Vol. 14, No. 1, 2015

ISSN 1648-3898





Journal of Baltic Science Education



Editorial Board

Editor-in-Chief

Prof., Dr. Vincentas Lamanauskas Siauliai University, Lithuania

Deputy Editor-in-Chief

Prof., Dr. Andris Broks University of Latvia, Latvia

Deputy Editor-in-Chief

Prof., Dr. Miia Rannikmäe University of Tartu, Estonia

Executive Secretary

Scientific Methodical Center "Scientia Educologica", Lithuania Dr. Laima Railienė

Editors:

Prof., Dr. Boris Aberšek University of Maribor, Slovenia University of Sao Paulo, Brazil Prof., Dr. Agnaldo Arroio

Prof., Dr. Martin Bilek University of Hradec Králové, Czech Republic

Commission for the Publication of the National Edition of Federigo Dr. Paolo Bussotti

Enriques's Works, Italy

Dr. Bulent Cavas Dokuz Eylul University, Turkey Prof., Dr. Hana Čtrnáctová Charles University, Czech Republic Dr. Peter Demkanin Comenius University, Slovakia

Dr. André du Plessis Nelson Mandela Metropolitan University, South Africa Riga Teacher Training and Educational Management

Prof., Dr. Jānis Gedrovics Academy, Latvia

Prof., Dr. Peter Heering University of Flensburg, Germany Prof., Dr. Jack Holbrook University of Tartu, Estonia

Prof., Dr. Ryszard M. Janiuk Maria Curie Sklodowska University, Poland Dr. Milan Kubiatko Masaryk University, Czech Republic

Belarusian State Pedagogical University named after Maxim Tank, Dr. Todar Lakhvich

Republic of Belarus

Prof., Dr. Jari Lavonen University of Helsinki, Finland

Dr. Rita Makarskaitė-Petkevičienė Lithuanian University of Educational Sciences, Lithuania

Prof., Dr. Aadu Ott Göteborg University, Sweden Dr. Paul Pace Malta University, Malta Prof., Dr. Valfrids Paškevičs Daugavpils University, Latvia Prof., Dr. Jongwon Park Chonnam National University, Korea

Dr. Raffaele Pisano European Society for the History of Science, Italy

Dr. Pavol Prokop Institute of Zoology, Bratislava, Slovakia

Dr. Alona Rauckienė Klaipėda University, Lithuania Prof., Dr. Heimo Saarikko Helsinki University, Finland Dr. Uladzimir K. Slabin University of Oregon, USA

Prof., Dr. Valery P. Solomin Herzen State Pedagogical University of Russia, Russia

Prof., Dr. Borislav V. Toshev Sofia University, Bulgaria Dr. Georgios Tsaparlis University of Ioannina, Greece

Dr. Muhammet Usak Gazi University, Turkey

A scientific journal JBSE issued by the SMC Scientia Educologica in cooperation with Scientia Socialis, Lithuania, emphasizes theoretical, experimental and methodical studies in the field of science education. JBSE is an international academic journal. In order to maintain the high standards appropriate to such a journal, all contributions received are submitted for anonymous review by two experts, additionally to review by the Editor. The decision of the Editor on the acceptance of articles is final and no correspondence can be entered into on reasons for rejection of a submitted contribution.

Published since 2002 Address:

The journal is published bimonthly.

Scientific Methodical Center "Scientia Educologica" IF-0.226 (2010), 0.425 (2011), 0.444 (2012), 0.481 (2013)

Donelaičio Street 29, LT-78115 Siauliai, Lithuania

E-mail: mail.jbse@gmail.com Phone: +370 687 95668

http://www.scientiasocialis.lt/jbse/ Home page:

ISSN 1648-3898

© Scientific Methodical Center, Scientia Educologica", Lithuania, The Associated Member of Lithuanian Scientific Society, European Society for the History of Science (ESHS) and ICASE

The articles appearing in this journal are indexed/abstracted in British Education Index (http://www.leeds.ac.uk/bei/bei.htm), Copernicus Index (http://journals.indexcopernicus.com), The Asian Education Index (http://www.asian-education-index.com/sciences_index.php), EBSCO: Academic Search Premier (http://search.ebscohost.com), Social Scisearch (Thomson Reuters) (http://science.thomsonreuters.com/index.html), Journal Citation Reports / Social Sciences Edition (Thomson Reuters) (http://thomsonreuters.com/products_services/scientific/Journal_Citation_Reports), and SCOPUS (http://www.scopus.com)