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# PROGRAMME

**Date/Time:** Wednesday, May 24, 2017, 14:30 to 18:30 p.m.  
**Room:** I2 (1<sup>st</sup> floor)  
**Address:** Technical University of Civil Engineering Bucharest  
Faculty of Civil, Industrial and Agricultural Buildings  
Blvd. Lacul Tei, No. 122-124, District 2, Bucharest, Romania

**General Chair:** **Esa Kujansuu** (Tampere University of Applied Sciences, Finland)

- 14:30 **Open Ceremony**  
Ion Mierlus-Mazilu, Technical University of Civil Engineering, Bucharest, Romania
- 14:30-14:40 **Digital text books for learners - a new challenge for Romanian secondary school.**
- p. 1** Ana Elisabeta Naghi, National Committee of Mathematics, Ministry of Education, Bucharest, Romania  
Gabriel Vrinceanu, Teacher Training Center of Bucharest, Romania
- 14:40-14:50 **Pedagogical Practices for Utilizing Educational Technology In Engineering Mathematics**
- p. 1** Hanna Kinnari-Korpela, Tampere University of Applied Sciences, Finland  
Kirsi-Maria Rinneheimo, Tampere University of Applied Sciences, Finland
- 14:50-15:00 **Dynamic Visualizations in Education of Mathematics**
- p. 1** Daniela Velichová, Slovak University of Technology in Bratislava, Slovakia
- 15:00-15:10 **Interactive Mathematics For Engineers With MAPLE Usage**
- p. 2** Ralitsa Vasileva-Ivanova, University of Ruse, Bulgaria  
Magdalena Petkova, University of Ruse, Bulgaria  
Emiliya Velikova, University of Ruse, Bulgaria  
Ion Mierlus-Mazilu, Technical University of Civil Engineering, Bucharest, Romania
- 15:10-15:20 **E-Learning Materials, Methods and Tools to Activate Students**
- p. 2** Anne Uukkivi, University of Applied Sciences, Tallinn, Estonia  
Oksana Labanova, University of Applied Sciences, Tallinn, Estonia
- 15:20-15:30 **Foster Students' Creativity and Motivation Through Active Learning**
- p. 3** Valentina Voinohovska, University of Ruse, Bulgaria
- 15:30-15:40 **Goniometric Functions and their Mathematical Representation**
- p. 3** Daniela Richtarikova, Slovak University of Technology in Bratislava, Slovakia
- 15:40-15:50 **Trigonometry and Limits**
- p. 3** Peter Letavaj, Slovak University of Technology in Bratislava, Slovakia
- 15:50-16:00 **Constructivism and Multimedia Learning**
- p. 4** Dessislava Georgieva, University of Ruse, Bulgaria  
Ion Mierlus Mazilu, Technical University of Civil Engineering, Bucharest, Romania  
Emiliya Velikova, University of Ruse, Ruse, Bulgaria
- 16:00-16:10 **Teaching Mathematical Terminology to Language Students**
- p. 4** Raluca Ghentulescu, Technical University of Civil Engineering, Bucharest, Romania
- 16:10-16:20 **The Resonance Between Teacher and Technology Gives Authority to Specific Information**
- p. 5** Mihai Pincu, Theoretic High School "Dimitrie Bolintineanu", Bucharest, Romania  
Liliana Pincu, Elementary School "George Calinescu", Bucharest, Romania  
Catalin Mihai Pincu, Faculty of Mathematics and Computer Science, University of

- Bucharest, Romania
- 16:20-16:30  
**p. 5** **Webinar - the newest alternative for distance learning**  
Diana Popescu, National College "Sf. Sava", Bucharest, Romania  
Răzvan Săndulescu, National College "Sf. Sava", Bucharest, Romania
- 16:30-16:50 **Coffee Break**
- 16:50-17:00  
**p. 6** **New Learning Methods For Modern Mentalities**  
Ovidiu David Nae, "Grigore Moisil" National College, Bucharest, Romania  
Antonie Luca Trifan, "Sfantul Sava" National College, Bucharest, Romania  
Sofia Nae, "Sfantul Sava" National College, Bucharest, Romania
- 17:00-17:10  
**p. 6** **Bitwise Operators**  
George-Robert Micu, "Sfantul Sava" National College, Bucharest, Romania  
Sofia Nae, "Sfantul Sava" National College, Bucharest, Romania
- 17:10-17:20  
**p. 7** **Orbit Fractals**  
Prassa Raluca-Mihaela, Faculty of Mathematics and Computer Science, University of Bucharest, Romania  
Pirvulescu Valentina, Faculty of Mathematics and Computer Science, University of Bucharest, Romania
- 17:20-17:30  
**p. 7** **Area of a Curvilinear Trapezoid Using Integral Calculus**  
Angelescu Alice, "Saint Sava" National College, Bucharest, Romania  
Stefania Constantinescu, Technical University of Civil Engineering, Bucharest, Romania  
Ion Mierlus Mazilu, Technical University of Civil Engineering, Bucharest, Romania
- 17:30-17:40  
**p. 7** **Modern Methods of Teaching Physics Using a Free Website for Studying The Simple Pendulum**  
Mihaela Chirita, Saint Sava National College, Bucharest, Romania  
Cristian Mihai Chiriță, University College London, UK
- 17:40-17:50  
**p. 8** **Blended-Learning Applications in Teaching Chemistry**  
Gabriela-Raluca Dimulescu, Secondary School No 56, Bucharest, Romania
- 17:50-18:00  
**p. 8** **Means and Methods of Teaching Chemistry**  
Iuliana Shajaani, "Saint Sava: National College, Bucharest, Romania  
Iuliana Cristea, "Jean Monnet" High-school, Bucharest, Romania  
Ioana Maruntel, Carol Davila Medicine and Pharmacy University, Bucharest, Romania
- 18:00-18:10  
**p. 9** **Blended-Learning for Religion Schoolbooks**  
Aurora Ciachir, Secondary School No 56, Bucharest, Romania  
Dragos Ionita, Secondary School No 77, Bucharest, Romania
- 18:10-18:20  
**p. 9** **Scientix - Technology And Creativity**  
Nectara Elena Mircioagă, Technological High School "Constatin Brâncuși", Bucharest, Romania
- 18:20-18:30  
**p. 9** **A Set of Professional Attributes for Pre-Service Teachers**  
Mariana Lili Badea, Colegiul National "Iulia Hasdeu", Bucharest, Romania
- p. 10** **From Simulation to Real-Life with lot Enabled Authentic Learning Activities in Engineering Education**  
Esa Kujansuu, Tampere University of Applied Sciences, Finland
- 18:30-21:00 **Social Program - Dinner Buffet**

# ABSTRACT BOOK

## DIGITAL TEXT BOOKS FOR LEARNERS - A NEW CHALLENGE FOR ROMANIAN SECONDARY SCHOOL.

**Ana Elisabeta Naghi**, Teacher, member of National Committee of Mathematics. Ministry of Education, [ana.naghi@gmail.com](mailto:ana.naghi@gmail.com)

**Gabriel Vrinceanu**, Teacher, manager of Teacher Training Center of Bucharest, [vrinceanugabi@yahoo.com](mailto:vrinceanugabi@yahoo.com)

**Abstract:** Beginning next school year, teachers and learners of 5th grade must use the digital text books at every subject. It is a real challenge for our educational system. We present what is the sense of digital books, how IT improves learning and which are the risks.

**Keywords:** digital text book, IT&C, new education.

## PEDAGOGICAL PRACTICES FOR UTILIZING EDUCATIONAL TECHNOLOGY IN ENGINEERING MATHEMATICS

**Hanna Kinnari-Korpela**, Head of Degree Programme in ICT Engineering, Tampere University of Applied Sciences, [hanna.kinnari-korpela@tamk.fi](mailto:hanna.kinnari-korpela@tamk.fi)

**Kirsi-Maria Rinneheimo**, Senior Lecturer, Engineering Mathematics, Tampere University of Applied Sciences, [kirsi-maria.rinneheimo@tamk.fi](mailto:kirsi-maria.rinneheimo@tamk.fi)

**Abstract:** Rapidly growing trend - pervasive computing - surrounds us in everyday life. Also educational sector benefits from ubiquitous technology. Today digital technologies offer lot of possibilities to utilize technology in mathematics' teaching and learning. This paper presents the best pedagogical practices related to utilization of technology that have tested during engineering mathematics courses at Tampere University of Applied Sciences. These practices found out to contribute an efficient and good learning and teaching experience for both students and teachers.

**Keywords:** online exercises, online pedagogy, flipped classroom, computer-aided assessment, short videos

## DYNAMIC VISUALIZATIONS IN EDUCATION OF MATHEMATICS

**Daniela Velichová**, Professor, PhD, Slovak University of Technology n Bratislava, [daniela.velichova@tuba.sk](mailto:daniela.velichova@tuba.sk)

**Abstract:** In the paper we discuss some of the new challenges of ICT aided education and we present some examples of utilization of dynamic mathematical software GeoGebra in teaching basic courses of university mathematics and geometry at technical university.

**Keywords:** Visualization, dynamic mathematics, interactive worksheets, applets

## INTERACTIVE MATHEMATICS FOR ENGINEERS WITH *MAPLE*<sup>1</sup> USAGE

**Ralitsa Vasileva-Ivanova**, Pr. Assist. Prof, PhD, University of Ruse, Bulgaria, [rivanova@uni-ruse.bg](mailto:rivanova@uni-ruse.bg),

**Magdalena Petkova**, PhD, Bulgaria, [magipetkova@ymail.com](mailto:magipetkova@ymail.com),

**Emiliya Velikova**, Assoc. Prof., PhD, University of Ruse, Bulgaria, [velikova@uni-ruse.bg](mailto:velikova@uni-ruse.bg),

**Ion Mierlus-Mazilu**, Assoc. Prof., PhD, Technical University of Civil Engineering, Bucharest, Romania, [mimi@utcb.ro](mailto:mimi@utcb.ro)

**Abstract:** This article presents some possible usages of the interactive *Maple Tutors* in engineering mathematics, which correspond to the FutureMath project purposes. The *Maple Tutors* allow students to work step-by-step through mathematical problems. For example, one *Maple Tutor* provides students with opportunities to practice exercises by applying different rules of integration. They need to know the theoretical background, and after that have to understand what type of a problem it is necessary to solve (typical or complicated). They can also use the *Maple Assistant* to support their solution of the problem and to experiment with it. Students can perform some steps themselves, and ask *Maple* to perform the next ones.

In addition, in this article are presented some mathematical problems from the National Student Olympiad in Computer Mathematic “Academician Stefan Dodunekov” (CompMath) in Bulgaria, solved and visualized by the usage of *Maple* 18.

**Keywords:** Calculus, *Maple Tutors*, education, CompMath problems, FutureMath project

## E-LEARNING MATERIALS, METHODS AND TOOLS TO ACTIVATE STUDENTS

**Anne Uukkivi**, Lecturer, PhD, University of Applied Sciences, Tallinn, Estonia, [uukkivi@tktk.ee](mailto:uukkivi@tktk.ee)

**Oksana Labanova**, Lecturer, MSc, University of Applied Sciences, Tallinn, Estonia, [oksana.labanova@tktk.ee](mailto:oksana.labanova@tktk.ee)

**Abstract:** Our daily life has become highly interactive: we search for information on the Internet; we communicate via the Internet; and we comment, “like”, chat and tweet. These everyday habits also affect the teaching and learning environment.

According to a joint research of Tallinn and Tartu Universities (Jõgi et al, 2013) students prefer to be actively involved in the learning process and they believe that active involvement helps them to better understand their study objectives and content. However, they also think that lecturers do not use involvement techniques enough in the learning process.

The aim of this paper is to share the best practices for increasing students’ involvement in the learning process, based on the experience of the lecturers of the Centre for Sciences of TTK University of Applied Sciences (TTK UAS). To support and involve students we have introduced a variety of interactive teaching methods and educational technology tools. Free online tools are used for this purpose. Our selected learning materials and methods are effective in the classroom and also in an e-learning environment. Our students’ feedback has been positive.

Students appreciate short tutorial videos as learning material and also as a method for giving and receiving individual feedback. They like assignments which have a competitive element (individually or as a team), practical assignments and games, especially if they are related to their specialty. Immediate feedback is important for students as well.

This has helped to lessen problems, such as the varying progress and academic level of learners, working students, and students of different nationalities. Since part of the materials can be made available online, the amount of material to be covered during contact hours has decreased.

**Keywords:** e-learning, classroom learning, learning materials, learning methods, online tools, interactive teaching

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<sup>1</sup> The Symbolic Computation Group at the University of Waterloo developed the first concept of Maple software and initial versions in the early 1980s.

## FOSTER STUDENTS' CREATIVITY AND MOTIVATION THROUGH ACTIVE LEARNING

Valentina Voinohovska, Associate Professor, University of Ruse, [voinohovska@ami.uni-ruse.bg](mailto:voinohovska@ami.uni-ruse.bg)

**Abstract:** The purpose of this study is to foster students' creativity by using active learning. The learning model used is creative problem solving. It is supposed that the students' ability in producing ideas to solve the given problem has been increased significantly. Problem based learning was chosen to develop students' creativity. As students encounter a new problem in every meeting and building up their knowledge through experiencing problem solving activities will foster their creativity. The creative activities can be shown in exposing and implementing the ideas to solve the given problem. This study is focused on how a problem solving activities can develop students' creativity in generating different ideas and different correct solution to the given problem.

**Keywords:** creativity, web design, multimedia, active learning, problem solving

## GONIOMETRIC FUNCTIONS AND THEIR MATHEMATICAL REPRESENTATION

Daniela Richtarikova, Professor, Slovak University of Technology in Bratislava, Slovakia, [daniela.richtarikova@stuba.sk](mailto:daniela.richtarikova@stuba.sk)

**Abstract:** Paper will deal with goniometric functions in relation to vibration as one of the main movements studied at technical universities. It introduces some applets that can effectively help to clarify and understand the role of selected items within forms of their traditional mathematical representations.

**Keywords:** goniometric functions, applets

## TRIGONOMETRY AND LIMITS

Peter Letavaj, Assistant, Slovak University of Technology in Bratislava, Slovakia, [gletavaj@stuba.sk](mailto:gletavaj@stuba.sk)

**Abstract:** In this article two presentations / video from the project Future Maths are discussed step by step. First presentation is about Trigonometry, basic formulas in this topic and their derivation. Second presentation is about e-limit, derivation of existence using Bernoulli inequality and Binomial Theorem.

**Keywords:** trigonometry, trigonometric formulas, e-limit, Bernoulli inequality, binomial theorem, Pascal triangle

## CONSTRUCTIVISM AND MULTIMEDIA LEARNING

**Desislava Georgieva**, PhD. University of Ruse, Ruse, Bulgaria, [dmgeorgieva@uni-ruse.bg](mailto:dmgeorgieva@uni-ruse.bg)  
**Ion Mierlus Mazilu**, Assoc. Prof. Technical University of Civil Engineering, Bucharest, Romania [mmi@utcb.ro](mailto:mmi@utcb.ro)  
**Emiliya Velikova**, Assoc. Prof. University of Ruse, Ruse, Bulgaria, [evelikova@uni-ruse.bg](mailto:evelikova@uni-ruse.bg)

**Abstract:** In this paper the authors present the integration of constructivist principles and multimedia lessons in mathematical training with purpose optimization of the learning process for forming and developing of mathematical knowledge and skills. For that purpose an experiment was conducted with fifth grade students at the High School with the Study of European Languages “St. Constantine-Cyril the Philosopher” – Ruse, Bulgaria. It is given one example of the multimedia usage – a lesson on the theme *Division of Common Fractions*, developed with MS PowerPoint.

**Keywords:** constructivism, multimedia lessons, mathematical training, division of fractions

## TEACHING MATHEMATICAL TERMINOLOGY TO LANGUAGE STUDENTS

**Raluca Ghentulescu**, Lector. Ph.D., Technical University of Civil Engineering, Bucharest, Romania,  
[raluca4u@gmail.com](mailto:raluca4u@gmail.com)

**Abstract:** Due to their special status within the Technical University of Civil Engineering of Bucharest, the language students from the Specialization of Translation and Interpretation come into contact with all sorts of highly specialized terms from various fields, mostly from mathematics, physics, architecture and constructions. As they constantly need technology and expert advice to deal with their problems, they are usually recommended to resort to computer-based training and online learning. The courses of Terminology and Terminological Databases, included in the curriculum of the first year of study, help them to better understand the technical-scientific language, to create and access term banks, as well as to work with translation platforms (e.g. Memsource, TRADOS). Many texts they use as teaching materials for these subjects are taken from mathematics and, therefore, the aim of this article is to analyze them from the double perspective of terminology and e-learning.

**Keywords:** e-learning, mathematical terms, terminological databases, translation platforms



## **THE RESONANCE BETWEEN TEACHER AND TECHNOLOGY GIVES AUTHORITY TO SPECIFIC INFORMATION**

**Mihai Pincu**, Techer, Theoretic High school Dimitrie Bolintineanu, [mihai\\_pincu@yahoo.com](mailto:mihai_pincu@yahoo.com)

**Liliana Pincu**, Teacher, Elementary School George Calinescu, [liliana.pincu@yahoo.com](mailto:liliana.pincu@yahoo.com)

**Catalin Mihai Pincu**, Student at Faculty of Mathematics and Computer Science, University of Bucharest, [pincu.catalin@yahoo.com](mailto:pincu.catalin@yahoo.com)

**Abstract:** Digital learning and recent trends in Open Educational Resources (OER) are enabling fundamental changes in the education world, expanding the educational offer beyond its traditional formats and borders. New ways of learning, characterized by personalization, engagement, use of digital media, collaboration, bottom-up practices and where the learner or teacher is a creator of learning content are emerging, facilitated by the exponential growth in OER available via the internet. Integrating TIC (technology of information and communication) into physics classes makes it so that the schools are sure that all the actual society requirements are met, prepping the students in a way that makes it sure they succeed in the future.

Continually developing, the technology of information and communication has fundamentally changed international relationships. The internet, personal computers and smartphones turning the world into a global network of continuous information exchange.

**Keywords:** Digital learning, new technology, communication, educational resources, virtual environments

## **WEBINAR - THE NEWEST ALTERNATIVE FOR DISTANCE LEARNING**

**Diana Popescu**, Teacher, Ph.D., National College "Sf. Sava", [diana\\_20e@yahoo.com](mailto:diana_20e@yahoo.com)

**Răzvan Săndulescu**, Student, National College "Sf. Sava", [sandulescu.razvan16@yahoo.com](mailto:sandulescu.razvan16@yahoo.com)

**Astract:** Webinar, in its essence, is an interactive web conference. Basically it is a real-time lesson given via Internet. The aim of this project is to outline the advantages of the online lessons which are being taught by a teacher in front of an online audience. The reason why the Webinar is considered to be better than the traditional way of education is because it can be held anywhere, anytime, as long as an Internet connection is available. At this moment, it is the most modern and interactive way of learning because it provides easy access to well-structured information. Moreover, it is possible to ask questions, and the discussions are held in real time. Furthermore, it is also a very comfortable way of learning, as there is no need to travel anywhere. One must only sign up, in order to attend a Webinar. Attending a Webinar is really easy, and does not require vast technical knowledge: all one needs is a web browser, a stable Internet connection, and working audio equipment. The Webinar is one of the most convenient ways of learning because it provides access to information from the comforts of your home.

**Keywords:** audience, online, Internet, modern, attend

## NEW LEARNING METHODS FOR MODERN MENTALITIES

**Nae Ovidiu David**, Student, “Grigore Moisil” National College, [naevidiu@yahoo.com](mailto:naevidiu@yahoo.com)  
**Trifan Antonie Luca**, Student, “Sfantul Sava” National College, [trifanluca2016@yahoo.ro](mailto:trifanluca2016@yahoo.ro)  
**Nae Sofia**, Teacher, “Sfantul Sava” National College, [nae.sofia@gmail.com](mailto:nae.sofia@gmail.com)

**Abstract:** “Math is a human language just like English, Spanish or Taiwanese because it allows people to communicate with each other”. This is how a teacher named Randy Palisoc started his Ted Talks speech on the fifth of December 2014. What he meant was that by using words, student can understand math better. For example:  $7 \times 3$  can be spelled seven times three and this way children understand what the equation means, what it tries to achieve and what is used for. The truth is that more than half of children nowadays consider math to be useless. This is a consequence of the subject being presented to students in an abstracted way filled with formulas which the young won't ever use again. To learn something efficient you need to find the subject interesting. When you do, it often results in a passion. Only when you have a passion for something you can assimilate large quantities of information. This is what many teachers nowadays miss. It's not the subject which is boring but the way it is taught to students. Choosing to fill the memory of children with rules and equations hoping that they will comply and create a passion for math is a wrong way to go forward. A recent study which indicates the negative effects of this way of teaching is based on the American students and shows that only 26% of twelve graders are proficient in math! I believe that this number can improve not only in America but also in other countries now more than ever. The answer lies in the changes that we make in our way of teaching, in our view on the subject and by using technology to our advantage. One day students may once again see math as a way of solving problems and not a source of creating them.

**Keywords:** upgrading the old mentalities, hoping for a better world, getting the right education.

## BITWISE OPERATORS

**George-Robert Micu** Student, “Sfantul Sava” National College, [micualexandru76@yahoo.com](mailto:micualexandru76@yahoo.com)  
**Sofia Nae** Teacher, “Sfantul Sava” National College, [nae.sofia@gmail.com](mailto:nae.sofia@gmail.com)

**Abstract:** The main objective of the paper is to put emphasis on the importance of bits manipulation in both high level and low level programming. The research is based on the different types of operators, including shifting and bitwise ones such as: NOT, AND, OR, XOR. There are many applications included in order to demonstrate the effectiveness of using bits as programming objects in different projects that can be used in our modern society as well. The major conclusions of the paper show that using this method of manipulating bits is necessary when dealing with large amounts of data that must be compressed or even when programming graphics due to it being much faster and effective than regular mathematical operations like addition and multiplication.

**Keywords:** byte, bit, programming, applications

## ORBIT FRACTALS

**Prassa Raluca-Mihaela**, Student, University of Bucharest, Romania, e-mail: [raluca\\_prassa@yahoo.com](mailto:raluca_prassa@yahoo.com)  
**Pirvulescu Valentina**, Student, University of Bucharest, Romania, e-mail: [prv.val41@yahoo.com](mailto:prv.val41@yahoo.com)

**Abstract:** A fractal is a never-ending pattern. Fractals are infinitely complex patterns that are self-similar across different scales. They are created by repeating a simple process over and over in an ongoing feedback loop. Driven by recursion, fractals are images of dynamic systems. In this lesson, we work on the principal of tracing out orbits of some function. Given a starting point  $x_n$ , the next point is calculated like so:  $x_{n+1} = f(x_n)$ . This process is then repeated.

**Keywords:** orbit fractals

## AREA OF A CURVILINEAR TRAPEZOID USING INTEGRAL CALCULUS

**Anghelescu Alice**, Student, Saint Sava National College, Bucharest, Romania, [alicee\\_dag@yahoo.com](mailto:alicee_dag@yahoo.com)  
**Stefania Constantinescu**, Assistant Professor, Technical University of Civil Engineering, Bucharest, Romania, [c\\_aurora32@yahoo.com](mailto:c_aurora32@yahoo.com)  
**Ion Mierlus Mazilu**, Associate Professor, Technical University of Civil Engineering, Bucharest, Romania, [mimi@utcb.ro](mailto:mimi@utcb.ro)

**Abstract:** From the course of elementary geometry, we are familiar with the concept of the area of a plane figure bounded of line segments or circular arcs. A curvilinear trapezoid is a figure bounded by the graph of a non-negative and continuous function  $f$  on the interval  $[a, b]$ , the axis  $Ox$  and straight lines  $x = a$  and  $x = b$ . We can define the area of the curvilinear trapezoid by  $\int_a^b f(x)dx$ . This definition generalizes the definition of the area of a plane figure bounded by line segments or circular arcs. In this lesson, the calculation of the areas of many plane figures are presented.

**Keywords:** integral calculus,

## MODERN METHODS OF TEACHING PHYSICS USING A FREE WEBSITE FOR STUDYING THE SIMPLE PENDULUM

**Mihaela Chiriță**, Teacher, Saint Sava National College, [mihaelachirita@yahoo.com](mailto:mihaelachirita@yahoo.com)  
**Cristian Mihai Chiriță**, Student, University College London, [Cristian.Chirita@outlook.com](mailto:Cristian.Chirita@outlook.com)

**Abstract:** The purpose of this work is studying the simple gravity pendulum using a free educational website for students: [https://phet.colorado.edu/sims/pendulum-lab/pendulum-lab\\_en.html](https://phet.colorado.edu/sims/pendulum-lab/pendulum-lab_en.html). Using the interface provide by the website, different physical experiments can be made to determine different parameters like gravitational acceleration, and different properties such as the dependence between the period and angular amplitude. Different phenomena such as: law of conservation of energy in absence of friction, transformation of initial kinetic energy in thermal energy due to friction, isochronism of 2 pendulums of same length, and movement of the pendulum in the absence of a gravitational field. The advantage of the website is that it allows to repeat the experiment as many times as we wish without affecting the result of the measurements, as it happens in the case of lab experiments. The site also allows for visualization of physical experiments which we are not able to otherwise, such as the velocity and acceleration vectors while the pendulum is moving.

**Keywords:** length, mass, period, acceleration, gravity

## BLEND-LEARNING APPLICATIONS IN TEACHING CHEMISTRY

**Gabriela-Raluca Dimulescu**, Teacher, Secondary School No 56, Bucharest, Romania, [dimulescu.gabriela@gmail.com](mailto:dimulescu.gabriela@gmail.com)

**Abstract:** The purpose of this study is to present a good practice example of teaching, a learning unit for Elementary School Chemistry. Blended-learning applications can be used to improve the quality of teaching and also to optimize the Chemistry Education. Informational technology improves the communication between teachers and students and allows teachers and students to access resources beyond the wall of their schools. Success in teaching and learning Chemistry involves organization, imagination and critical-thinking on the part of the all participants at the process.

**Keywords:** chemistry,

## MEANS AND METHODS OF TEACHING CHEMISTRY

**Iuliana Shajaani**, Teacher, Saint Sava National College, Bucharest, [iuliana.shajaani@yahoo.com](mailto:iuliana.shajaani@yahoo.com)

**Iuliana Cristea**, Teacher, Jean Monnet High-school, Bucharest, [iuliem@yahoo.com](mailto:iuliem@yahoo.com)

**Ioana Maruntel**, Student, Carol Davila Medicine and Pharmacy University, Bucharest, [maruntel.ioana@yahoo.com](mailto:maruntel.ioana@yahoo.com)

**Abstract** There are advantages and disadvantages regarding the use of internet in Chemistry class. Allowing the students to use the internet as source of information and knowledge can lead to the facilitation of the learning process, for this way the students can reach an enormous amount of information.

Moreover, students and teacher can communicate faster this way and internet as a learning tool has an exceptionally lower cost in comparison to others, like paper-based learning materials.

Regarding the disadvantages, the first one would be the lack of accuracy of the information found online. The amount of information and sources does not allow the teachers to verify its consistency and the veracity. Also, this may reduce the involvement of students in the learning process and diminish their originality, for they are not determined to be proactive. Therefore, scientific authority and citing the sources are aspects which are problematic in this case. Taking into consideration all of the above, one solution to the problems exposed can be an educational software program, which can be made to be interactive and stimulating, while also usable in evaluating the knowledge of students.

Moreover, Chemistry educational software programs make experiments safe for the students, while also being interactive. This way, the whole class can engage in experiments in an environment which is free of toxicity, safety problems or obstacles like lack of materials. The teacher retains the most important role by using this software program in an interactive way, in order to keep the students interested and attentive.

**Keywords:** learning process, chemistry classroom learning, educational software program, online learning tools

## **BLENDED-LEARNING FOR RELIGION SCHOOLBOOKS**

**Aurora Ciachir**, Teacher, Secondary School No 56, Bucharest, Romania, [aurora.ciachir@yahoo.com](mailto:aurora.ciachir@yahoo.com)

**Dragos Ionita**, Teacher, Secondary School No 77, Bucharest, Romania [dragos11csc@yahoo.com](mailto:dragos11csc@yahoo.com)

**Abstract:** Nowadays, using technology has become a very important issue. It is present in people's lives from the early years of childhood. In addition to utility, which is given by the purpose of use, it is also very attractive. In the era of smartphone's, highly performing computers and video games, students are attracted to these gadgets. By observing these facts, digital textbooks which contain extra images, videos and interactive exercises have been introduced in the Educational System for facilitating pupils' way of learning. Considering the perspective of Religion Textbooks, this article proposes to present the Orthodox Cult for 3rd and 4th graders.

**Keywords:** religion, Orthodox Cult, textbooks,

## **SCIENTIX - TECHNOLOGY AND CREATIVITY**

**Nectara Elena Mircioagă**, Teacher, eng. PhD. Technological High School "Constantin Brâncuși", [nectara@gmail.com](mailto:nectara@gmail.com)

**Abstract:** Scientix promotes and sustains pan-European collaboration between teachers, education researchers, decision-makers and other professionals in the fields of science, technology, engineering, and mathematics. The paper presents some of the useful resources for chemistry, biology and science teachers.

**Keywords:** Chemistry, Biology, Technology, Sciences

## **A SET OF PROFESSIONAL ATTRIBUTES FOR PRE-SERVICE TEACHERS**

**Mariana Lili Badea**, PhD, Teacher, Colegiul National "Iulia Hasdeu", [mariana\\_lili2000@yahoo.com](mailto:mariana_lili2000@yahoo.com)

**Abstract:** Then that one of the most effective ways to improve education is to attract intelligent, creative, innovative, caring, dedicated, hardworking people into the field and to give them the knowledge and skills necessary to succeed..

**Keywords:** Education, Teaching

# FROM SIMULATION TO REAL-LIFE WITH IOT ENABLED AUTHENTIC LEARNING ACTIVITIES IN ENGINEERING EDUCATION

Esa Kujansuu, Tampere University of Applied Sciences, [esa.kujansuu@tamk.fi](mailto:esa.kujansuu@tamk.fi)

**Abstract:** The engineering students need more real-world learning experiences with a true link to the work-life scenarios, because engineering by its own definition deals with real-life problems and challenges. The assimilation of engineering concepts requires more hands-on approach than just theoretical discussions. Real-life learning experiences are traditionally offered for the students by engineering lab setups, but maintaining physical labs have been a static solution and consequently an expensive approach with remarkable limitations.

A new approach to improve engineering education is the inclusion of authentic learning activities by confronting the students with real questions, problems or scenarios taken directly from the industry. The new approach of authentic learning activities has been implemented up to the present by using simulations with a computer. While the simulations do enable a more practical oriented approach for learning activities, there is still a remarkable gap between the student and the actual real-life.

IoTELA project proposes the gap should be reduced by using IoT to bring the genuine real-life into the engineering education. The use of IoT enables to expose the students to true authentic learning activities, in which they can observe the actual device, machine or phenomenon in its real environment. In these authentic learning setups the students are physically in the university, but most likely, far away from the subject of observation.

The actual learning activities for the students can be implemented mostly by exploiting the existing IT infrastructure in universities, but the use of IoT for the authentic learning requires support from the IT infrastructure in the universities. According to IoTELA project this support should be enabled by establishing dedicated IoT labs. For improved opportunities IoTELA project proposes a community of IoT labs to enable sharing of IoT enabled authentic learning activities. In the community, the IoT labs can share their best authentic learning activities and their best practises. The community enables a rich variety of IoT enabled authentic learning activities for the students.

**Keywords:** simulation, real life, engineering education, problem solving