

### GAMTAMOKSLINIS UGDYMAS NATURAL SCIENCE EDUCATION

ISSN 1648-939X /Print/, ISSN 2669-1140 /Online/

### Dear colleagues,

**GAMTAMOKSLINIS UGDYMAS / NATURAL SCIENCE EDUCATION** – is a periodical, peer reviewed, scientific-methodical journal, issued by the SMC "Scientia Educologica" in cooperation with Scientia Socialis Ltd. It is an international journal, wherein the scientific and methodical/applied articles published in Lithuanian and English languages. This journal is intended for the teachers of general education schools, the lecturers of higher educational institutions and all, who are interested in the problems of natural science education.

The GU/NSE journal welcomes the submission of manuscripts that meet the general criteria of scientific and methodical (practical/applied) papers.

### GAMTAMOKSLINIS UGDYMAS / NATURAL SCIENCE EDUCATION ISSN 1648-939X /Print/, ISSN 2669-1140 /Online/

http://gu.puslapiai.lt/gu/

http://gu.puslapiai.lt/gu/jr-online article submission/

http://oaji.net/journal-detail.html?number=514

Fast Publication Peer Reviewed Open Access This journal is abstracted / listed / indexed / cited in: COPERNICUS INDEX, LIST OF SCIENCE EDUCATION JOURNALS, JOURNALS OF INTEREST TO CHEMICAL EDUCATORS, SKYLIGHT, OAJI, WebQualis (QUALIS/

CAPES ), MIAR, EuroPub, QOAM, ESJI, Crossref, DOI, Internet Archive.

Applied research/practical/methodical work. This type of submission is best suited for practical/didactical work and reports, as well as position papers raising original and provocative theoretical or practical discourses and questions (small-scale research, applied research, didactical/methodical papers, case studies, best educational practices etc.). Each submission is carefully reviewed by two independent reviewers and ranked based on: quality of preparation, relevance to the educational community, didactical quality, originality, and importance of the contribution.

Instruction for authors and other details are available on the journal's website at:

http://gu.puslapiai.lt/gu/aut-info/

GU/NSE is an Open Access journal accessible for free on the Internet. Papers must be submitted on the understanding that they have not been published elsewhere and are not currently under consideration by another publisher. Optimal paper's size: 8/12 pages. Partial article processing charges are: 5-8 EUR per one A4 page.

For contacts, questions and papers submission: gu@gu.puslapiai.lt

Sincerely yours, Editorial Board

#### INSTRUCTIONS FOR AUTHORS

The journal GAMTAMOKSLINIS UGDYMAS / NATURAL SCIENCE EDUCATION publishes scientific, methodical (investigations of educational experiences, case studies, action research and etc.) articles and other original materials relating to the results of investigations and new experiences in the field of science and technology education. All materials sent to the journal should not have been previously published or submitted for publication to other national or international journals.

#### The authors should fulfil the following instructions:

The word processed manuscripts of the articles, single spaced and written in Lithuanian or English should be submitted online: http://gu.puslapiai.lt/gu/jr-online article submission/

Alternatively, articles can be emailed to: gu@gu.puslapiai.lt

The text must be elaborated in Word for Windows or compatible word processors, using 12 point Times New Roman letters. The optimal length of the manuscript is 6-15 A4 pages, including figures, tables and bibliography/references. The size of articles may be larger.

The language must be clear and accurate. The manuscript should be written in an impersonal style. The text of the scientific article shall contain no revision marks (track changes function).

The structure for the article: Title, names and surnames of the authors, the institution to which they belong, abstract (150–250 words with keywords /no more than five keywords/), introduction, methodology applied in the investigation, results, discussion, conclusions, acknowledgements, references (the list should be arranged in alphabetical order).

The articles written in Lithuanian must have abstracts in English (150-250 words, including title and keywords in English). When acronym is used first time in the text its full title is presented.

**Editorial procedures:** Authors will be notified of the receipt of the manuscript. After an initial review by the coeditors, those manuscripts which meet specifications will be sent to reviewers. Those which do not will be returned to the author. Notification of the status of the manuscript will take place after the deadline date for each issue. The journal coeditors will make editorial changes and send an edited copy of the article to the author prior to publication. The publishing of materials does not mean that the editors are in agreement with the points of view covered by the author.

The review procedure usually takes 3-4 weeks.

**Article processing charges:** The amount of article processing charges (APC) for GU/NSE is in the interval 5-8 EURO per one page (A4). GU/NSE is committed to keep its publication charges at a minimum level. The acceptance of a manuscript is based on the outcome of the peer-review procedure. The authors do not need to pay if the manuscript is rejected. There is no submission fee.

Other information: Authors should give full personal details (full name and surname, address, e-mail address, and place of work. The authors must confirm (in writing) that the manuscript is original study and hasn't been published elsewhere or sent for publish elsewhere. All persons designed as "authors" should meet the criteria of the concept. Each author should have participated sufficiently in the work to take responsibility for its content.

**Note:** Originality is very important aspect of a paper. Take great care to avoid plagiarism in your writing and be sure that any text you pull from outside sources is properly quoted and noted in your list of references.

**Note:** Manuscripts in which references are not in this format (APA 7<sup>th</sup> Ed. style) will be returned without review.

Address: Scientific Methodical Center "Scientia Educologica", Donelaičio Street 29; LT-78115

Siauliai, Lithuania

E-mail: gu@gu.puslapiai.lt

Skype: scientia12

Website: http://gu.puslapiai.lt/gu/

## GAMTAMOKSLINIS UGDYMAS 2023, Vol. 20, No. I

Sudarė Vincentas Lamanauskas (vyriaus. red.)

Redaktorė Loreta Šimutytė-Balčiūnienė

Dailininkė Jurgina Jankauskienė Anglų kalbos korektorė Ilona Ratkevičienė

2023-12-30. 4 leidyb. apsk. 1. Tiražas 80 egz.

Išleido MMC "Scientia Educologica" ir Scientia Socialis

Donelaičio g. 29, LT-78115 Šiauliai El. paštas gu@gu.puslapiai.lt

Spausdino UAB Šiaulių spaustuvė

P. Lukšio g. 9a, Šiauliai

El. paštas info@dailu.lt, tel. / faksas (8 41) 500 333

Interneto adresas http://www.dailu.lt

# NATURAL SCIENCE EDUCATION 2023, Vol. 20, No. I

Compiler Vincentas Lamanauskas (Editor-in-Chief)

Language Editor Loreta Šimutytė-Balčiūnienė

Designer Jurgina Jankauskienė

English language proofreader Ilona Ratkevičienė

30 December 2023. 4 printer's sheets. Edition 80.

Publisher SMC "Scientia Educologica" in cooperation with Scientia Socialis

Donelaičio Street 29, Šiauliai, Lithuania

E-mail: gu@gu.puslapiai.lt

Printing Šiauliai printing house

9a Lukšio Street, LT-76207 Šiauliai

E-mail: info@dailu.lt, phone / fax +370 41 500 333

http://www.dailu.lt

Adresas Address

MMC "Scientia Educologica" SMC "Scientia Educologica"

Donelaičio g. 29, LT-78115 Šiauliai, Lietuva Donelaičio Street 29, LT-78115 Šiauliai, Lithuania

El. paštas gu@gu.puslapiai.lt

Tel. (8 687) 95668

E-mail: gu@gu.puslapiai.lt

Phone: +370 687 95668

Interneto svetainė http://www.gu.puslapiai.lt Home page: http://www.gu.puslapiai.lt



"Reikia pripažinti tai, kad gamtos mokslai pagal savo specifiką atlieka labai svarbų vaidmenį formuojant mokinių pasaulėžiūrą.
Gamtos mokslo dalykai, dėstomi mokykloje, tokie kaip biologija, fizika, chemija ir kt., betarpiškai ir ne vien teoriškai, o pagrindinai empiriškai nagrinėja patirtinį pasaulį - tikrovę: mokinius supančią gamtą, techniką, patį žmogų, kaip gamtos dalelę ir visi šie gamtos mokslų objektai, daiktai, aprašomieji ir grindžiamieji ryšiai, kuriuos tiria ir aiškina gamtos mokslai, visada gali būti patikrinti ir patvirtinti praktiškai. Tuo pačiu ir gautos bei daromos išvados savo patikimumu nekelia abejonių... Mokant gamtos dalykus visada kalbama apie realius, konkrečius daiktus, reiškinius, su kuriais mokiniai susiduria tikrovėje, netgi kasdienybėje...

... Silpna gamtos mokslų vieta formuojant mokinių pasaulėžiūrą yra ne jų vaizdume, empiriniame patyrime (čia būtent jų jėga), bet šių mokslų susiskaldyme... "

**Prof. Juozas Vaitkevičius** 

**"It could** be acknowledged that natural sciences, according to their specifics, play a very important role in broadening pupils' world outlook. Science subjects, such as biology, physics, chemistry, etc. are taught at school. These subjects theoretically and empirically examine the world of experience - reality: nature that surrounds pupils, technical and human being who is a part of nature. All these objects, things, descriptive and motivated relations of science subjects are researched and explained by natural sciences and can always be checked and practically proved. Herewith received and made conclusions are correct and have not any doubts...

The science classes always discuss real, concrete things and phenomena which are a part of pupils' reality and even every day life...

... A weak position of natural sciences in the development of pupils' world outlook is the disunity of the sciences but not imagination or empiric experience (their strength is exactly here)".

Prof. Juozas Vaitkevičius





