

Vol. 13, No. 1, 2014

ISSN 1648-3898



JOURNAL  
OF BALTIC  
SCIENCE  
EDUCATION

# Journal of Baltic Science Education

ISSN 1648-3898



THE INTERNATIONAL JOURNAL OF THE SCIENTIFIC METHODOLOGICAL CENTRE "SCIENTIA EDUCOLOGICA"

Vol.13, No.1, 2014  
ISSN 1648-3898

# Journal of Baltic Science Education



JOURNAL  
OF • BALTIC  
SCIENCE  
EDUCATION

The International Journal of the Scientific Methodical Center "Scientia Educologica"

## Editorial Board

### Editor-in-Chief

Prof., Dr. Vincentas Lamanauskas

Siauliai University, Lithuania

### Deputy Editor-in-Chief

Prof., Dr. Andris Broks

University of Latvia, Latvia

Prof., Dr. Miiia Rannikmae

Tartu University, Estonia

### Executive Secretary

Dr. Laima Railienė

Scientific Methodical Center "Scientia Educologica", Lithuania

### Editors:

Prof., Dr. Boris Aberšek

University of Maribor, Slovenia

Prof., Dr. Agnaldo Arroio

University of Sao Paulo, Brazil

Prof., Dr. Martin Bilek

University of Hradec Králové, Czech Republic

Dr. Paolo Bussotti

Commission for the Publication of the National Edition of Federigo 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

Prof., Dr. Jānis Gedrovcis

Riga Teacher Training and Educational Management Academy, Latvia

Prof., Dr. Peter Heering

University of Flensburg, Germany

Prof., Dr. Jack Holbrook

Tartu University, Estonia

Prof., Dr. Ryszard M. Janiuk

Maria Curie Skłodowska University, Poland

Dr. Milan Kubiak

Masaryk University, Czech Republic

Dr. Todar Lakhvich

Belarusian State Pedagogical University named after Maxim Tank, 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

The journal is published bimonthly.

IF-0.226 (2010), 0.425 (2011),

0.444 (2012)

### Address:

Scientific Methodical Center "Scientia Educologica"

Donelaičio Street 29, LT-781 15 Siauliai, Lithuania

E-mail: mail.jbse@gmail.com

Phone: +370 687 95668

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

**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](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](http://thomsonreuters.com/products_services/scientific/Journal_Citation_Reports)), and SCOPUS (<http://www.scopus.com>)