The submitted master thesis called Linear Algebra Education at Secondary School consists of a theoretical and an experimental part. The theoretical one deals with the identification of those linear algebra themes, which appear in the secondary school mathematics curriculum. It follows up with a more detailed look into those topics and proposes ways for further extension of secondary level linear algebra education. The main topics, which are identified in the thesis, are vectors and vector spaces, inner and dot product, systems of linear equations and matrices. The main section of this thesis is the experimental part, which incorporates the conclusions of the first one to design and later realise an online educational course of linear algebra as a part of the Talnet project, which took place in the winter semester of the academic year 2015/2016. The end of this thesis contains assessment of the results of this course.