descriptions relating to their own field when defining them.

**Keywords:** Vector, readiness, science student, elementary mathematics student.