ESCOLA
DIGITAL TEACHING TOOLS FOR ENGINEERING LABS

IITEEC

INTERNATIONAL INSTRUCTIONAL TECHNOLOGIES IN ENGINEERING EDUCATION CONFERENCE

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ABSTRACT PROCEEDINGS

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TIME TABLE

29th of March, 2019
Venue: Ege Üniversitesi Turgut Yazıcıoğlu Konferans Salonu (www.muhfak.ege.edu.tr)

09.30-10.00 Opening Ceremony

10:00- 10:30 Engineering Student-Centered Learning Approaches (ESCOLA Project) - Assoc. Prof. Özge ANDİÇ ÇAKIR

10.30-11.00 Course Management System (CMS) in Izmir Institute of Technology - Assoc. Prof. Dr. Tahir Kemal ERDEM

11.00-11.15 **Coffee Break**

11.15-11:45 Eğitim 4.0 - Dr. Zeynep Meral TANRIÖĞEN

11.45-12:15 Erasmus+ Project in Engineering Technology Supported Education - Manon van Leeuwen (Online Presentation)

12.15-13.00 **Session 1 - Session Chair: Dr. Selim ALTUN**

PROMES®: Project Oriented Innovative Engineering Research and Education System
S.Bilgen, O. Alankuş, R. N. Tuncay

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A. Aktas, B.Ecer, M.Kabak

A Review on the Entrepreneurial Structure of Higher Education Institutions Regarding Academic Studies on Energy
D. Çebi, F. M. Alptekin, M. Uyan, H.Sarptaş, M. S. Çeliktaş

iStart: A Lean-Training, Innovative, Multidisciplinary Digital Entrepreneurship Platform: Context and Approach
E. Staiou, Y. Özarslan, L. Kandiller, D. Bibikas, N. Zaharis

13.00-13.45 **Lunch Break**

13.45-14.45 **Session 2 - Session Chair: Dr. Alev ATEŞ ÇOBANOĞLU**

The Use Of Virtual Reality And Arduino Based Solutions To Create Low Cost Teaching Materials
B. Alam

Yapı Mühendisliği Eğitiminde Bilgisayar Kullanımı
H. H. Çatal

The Development of Biomimicking and Biodesign Education for Faculty Members Teaching in Architecture/Engineering Departments
A. Şendemir, Ö. Andiç Çakır, B. Baran, B. Ceylan, A. Tokuç, İ. D. Can, F. Avcı Özkaban, T. D. Altun, G. Köktürk, F. Sarsar

Development of a Low Cost Open Source 3D Scanner and Viewer for Biological Specimens
O. Yetkin, E. Akçi, H. Gökcan, F. Karaoğu, B. Savaşan, A. Şendemir

14.45-15.45 Session 3 - Session Chair: Dr. Şebnem TAVMAN

Mühendislik Alanında Matematiğin Yeri Ve Önemi
S. Çatal

Big Data Analytics in Higher Education and Learning Environments
Z.Aytaç, H. Ş. Bilge

Influencing Factors that Affect Students' Decision to Choose Civil Engineering
S.M.F.Mousavi, S. Baradarani

15.45-16.00 Coffee Break

16:00-17:30 ESCOLA Session (Virtual Session) - Session Chair: Dr. Fırat SARSAR

ESCOLA in a Nutshell
Marie-Jetske Lettinga

Distance Learning
B. Evstatiev, T. Georgiev, S. Kadirova, T. Georgieva, N. Mihailov

Collaborative Learning in Virtual Environments
G. Roche

Digital Inclusion
P. Różewski

Videos and 3D simulations for laboratory
F.Sarsar

Empowering Female Engineering Entrepreneurs – case study of modern approaches to enhance entrepreneurial capacities amoung woman engineers
K. Lobacz, Ö. Andiç Çakır

Digital Skills Accelerator Project
P. Różewski

PROMES®: Project Oriented Innovative Engineering Research and Education System

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Abstract

Starting in the 2018-2019 academic year, with the aim of significantly enhancing engineering education effectiveness, Istanbul Okan University has adopted a novel approach, PROMES®: Project Oriented Innovative Engineering Research and Education System.

With PROMES®, in addition to the traditional compulsory internship for 8 weeks in industry, undergraduate students, selected according to their levels of motivation and success, are immersed in actual industrial projects that constitute a part of a complex product development process, starting from their first year in engineering education, with direct mentorship by professional engineers collaborating with academicians.

This enhances students' motivation while introducing them to real-life issues and settings from early stages of their education. Furthermore, they get a chance to start working as professional engineering interns before finishing their studies. Thus, the common question about how all the theoretical coursework will be useful in their careers is answered in practical contexts.

Those students who participate in the O'COOP program, another medium that enforces Okan University's principle of close collaboration with industry, work professionally during their last semester of the engineering undergraduate program, enjoying the opportunity to combine their experience gained during PROMES® with full-time work in industry.

Every year, successful PROMES® students, evaluated by mentors from industry and university, are awarded scholarships based on their performance in the program.

Industrial firms sponsor the PROMES® program with the aim of benefitting from the innovative and energetic contributions of young engineering students in their R&D problems.

Pilot implementation of PROMES® has started in September 2018 with only 9 firms and 23 students, focusing on automotive engineering and related disciplines as part of an "Intelligent and Electrical Vehicle Development" project. Based on the assessment of this stage, implementation will be extended to all disciplines in which Okan Engineering Faculty is actively involved.

Keywords: PROMES(R), project oriented engineering education, engineering education, university ındustry collaboration

Endüstri Mühendisliği Eğitiminde Alan Dışı Derslerin Uzaktan Eğitim İle Öğretilmeye Uygunluğunun Değerlendirilmesi

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Abstract

Son yıllarda Türkiye'de üniversitelerde mühendislik eğitimi gören öğrenci sayısı hızla artmaktadır. Yeni açılan bölümlerin yanında, eskiden beri eğitim faaliyetlerini sürdüren bölümlerin de kontenjanlarının artırılması bu durumun sebepleri olarak değerlendirilebilir. Artan öğrenci mevcudu sebebiyle eğitim – öğretim faaliyetlerinin planlanması zorlaşmakta, daha fazla öğretim elemanı ve fiziksel imkânlar teminine ihtiyaç duyulmaktadır. Bu noktada alan dışı derslerin yürütülmesinde uzaktan öğretim teknolojilerinden faydalanılması eğitim – öğretim faaliyetlerinde öğretim elemanı ve fiziksel imkânlara yönelik gereksinimi azaltabilecektir. Bu düşünceyle uzaktan öğretim kapsamına alınabilecek derslerin tespitine yönelik analitik bir karar modelinin, eğitim – öğretim planlarını yapan karar vericilere yol gösterici olacağı öngörülmüştür. Derslerin değerlendirmesinde birden fazla faktörün aynı zamanda dikkate alınması gerektiğinden, farklı faktörler açısından bütünleşik bir karar alınması için çok kriterli karar verme yaklaşımlarından faydalanmak uygun olacaktır. Bu çalışmada, Endüstri Mühendisliği eğitiminde uzaktan öğretim kapsamına alınabilecek alan dışı dersleri sıralamak için çok kriterli karar verme yaklaşımlarından Analitik Hiyerarşi Süreci (AHP) ve ELECTRE-II yöntemlerini içeren analitik melez bir yaklaşım önerilmiştir. AHP ile elde edilen kriter ağırlıkları ELECTRE – II yöntemi içinde alternatiflerin değerlendirilmesinde ağırlıklı karar matrisi oluşturulurken kullanılmıştır. Gazi Üniversitesi Endüstri Mühendisliği bölümü müfredatında bulunan alan dışı dersler üzerinde örnek bir değerlendirme yapılarak önerilen yaklaşımın uygulanabilirliği gösterilmiştir. Çoğunlukla bölüm dışı öğretim elemanları tarafından verilen yedi seçmeli ders, ders içeriğinin uzaktan eğitime uygunluğu, ödev değerlendirmesi, uzaktan eğitim materyali temini, sınavların uzaktan yapılabilirliği ve öğretim elemanları açısından dersi uzaktan eğitime almanın uygunluğu kriterleri temelinde değerlendirilmiştir. Elde edilen sıralama sonuçları Endüstri Mühendisliği alanında uzaktan öğretim yoluyla verilebilecek dersleri belirlemede yol gösterici olmasının yanında diğer alanlarda da benzer uygulamaların yapılmasına olanak sağlayacaktır.

Keywords: Uzaktan eğitim, mühendislik eğitimi, AHP, ELECTRE

A Review on the Entrepreneurial Structure of Higher Education Institutions Regarding Academic Studies on Energy

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Abstract

The skills and knowledge that drive development and innovation in today's economy are supplied by Higher Education Institutions (HEIs). In the transformation and improvement process of HEIs, it is a new trend to be an entrepreneurial body. In this manner, the top ranking universities give priority to provide a critical framework for questioning and connecting topics related to entrepreneurship. Entrepreneurship programs in the universities ensure understanding of the concepts, frameworks and practical implications of entrepreneurship by undergraduate, graduate and professional students. These programs further offer global careers in innovation management, entrepreneurship and technology consulting.

In this study, the top 30 universities are determined in accordance with University Ranking by Academic Performance (URAP) ranked with respect to the number of entrepreneurs active in related institutions. These universities which are focused on bridging technology and society through innovation, design and VC-backed entrepreneurship are investigated in terms of innovation system, connecting innovators to education, mentoring, resources, community and intellectual leadership in the selected field of energy. Publications of the universities on energy are processed, which are then further analyzed using the bibliometric network construction software tools. Restrictions to better utilize the big data are defined in terms of publication year, document type and field of research in order to categorize conducted researches and evaluate main tendencies.

Keywords: Energy, higher education institutions, entrepreneurship, education, bibliometric analysis

iStart as a Lean-Training, Innovative, Multidisciplinary Digital Entrepreneurship Platform: Context and Approach

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Abstract

EU's success in the global markets is heavily dependent on the ability of the economy to produce innovative enterprises; this requires a core engine of open innovation and co-creation among all the involved stakeholders. In this scope, higher education institutions must be able to "produce" independent, creative, entrepreneurial individuals, who understand inter-and-multidisciplinary challenges of the socio-economic environment. As a result can contribute to open innovation in true convergence with technological growth.

To this end, iStart project responds to this need by aiming to develop an innovative, evidence-based transnational framework, that will markedly improve the knowledge and skills of academic institutions to produce more market oriented digital entrepreneurship (DEP) curricula, reducing the barriers in the field of entrepreneurship education.
The paper focuses on presenting the achievements of the iStart project, and mainly the development of a Virtual Learning Environment (VLE) platform to support and enhance Entrepreneurship education. The project partners collaborated with the quadruple-helix stakeholders in 5 countries, to co-create a curriculum for universities and other academic institutions to teach Digital Entrepreneurship in a more market/startup oriented way and designed and developed a tool as MOOC for Digital Entrepreneurship, for supporting it.

Furthermore, the paper discusses the importance of entrepreneurship education in university settings, the impact of the project on the way the topic was approached, as well as the importance of sustaining the project's achievements, notably with the Virtual Learning Environment Platform (VLE) created and tested during the 4 Digital Entrepreneurship Practice (DEP) Start-up Academies, organized within the scope of the project.

iStart: A Lean-Training, Innovative, Multidisciplinary Digital Entrepreneurship Platform is an ERASMUS+ KA2 project funded by the European Union and coordinated by the Turkish National Agency under (Grant Agreement Number: 2016-1-TR01-KA203-034258)
https://istart.yasar.edu.tr/

"iStart: A Lean-Training, Innovative, Multidisciplinary Digital Entrepreneurship Platform" is an ERASMUS+ KA2 project funded by the European Union and coordinated by the Turkish National Agency under (Grant Agreement Number: 2016-1-TR01-KA203-034258) https://istart.yasar.edu.tr/

Keywords: Entrepreneurship, higher education, virtual learning environment platform (VLE), MOOC

The Use Of Virtual Reality And Arduino Based Solutions To Create Low Cost Teaching Materials

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Abstract

One of the main tasks of an engineer is to find solutions to the different problems and develop new methods to simplify different aspects. However, to learn how to do all of these, the latest teaching methods and technologies should be used in order to allow the engineering students to be adopted to modernist solutions. Therefore, the job of the academicians at engineering schools should not be limited to teach the traditional methods of how to do the basics of calculating and analyzing materials and structures, but should also include techniques that deliver any required idea through a medium other than papers. Yet, most of the times, it is impossible to have such real examples or equipment at every school or facility. For that, new methods like virtual reality or augmented reality can offer a lot by bringing 3D models to life and allowing students to move around and explore them anytime anywhere. On the other hand, while these kind of techniques can provide a great visualization, a good engineering education system should go beyond that and perform real tests to validate and analyze the new systems or materials. Performing those tests usually requires complicated and expensive testing systems. While this might not be a problem for a big budget research project, finding such funds for all the ideas or at new developed laboratories and departments is not easy. On the other hand, using an optimized test design and a wise selection of medium class devices can be more than enough for preliminary tests or small projects. This presentation reviews some of the virtual reality methods used for education purposes, and provides an approach on how to use low cost modern technologies in test and data acquisition devices.

Keywords: Virtual reality, augmented reality, low cost test equipment

Yapı Mühendisliği Eğitiminde Bilgisayar Kullanımı

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Abstract

Kişisel bilgisayar kullanımının yaygınlaşmasına bağlı olarak ülkemizde 1990'lı yılların başından itibaren inşaat mühendisliğinde ve inşaat mühendisliği eğitiminde bilgisayar kullanımı artmıştır. İlerleyen dönemlerde, inşaat mühendisliğinin yapı, hidrolik, yapı işletmesi, yapı mekaniği, ulaştırma disiplinlerini ilgilendiren konularda hazırlanmış paket bilgisayar programlarının artması proje, imalat ve mühendislik eğitimi aşamasında bilgisayar kullanımını hızlandırmıştır.

Paket programların yaygınlaşması, bilgisayar teknolojisindeki hızlı gelişmeler, yapı mühendisliği eğitiminde ve iş yaşamında bu teknolojiden yararlanmayı neredeyse zorunlu kılmaktadır.

Yapı mühendisliği eğitiminde, depreme dayanıklı, işlevsel yapıların projelendirilmesi aşamasında paket program kullanımı tasarımcıya hızlı ve alternatif çözümler sunmaktadır. Ancak tasarımcı ve mühendislik eğitimi gören öğrenciler tarafından bu programların birer araç olduğu unutulmamalıdır. Paket programlara veri girişinde, programa taşıyıcı sistemin hesap modelinin tanıtılmasında, hesap kısıt ve kabullerinde hatalar yapıldığında paket program ile gerçekleştirilen analiz sonuçlarının gerçek yapısal davranışın sonuçlarını temsil etmeyeceği açıktır. Bu tür hataların önüne geçebilmek için tasarımcı mühendislik eğitimi boyunca edindiği bilgileri kullanarak paket program sonuçlarını yorumlamalı ve kontrol etmelidir.

Çalışmada, paket programlarda kullanılan ve sonlu elemanlar çözüm yönteminin özel hali olan matris-deplasman yöntemi ile yapısal analizde, mühendislik eğitimi boyunca edinilen bilgiler kapsamında dikkat edilmesi gereken hususlar örneklerle sunulmuş, ülkemizdeki üniversitelerin inşaat mühendisliği yapı programlarında lisans ve lisansüstü düzeyinde açılan bilgisayar kullanımına yönelik öğretim planları incelenmiştir.

Keywords: Yapısal analiz, paket programlar, matris-deplasman yöntemi, dinamik analiz, statik analiz.

The Development of Biomimicking and Biodesign Education for Faculty Members Teaching in Architecture/Engineering Departments

Aylin Şendemir[1], Özge Andiç Çakır[2], Bahar Baran[3], Beril Ceylan[4], Ayça Tokuç[5], İrem Deniz Can[6], Feyzal Avcı Özkaban[7], T. Didem Altun[8], Gülten Köktürk[9], Fırat Sarsar[10]

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Abstract

Biomimicking is an interdisciplinary approach that simulates nature's time-tested templates and strategies to find solutions for society's problems and obstacles. Biodesign, on the other hand, is a discipline that examines the nature and analyzes the obtained data in an interdisciplinary approach to create product and system designs that are environmentally friendly, practical and non-hazardous for human health. The world giant companies in automotive, textile, architecture and electronics industries mimic nature in their designs, because nature's constructions have evolved to perfection in time. University students studying in disciplines that involve design and creativity, like engineering or architecture, should get a relevant education to be able to study the nature with appropriate techniques and be inspired by and adopt it in their designs. Therefore, it is important to integrate these techniques in the undergraduate and graduate level courses. In this way, students will come to the fore in their prospective product and process designs they will create in their careers by using these abilities. Biomimicking and biodesign techniques are taught in schools in Europe and the USA, but these are far less than adequate. It is important to raise awareness in biomimicking and biodesign subjects within faculty members and staff who carry out education and research activities in the fields of architecture and engineering, to equip them with the habit of using this basic approach in their educational and scientific thought systems, and to enable them to use innovative educational approaches while carrying out these activities. In this presentation, we aim to introduce the content of Biomimicking and Biodesign training for faculty members teaching in Architecture/Engineering departments. With our proposed curriculum, the Biomimicking and Biodesign training starts with introducing biomimicking and biodesign-oriented thinking process, and teaching how to perform detailed observations to understand nature. It is important to distinguish the difference between "looking" and "seeing", particularly to solve the cause and effect relations in nature. In the second phase of the training programme, the faculty members are to learn the technical tools, programs and applications to implement photographic and movie based visual materials obtained from nature and/or to use 3D modeling to prepare course materials. Finally, the learners are introduced to various techniques for preparation of course materials to reach students by mobile applications and e-learning environments.
This work is supported by Scientific and Technological Research Council of Turkey (TUBITAK) through Project no: 218B544

Keywords: Biodesign, biomimicking, innovative teaching applications

Development of a Low Cost Open Source 3D Scanner and Viewer for Biological Specimens

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Abstract

We present an open source 3D archive system for scanning and viewing biological specimens from all possible angles in photographic detail. The system aims to reduce the need to sacrifice animals for dissection, while increasing the availability of biological specimens for all students. Our system is comprised of a 2 degrees of freedom (DOF) robot arm carrying a camera that takes pictures of a biological specimen from multiple angles at various stages of dissection. Later, the data from any angle and any stage of dissection can be viewed using the concept of "layers". In contrast to most 3D scanner systems currently available, our system does not attempt to create a point cloud or a geometrical reconstruction. The users are shown actual photographs from the various angles archived, similar to a QTVR object movie.

Several biological specimen archives already exist for educational purposes -- the most notable example is the Visible Human Project by the USA National Institutes of Health (NIH). In this system, both a male and a female cadaver have been scanned with an MRI scanner, cryo-sectioned and archived photographically. Several museums and universities also host biological specimen archives, but these consist mostly of 2D pictures or 3D reconstructions. To the best of our knowledge, no online biological specimen archive that allows the user to view actual specimens in 3D exists.

Our system is built using the popular Arduino platfrom using off-the-shelf parts, and can be easily duplicated by a high school student with some electronics experience. The software is written using the Processing language and allows the user to scan multiple "layers" of the same object (usually taking thousands of photographs per scan), compress the result, and view them using either the mouse or the keyboard.

We anticipate extending the system to include an online hosted database and a JavaScript based viewer, in order to allow the creation of a national specimen database.

Keywords: 3D scanner, open source, Arduino

Mühendislik Alanında Matematiğin Yeri ve Önemi

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Abstract

Mühendislik; bir düşüncenin sistematik olarak kullanımıdır; matematiksel olarak düşünme becerisine sahip olmaktır; bilim yoluyla elde edilmiş olan tüm bilgilerden, akıl ve deneyim yoluyla somut sentezlere vararak insanlığa yararlı oluşumları ortaya koyma çabasıdır; ekonomiyi, bilimi, zamanı ve fiziksel kaynakları en iyi şekilde değerlendirmektir. Hızla gelişen teknolojileri yakalamak, yeni teknolojiler üretmek için mühendislik eğitiminde gerekli değişimlerin yapılması zorunludur.

Mühendislik alanları, bilimsel ve matematiksel prensiplerini, tecrübeyi, kararları ve ortak fikirleri kullanarak insana yararlı ürünleri ortaya koyan bilim alanlarıdır; bir başka deyişle; belirli bir ihtiyacı karşılamak için gerekli teknik ürünleri ve sistemleri üretme aşamasıdır. Bu nedenle; ortaya çıkan problemin çözümünü yapabilmek için; problem iyi tanımlanmalı; iyi bir şekilde modellenmeli; oluşturulan modelin çözümü için uygun yöntem kullanılmalı; kullanılan yöntem sayısal yöntem ise bilgisayar programlarından yararlanılmalıdır. Elde edilen sonuçları iyi yorumlayabilmek için matematik bilgisi devreye girmektedir.

Matematik dünya genelinde doğa bilimleri, mühendislik, bilişim ve finans gibi birçok alanın temel aracıdır. Uygulamalı matematik, matematiksel bilginin diğer alanlara uygulanmasıyla ilgilidir. Bu uygulamalar sayesinde istatistik ve oyun teorisi gibi tamamıyla yeni matematik disiplinleri doğmuştur. Matematikçiler soyut matematikle akıllarında herhangi bir kullanım olmadan da yalnızca matematik yapmak için uğraşırlar. Soyut matematikle uygulamalı matematiği ayıran belirgin bir çizgi yoktur; soyut matematikteki keşifler sıklıkla pratik matematik uygulamalarının başlatıcısı olurlar.

Matematik, genel mantığın uygulama alanı, insan zekâsının bu yolda işlemesi görevini üstlenir; mekanik, fizik, astronomi bilimlerinin de temelini oluşturur (temel özellikleri, gözleme, deneye dayalı, aynı zamanda da ölçülebilir olmasıdır) ; sosyal bilimler, tıp, jeoloji, jeofizik, psikoloji, sosyoloji ve iş idareciliği gibi alanlarda da, matematiğe geniş bir şekilde ihtiyaç duyulur ve yaygın bir şekilde kullanılır.

Günümüzde ön sıralarda yer alan, büyük endüstri, yan kuruluşları, istihkâm hizmetleri hep matematiğin yardımı ile oluşturulmuş eserlerdir. Örneğin, karşınızda duran bilgisayarınızın içinde milyonlarca matematik işlemi büyük bir hız ile yapılmakta ve sonuçları size görüntü ve ses olarak sunulmaktadır. Yolda yürürken gördüğünüz binalar, taşıtlar ve yollar hep matematik ve mühendisliğin birlikte ortaya koymuş olduğu tasarımlardır. Bu sebeple en soyut bir ilim olan matematiğin yan yollardan günlük hayata etkisi devam ediyor demektir. Matematiğin tarihini bilmek, matematiğin önemini kavramanın temelidir.

Matematik, soyut bir bilim dalı olmakta ve temel konusu da sayılar ve etrafımızda gördüğümüz şekillerden oluşmaktadır; farkları ise, sembol ve şekillerin kullanılması, uygulama alanının geniş olması, soyut ve kesin sonuç esasına dayanması, kesin yasalarının olması, kendisini devamlı yenilemesi, diğer

bilimlerde yapılan çalışmaları yasalar halinde ifade edilebilir duruma getirmesi, var olanı incelemesi, kesin sonuç vermesi, birbirine bağımlı olarak sürekli gelişme göstermesi ve gelişmelerin birbirini tamamlaması şeklinde ifade edilebilir; diğer müspet bilimlerin gelişmesini sağlar iken, diğer bilimler de matematiğin bugünkü ileri seviyeye gelmesinde katkısı olmuştur. Örneğin: 17. yüzyıl başlarında, gökcisimlerin yörünge hesaplarında, mevcut matematiksel bilgiler yeterli olmamış, astronomların zorlamalarıyla diferansiyel denklem kavramları ortaya konmuştur.

Bu anlamda; mühendislik alanında çalışmaların yapılabilmesi için matematiğin temel bilgilerine sahip olunmalıdır, daha üst bilgiye ulaşmak için bu bilgi birikiminin nasıl kullanılacağı belirlenebilmelidir, hızlı ve güvenilir çözümlere ulaşmak için bilgisayarlardan yararlanılmalıdır. Bunun için mühendisliğin hangi alanında çalışmak isterseniz isteyin iyi bir matematik alt yapısına sahip olunması gereklidir. Matematiğin uygulama alanı ise mühendislik bilimidir. Mühendisliğin hem temelinde ve hem de bugünkü ileri duruma gelmelerini hazırlayan faktörlerin başında matematik gelmektedir.

Keywords: Mühendislik, matematik, uygulama alanı, matematiğin önemi, matematiğin mühendislikteki yeri.

Big Data Analytics in Higher Education and Learning Environments

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Abstract

Learning Environment in education has been changing in the last few years. The amount of data derived from the activities in online learning environments has been started to process for improvement in higher education by using big data technologies. The following paper is based on a review of the literature that focused on the evolving area of big data analytics in higher education and learning environments. We discuss the four groups of stakeholders (students, educators, administrators, and course developers) in higher education by utilizing big data and the conceptual model of educational big data analytics. The main aim of this article is to examine different learning environments in a framework. Based on the findings of our literature review, we present a framework of our key findings by examining kinds of learning environments.

Keywords: Big data, educational analytics, higher education, learning environments

Influencing Factors that Affect Students' Decision to Choose Civil Engineering

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Abstract

The aim of this research is to evaluate the significant influence that different career-choice factors may have on a decision to choose civil engineering major in North Cyprus. The study findings will help engineering educators and professional civil engineers to understand the reasons why students may want to choose civil engineering major. The main contribution of this research is that there are scarce studies which explore international students' perception of the career-choice factors in pursuing civil engineering major, particularly in North Cyprus.

A quantitative study will be conducted in this research, by focusing on current civil engineering students who study this major in various universities of North Cyprus. The sample will be first-year students from international countries. The self-administrated questionnaires contain items related to the attributes influencing students' choice of a major that are adopted from the relevant literature (Tan and Laswad, 2006; Sugahara and Boland, 2009), and has also been utilized in other studies (e.g. Dalcı, Araslı, Tümer and Baradarani, 2013).

Civil engineering is a major, with various career opportunities in every country. Specifically, developing countries have more career opportunities for the graduates of this major. Thus, it is important to consider the career opportunities in advance to choosing a major to study. Some of the evaluated items in this research comprise: career that is challenging; opportunity to work in a dynamic atmosphere; opportunity to be creative; advancement opportunities; flexibility of career options; security of employment; good initial earnings; good long-term earnings; parental, teachers', peers' and career advisors' influence; skills and background in mathematics; genuine interest in the subject; aptitude for the subject; required workload in introductory courses; an academic major with difficult courses; success in introductory courses; career that deals with a lot of numbers; autonomy; job availability; and years of study considerations.

Thus, the collected data in this research will be analyzed by AMOS program. The findings of this study will give an understanding of whether differences in gender, age, and university affect each factor. Moreover, the study findings will give detailed information about the important career-choice factors which have significant influence on the students' decision to choose civil engineering major. In addition, the findings will also assist academicians of European countries to motivate more potential students into the engineering programs. Accordingly, the study findings will help policy makers in the civil engineering sector to find appropriate strategies to attract students and to bring up bright civil engineer graduates into the profession.

It is worth mentioning that this research is an ongoing study.

References:

Dalcı, I., Araslı, H., Tümer, M., & Baradarani, S. (2013), Factors that Influence Iranian Students' Decision to Choose Accounting Major, Journal of Accounting in Emerging Economies, 3(2), 145-163.
Sugahara, S. and Boland, G. (2009), The Accounting Profession as a Career Choice for Tertiary Business Students in Japan: A Factor Analysis, Accounting Education: An International Journal, 18(3), 255-272.
Tan, L. M. and Laswad, F. (2006), Students' Beliefs, Attitudes, and Intentions to Major in Accounting, Accounting Education: An International Journal, 15(2), 167-187.

Keywords: Civil engineering, career-choice factors, international students, universities, North Cyprus

Engineering Student-Centered Learning Approaches: ESCOLA in a Nutshell

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Abstract

The ESCOLA trainers guide provides a detailed outline of the ESCOLA online training course *'ESCOLA – Digital Teaching Tools for Engineering Labs'' available at* http://escolaproject.eu/. The guide consists of two parts. The first part of the guide focuses on the following elements to describe the online training course:

- Title
- Introduction
- Short description
- Target group
- Overall objective
- Overall methodology
- Key learning outcomes
- Thematic modules
- Languages
- Assessment methods

The ESCOLA project targets teachers in higher education that include engineering laboratory training in their courses and seeks to boost their teaching capacities to access and effectively use digital interactive resources and/or to envisage how to include such technology into their traditional teaching strategies. Engineering educators in higher education are often lacking the digital pedagogy skills. To tackle this skills deficit, ESCOLA developed an online training course so that they can efficiently improve the quality of learning experience for students with the help of visual and interactive tools. The objective of the training course is to increase the abilities of teachers in Higher Education to pursue innovative teaching strategies supported by the intelligent use of digital learning platforms and tools. The training course is a flexi-time course and is delivered through e-learning as a training delivery method. The course duration is approximately 30 hours. The course consists of the following 5 modules and will become available in English, Dutch, Bulgarian, Turkish and Polish:

1. Digital inclusion
2. Innovative teaching
3. Distance learning
4. Videos and 3D simulations for laboratory
5. Collaborative learning in virtual learning environments

The second part of the trainers guide gives a detailed overview of the modules. The online training course includes a comprehensive set of resources:

- 5 x Modules (PowerPoint presentations) covering 28 units in total
- 5 x Self-assessment quizzes
- Additional resources per module

Per module the trainers guide provides a clear description of:

- Units
- Objectives
- Expected learning outcomes
- Additional resources
- Self-assessment quizzes
- Estimated completion time per module.

Keywords: digital teaching, engineering education, teacher training

Acknowledgements

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Engineering Student-Centered Learning Approaches (ESCOLA): Distance Learning

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Abstract

Distance learning or distance education is a field of education that focuses on the pedagogy/ andragogy, technology, and instructional system design that are effectively incorporated in delivering education to a student, where the teacher and the student may communicate asynchronously and synchronously. They are basically a learning/teaching methodology, an educational concept, very closely related to special learning materials and have a differentiated role for the new teachers. The traditional one in educational procedure, technology has a vital role, which intermediates in order to create a two-way communication between teachers and learners for the learning process of the learners. The education module of ESCOLA project, “distance learning” targets introducing those concepts to higher education engineering teachers. The module is available at http://escolaproject.eu/

Keywords: Distance learning, engineering education, technology

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Engineering Student-Centered Learning Approaches (ESCOLA): Collaborative Learning in Virtual Environments

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Abstract

As an exciting immersion in Collaborative Learning in Virtual Environments, this education module takes the learner on the transformation of traditional learning environments though ICT capabilities and the creation of collaborative virtual spaces for learning. Technology can encourage collaboration with students in the same classroom, same school and even with other classrooms around the world. This module looks at many aspects of collaborative learning offers as an educational approach to teaching and learning, bring groups of students and teachers together to solve a problem, complete a task, or create a product. Importantly, it focuses on collaborative learning in virtual learning environments that offer students and learners the opportunity to connect and learn outside of the class. Learners will discover different virtual learning platforms and its key features, explore the importance of using virtual learning platforms in today's education system and learn how to create an impactful virtual learning environment. The education module of ESCOLA project, "collaborative learning in virtual environments" targets introducing those concepts to higher education engineering teachers. The module is available at http://escolaproject.eu/

Keywords: Collaborative learning, engineering education, virtual environments

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Engineering Student-Centered Learning Approaches (ESCOLA): Digital Inclusion

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Abstract

The goal of digital inclusion is to enable everyone to access and use digital technologies effectively. Being connected is fast becoming a necessity, rather than a luxury. However, online benefits are not being shared equally: some groups and individuals still face real barriers to participation. Moreover, the internet becomes the default medium for everyday exchanges, information-sharing, and access to essential services, the disadvantages of being offline grows greater. According to the many reports nearly 30% of European Union population lack the basic digital skills that are needed to experience the full benefits of the web. And if we look strictly at business, nearly a third of small to medium size businesses (SMEs) don't have a website. The main objective of this presentation is introduction into new technologies that are developing in the world and how we can use those for promoting digital equality. The education module of ESCOLA project, "digital inclusion" targets introducing those concepts to higher education engineering teachers. The module is available at http://escolaproject.eu/

Keywords: Digital inclusion, engineering education, digital equality

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Engineering Student-Centered Learning Approaches (ESCOLA): Videos and 3D simulations for laboratory

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Emerging Technologies have brought many effective opportunities into education such as educational videos and 3D simulations for laboratories. It is very important to understand and know how to use those opportunities during teaching and learning process in higher education especially in engineering education. This presentation aims to increase (i) awareness on simulation and video techniques for engineering laboratory teaching, (ii) understanding the benefits of video and simulation techniques for laboratory practical applications and (iii) ability to select suitable simulation and video techniques for relevant laboratory course. During the presentation, the current satiations in laboratory courses are discussed and successful experiences are shared with the audiences. The education module of ESCOLA project, "Videos and 3D Simulations for Laboratory" targets introducing those concepts to higher education engineering teachers. The module is available at http://escolaproject.eu/

Keywords: video, simulation, engineering laboratories

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Empowering Female Engineering Entrepreneurs - case study of modern approaches to enhance entrepreneurial capacities amoung woman engineers

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Abstract

The presentation goal is to discuss how entrepreneurial capacities among women engineers can be enhanced through combination of specialized training, regional alliances and placements in high-growth local companies. It will be based on the experiences from the international initiative – EMERGE, started on the European level under the ERASMUS+ Programme.
Increasing the number of female entrepreneurs is a key priority in the EU for reasons linked to economic and social development. According to a 2015 report, "an unconscious bias still prevails which designates business and engineering as being typically 'male' fields." On the other hand other studies confirm that women are as entrepreneurial as men. Some countries that have introduced measures to improve the institutional framework for female enterprise, but research shows that there are still significant obstacles at individual level. Much could be achieved by ensuring females studying/working in Engineering are helped to identify entrepreneurial opportunities and to build confidence in their business skills.
The initiative which is a subject to discussion has been initiated in 2018 as a joint actions of partners representing five European countries: Poland, Turkey, Ireland, Denmark and Norway. EMERGE has been directly designed to strengthen the key entrepreneurial competence in female engineers, by developing an innovative model for ensuring the provision of high quality entrepreneurship education for female engineers initially in our partner regions and subsequently outwards to the rest of Europe. The key element of the project is to develop the three regional Action Plans in Turkey, Ireland and Poland on the basis of individual and collective commitments of stakeholders from VET, HE, engineering, enterprise and economic development sectors, drawn from public, private and non- profit organizations to improve access and quality of support from the entrepreneurship education ecosystem for women in engineering. The achieved results of this collaboration enable to propose the appropriate curriculum and content of open educational resources improving business potential, product markets, and positive brand awareness. All the materials will be distributed on the collaborative learning and knowledge exchange platform. To strengthen the development of entrepreneurship-related competences the apprenticeship style learning placements will be introduced. All presented activities have the aim to apply the complex approach to strengthen the key entrepreneurial competence in female engineers.

Keywords: Engineers, woman, entrepreneurship, empowering, emerge

Digital Skills Accelerator Project

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Abstract

The Digital Skills Accelerator project aims to mainstream the digital competence skillset to our education system and economies by providing HEIs (and VET Institution) with the tools and framework. DSA aims at improving the ability of young people entering the labor market to use Information and Communication Technologies (ICT) intelligently and creatively. The key role of digital skills in employability is not a new concept, it has been the focus of different previous projects and initiatives. However, there is a need of a constant update on which are the key areas of competence required by employers, and which are the best ways of delivering effective training for those. In DSA, we depart from existing, established competence frameworks for the aim of identifying the current priorities in digital skills as perceived by different interest groups. In addition to updating and prioritizing, DSA opens the dimension of needs to the broader spectrum of digital citizenship, and to skills required for continuous learning.

Keywords: Digital Skills, framework