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3rd INTERNATIONAL INSTRUCTIONAL TECHNOLOGIES IN ENGINEERING EDUCATION SYMPOSIUM

ABSTRACT PROCEEDINGS

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SCHEDULE (Online)

September 17-18, 2020

Day 1, 17th September

09:30 – 10:00 Opening Ceremony: Prof. Dr. Necdet BUDAK

Session 1 - Chair: Dr. Beril Ceylan

10:00 – 10:15 Eğitimde Blok Zincir Uygulamaları
Tolgahan Çobanoğlu, Turhan Faruk Cihan, Durmuş Özdemir

10:15 – 10:30 Bilgisayar Mühendisliği Öğrencilerinin Ortaöğretim Mezuniyet Türlerine Göre Akademik Başarı Durumlarının Değerlendirilmesi
Rabia Uyar, Durmuş Özdemir

10:30 – 10:45 Deep Learning-Based Alzheimer's Prediction and Fine-Tuning Transfer Learning
Emre Çintaş, Barış Özyer

10.45 – 11:00 Eğitim Alanında Veri Madenciliği Çalışmaları: 2014-2020 Yılları Literatür Derlemesi
Zehra Bilici, Durmuş Özdemir

11:00 – 11:15 Pandemi Sürecinde Uzaktan Eğitimde Yaşanan Ölçme Değerlendirme Sorunları
Mustafa Berkant Selek

11:15 – 12:00 Break

Session 2 – Chair: Doç. Dr. Aylin Şendemir

12:00 – 12:15 Rethinking Architectural Education In Response to Digital Age and Advanced Technologies
Omar Algburi

12:15 – 12:30 Analysis of the Perspective of the Faculty of Engineering Students on Higher Education Mentoring Practices
Ferhat Bahçeci, Tuğba Tümen, Vedat Tümen

12:30 – 12:45 Disturbance Rejection Controller Design of Unmanned Aerial Vehicle for Control Laboratory
Emre Kemer, Hasan Başak

12:45 – 13:00 Sınav Çizelgeleme Probleminin Çözümü İçin Bir Matematiksel Model Önerisi ve Mühendislik Fakültesi Uygulaması
Oğuzhan Gökbayrak, Hakan Altunay

13:00 – 13:15 E-DigiLit Project: An Investigation of Digital Literacy Needs of Students in the View of Stakeholders
Kürşat Arslan, Yasemin Kahyaoğlu Erdoğmuş, Ercan Akpınar, Bahar Baran, Daniel Villar-Onrubia, Sylvester Arnab, María del Mar Rodríguez Rosell, Violeta Vidaček-Hainš

13:15 - 14.30 Break

Session 3 - EMERGE Session[*]

Chair: Doç. Dr. Ayça Tokuç

14:30-14:45 Contributing to Development of Woman Entrepreneurs in Engineering – The Benefits of Multi-national European Approach
Katarzyna Lobacz, Magdalena Malinowska, Przemysław Różewski

14:45-15:00 What Holds Back Women in Taking the Next Step as Entrepreneurs in the Engineering Sector?
Dimitris Raftopoulos, Eva Fabry, Maria Sotıropoulou

15:00-15:15 EMERGE Entrepreneurship Internship Programme for Women Engineers
Aysun Demirdöğen, Özge Andiç Çakır, Fırat Sarsar

Day 2, 18th September

Session 4 – Chair: Dr. Öğt. Üyesi Alev Ateş Çobanoğlu

09:30 – 09:45 Endüstri Mühendisliği Bölümü'nde Okutulan Kalite Kontrol Dersinde İşlenen Konuların Küçük Bir Sermaye İle Üretim ve Satış Projesinde Uygulanmasının Dersin Anlaşılmasına Etkisi
Münire Berna Beşkese

09:45 – 10:00 Dersin İşlenmesinden Önce Uygulanan Drama Çalışmalarının Öğrencinin Derse Hazırlanmasına Etkisi
Münire Berna Beşkese

10:00 – 10:15 Eğitim Kurumlarının Ipv4'ten Ipv6'ya Geçiş Sürecinde Veri Katmanı Düzeyinde Güvenlik Açıkları Analizi
Fatih Özyurt

10:15 – 10:30 Bir Eğitim Yapısının DesignBuilder Programı ile Enerji Etkinlik Analizi
Hanife Büşra Koç, Hatice Derya Arslan

10:30 – 10:45 Break

[*]Entrepreneurship Education in Engineering" session is a multiplier event of EMERGE project funded by European Commission and Polish National Agency. (http://www.emergeengineers.eu)

Session 5- Erasmus+ Projects Session

Chair: Doç. Dr. Özge Andiç Çakır

10:45 – 11:00 Generation Z In Higher Education: International Students Experience and Achopint
Aylin Poroy Arsoy, Aslı Öcal

11:00 – 11:15 ThinkBS – Promoting Deep and Wide Thinking / Early Dual Degrees in Basic Sciences
Ayşe Hümeyra Bilge

11.15 – 11:30 Smart Rural Tourism: Development, Implemenation, Management
Yaşar Sarı, Rasa Pranskuniene, Cemile Ece, Efnan Ezenel

11.30 – 11:45 Otizm Spektrum Bozukluğu Olan Çocukların Eğitiminde Etkili Yüksek Teknoloji Uygulamalar: Sanal Gerçeklik
Feyzullah Şahin, Fidan Özbey, Hakan Özak

11:45 – 12:00 Better & Effective Nursing Education For Improving Transcultural Nursing Skills (BENEFITS)

Betül Tosun, Ayla Yava, Ezgi Dirgar, Eda Başustaoğlu Şahin, Emel Bahadır Yılmaz, Katalin Papp, Valérie Tóthova, Věra Olišarová, Mirko Prosen, Sabina Licen, M. Dolors Bernabeu Tamayo, Juan Manuel Leyva, Sandra Tricas-Sauras, Mehmet Ali Çıkımoğlu

12:00 – 12:15 Discussing Modernizing Engineering Education through the Erasmus + Project Titled "Open Educational Resources on Enabling Technologies in Wearable and Collaborative Robotics (WeCoRD)"

Ebru Kılıç-Bebek, Kostas Nizamis, Zeynep Karapars, Ali Gökkurt, Ramazan Ünal, Özkan Bebek, Mark Vlutters, Emmanuel Vander Poorten, Gianni Borghesan, Wilm Decré, Erwin Aertbelien, Olga Borisova, Ivan Borisov, Sergey Kolyubin, Melike İrem Kodal, Barkan Uğurlu

12:15-12:30 Üniversite Öğrencilerinin Dijital Okuryazarlıklarının Geliştirilmesine Yönelik ERASMUS + Projesi: E-DigiLit
Yasemin Kahyaoğlu Erdoğmuş, Bahar Baran, Ercan Akpınar, Kürşat Arslan

12:30-13:30 **Break**

Session 6 – CHET Session[†]

Chair: Doç. Dr. Onur Dönmez

13:30-13:45 Creativity Techniques for Higher Education Teachers (CHET Project)
Patricia Wolf, Manon van Leeuwen, Fırat Sarsar, Özge Andiç Çakır, Alper Başbay

13:45-14:00 Creativity and Innovation in Higher Education and CHET Project: Assessing the Needs of Teachers
César García-Aranda, Agustín Molina-García

14:00-14:15 Chargers of Electric Vehicles in Learning (C-EVIL)
Mutlu Boztepe, Fırat Sarsar, Özge Andiç Çakır, Abdullah Kalay

Closing Ceremony

[†] "Creativity for Engineering Education" session is a multiplier event of CHET project funded by European Commission and Turkish National Agency. (http://chetproject.eu)

Blockchain Applications in Education

Tolgahan Çobanoğlu [1], Turhan Faruk Cihan [2], Durmuş Özdemir [3]

[1]Kütahya Dumlupınar University, Faculty of Engineering, Computer Engineering Department,
tolgahan.cobanoglu@ogr.dpu.edu.tr, Kütahya, Turkey
[2]Kütahya Dumlupınar University, Faculty of Engineering, Computer Engineering Department,
turhanfaruk.cihan@meb.gov.tr, Kütahya, Turkey
[3]Kütahya Dumlupınar University, Faculty of Engineering, Computer Engineering Department,
durmus.ozdemir@dpu.edu.tr, Kütahya, Turkey

Abstract

18. the movement in information and communication technologies that emerged as a result of the industrial revolution in the century gained a great momentum with the Fourth Industrial Revolution. Due to the rapid development of information and communication technologies and large digital data, it has also brought with it a number of security threats. According to World Economic Forum and OECD reports, blokzinc technology, which is shown as the heart of the Fourth Industrial Revolution, ensures that the data on the system in which it is used cannot be changed, reliable, verifiable and permanent because it contains secure and distributed data sharing methods. Blokzincir technology, which allows reliable storage of data without the need for any intermediaries, is very popular in finance and law today, as well as has an important share in ensuring information security, which has now become important in all aspects of life. In addition to these areas where information security is essential, such as finance and law, it is extremely important to ensure information security in the field of Education, which has the largest share in human life. Personal data security vulnerabilities, especially due to the widespread use of distance education applications during the covid-19 pandemic, have clearly demonstrated the importance of information security in the field of Education. As a result of successful completion of educational and training processes, blokzincir technology can also play an effective role in making the certification or certification processes sustainable by conducting them in reliable environments. For this reason, Information Security Studies in the field of education are important. In the current situation, traditional methods are quite widely used in certification procedures, which requires a significant amount of time and cost. Signing, verification and accreditation procedures are also very important in certification processes. Therefore, after certification with the blockchain structure, which requires all these operations to be performed in completely digital environments, all operations will be able to be performed quickly and accurately in a reliable system. Blockchain applications in education, in addition to information security, can also be used in recognition of previous learning and future planning after education. In this study, the development, characteristics and effects of blockchain technologies will be examined, studies on blockchain in the field of Education will be presented, SWOT analysis will be conducted in which areas blockchain applications can be applied in the education system and their impact on the education system.

Keywords: Block chain, education, information security, learning, SWOT

Examination of Computer Engineering Students' Academic Achievement Status According to Secondary Education Graduation Areas

Rabia Uyar[1], Durmuş Özdemir [2]

[1] MA, Dumlupınar University Faculty of Engineering, Computer Engineering, rabia.uyar1@ogr.dpu.edu.t, Kütahya, Turkey
[2] Doctor Lecturer, Dumlupınar University Faculty of Engineering, Computer Engineering, durmus.ozdemir@dpu.edu.t, Kütahya, Turkey

Abstract

The lack of qualified and productive workforce is among the main needs of the business world. This situation shows how important technical education and especially engineering education is for business life, R&D culture and economy of the country. Technological developments offer various advantages and conveniences with usage alternatives in a different area of our lives every day. Thanks to the widespread use of technology, the products of technology producing countries have a positive effect on the country's exports and economy. Many disciplines that provide engineering education carry out studies in order to develop technology, to adapt to developments or to be a pioneer. However, it is seen that innovative and competitive products come out very little. As the reason for this situation, many different factors in the literature are R&D culture, qualified human resources, investment priorities etc. Elements such as are shown. There are studies showing that it is important for students who will receive engineering education to get acquainted with the process of creating and designing technology at a very early age in terms of constructivist approach. In this study, it is predicted that researching the effect of the students who have received engineering education on the academic success of the secondary education fields they graduated before will contribute to the literature. The sample of Computer Engineering of the State University research carried out under this objective in Turkey is comprised of students who graduated between the years 2015-2019 from the Department. The research was conducted on a total of 482 graduate students, 256 of which are primary education and 226 secondary education. By looking at the AGNO (Weighted Grade Point Average) that the students graduated from the Computer Engineering department, it was statistically investigated whether the differences in the secondary education graduation fields of these students have an effect on their academic achievement. For this purpose, analysis was performed using the Independent sample t-test and One-way analysis of variance (ANOVA) tests in the SPSS (Statistical Package for the Social Sciences) package program. For the independent sample t-test, the sample was divided into 2 main groups as vocational high school and general high school, and a significant difference was observed between the groups. As a result of the analysis, it was determined that the students of the vocational high school group were more successful than the students of the general high school group. For one-way analysis of variance, the sample was divided into 6 intermediate groups as Anatolian, Science, Straight, Technical, Imam Hatip and multi-program high school and the analysis was carried out. Significant differences were found between (Anadolu-Teknik) and (Imam Hatip-Teknik) high school groups, and it was observed that the students of the Technical High School group were more successful than both the Anatolian high school group and the Imam Hatip high school group students.

Keywords: Academic achievement, Secondary education graduation field

Deep Learning-Based Alzheimer's Prediction and Fine-Tuning Transfer Learning

Emre Çintaş [1], Barış Özyer [2]

[1]PhD, Atatürk University Faculy of Engineering, emrecintas@atauni.edu.tr, Erzurum, Turkey
[2]Assist. Prof. Dr, Atatürk University Faculy of Engineering, baris.ozyer@atauni.edu.tr, Erzurum, Turkey

Abstract

Alzheimer's disease is a medical condition that appears in the form of especially memory loss, dementia, behavioral deterioration, and overall decline in cognitive functions due to the damage of some brain cells over time. The disease is described as the most common cause of dementia and leads to change in different parts of the brain. Neuroimaging is widely used as clinical diagnostic biomarker for cerebrospinal fluid and some protein abnormalities. In this study, neuroimaging biomarkers were used for the diagnosis of Alzheimer's disease and dementia. Structural magnetic resonance imaging (MRI) images were used as input for the model to be trained. T1-weighted volumetric MRI images were reduced to a two-dimensional space using several pre-processing methods for three different projections. Pre-processed brain images were obtained for the convolutional neural network (CNN) VGG16 model, and the model was trained and tested with an open source data set. For the CNN model training, OASIS data set, which is free for scientific studies, was used. In the data set, patients aged over 60 years were mostly diagnosed with mild or moderate Alzheimer's disease. The dataset includes at least three T1-weighted image records of patients participating in MRI studies at the University of Washington and consists of totally 416 three-dimensional images. These images were selected among the ones taken from 30 Alzheimer's patients, 70 with cognitive disorders and 316 healthy individuals. Each T1-weighted MRI image was obtained with 1.5-T Vision scanner (Siemens, Erlangen, Germany). By reducing this three-dimensional data set to two-dimensional area and selecting an average of thirty-two slices, approximately 5120 images were reserved for CNN-VGG16 network training, and about 1280 images were reserved for testing. Tests were conducted for the VGG16 network with fine tuning transfer learning. While training the model, Google Colab was used, and NVIDIA Tesla P100 graphics card was referred. The same graphics card was used while evaluating the results. When the experimental results were examined, it was found that the method proposed gave 97.0% accuracy rate with the highest performance and had a precision as 92.0%.

Keywords: Alzheimer’s disease diagnosis; deep learning; transfer learning; convolutional neural networks; MRI.

Data Mining Studies in Education: Literature Review for the Years 2014-2020

Zehra Bilici [1], Durmuş Özdemir [2]

[1] M.Sc., Kütahya Dumlupinar University Faculty of Engineering, zehra.bilici@ogr.dpu.edu.tr, Kütahya, Turkey
[2] PhD, Kütahya Dumlupinar University Faculty of Engineering, durmus.ozdemir@dpu.edu.tr, Kütahya, Turkey

Abstract

The fact that the costs of computer systems are decreasing day by day and their performance are increasing, enables larger amounts of data to be stored on the computer. With today's development of technologies, techniques that process large amounts of data and make them available are gaining importance. Converting this raw data to information or meaning can be done with data mining. It is seen that rapid developments in technology are reflected in the field of education under the concept of instructional technologies. It is one of the important developments in the field of data mining, which is reflected in the education field and its usage area is becoming widespread day by day. It is certain that education is made more effective and efficient by making the data in the field of education meaningful. Various studies are carried out using data mining methods in the field of education. These studies include subjects such as development of e-learning systems, pedagogical support, clustering of educational data, student performance estimates. However, the use of cloud systems in the field of education and machine learning techniques in data mining methods offer more comprehensive and extensive opportunities, especially in recent years. In this study, research on data mining in the field of education between 2014 and 2020 was examined. Research in the last 6 years has been done through the article site ScienceDirect. When the words "education" and "data mining" were searched on the "Science Direct" screen, 130 articles appeared. However, when these were sorted, it decreased to a total of 58, including 31 articles, 14 papers and 13 books. These 58 selected articles were collected and analyzed in a table as the aim of the article, application area and sample, method and method and contribution to the literature. The topics covered in the articles examined were mostly on the prediction of student performance, classification of students and the participation of technological developments in education. When the articles were examined according to the publication year, it was concluded that the number of studies conducted between 2014-2018 increased gradually, but the number of studies conducted between 2018-2020 decreased. In the research; Using data mining method, it is aimed to group the studies in the field of education under certain headings, to determine their methods and objectives and to guide the people who will work in this field.

Keywords: Data mining, education, educational data mining, engineering education

The Measurement and Evaluation Problems of Distance Education During the Pandemia

Mustafa Berkant Selek[1]

[1]Dr., Ege University Ege Higher Vocational School, mustafa.berkant.selek@ege.edu.tr, İzmir, Turkey

Abstract

The Covid-19 outbreak, which started in Wuhan, China, affected the whole world in a short time and the epidemic turned into a pandemic. In this process, people have become unable to leave their homes, states have generally implemented quarantine measures, and this process has affected the entire education system, as of 2020, formal education institutions have suddenly had to switch to distance education. Distance education has become one of the mandatory requirements of the new world. Turkey is among the countries affected by this process. Distance education was started at Ege University within 1 week. During the study conducted, the number of students actively participating in the courses and exams for the "Digital Design" and "Antenna and Microwave Technologies" courses from Ege University Ege Vocational School Electronic Communication Technologies program and the ratio of the total number of students enrolled in the pandemic process was examined for two years. While the success and attendance rates of students were expected to decrease due to infrastructural problems such as computer and internet access, the rate of active students (taking the exam and attending classes) increased. Contrary to what was expected, this situation showed that the rate of active participation of students in Vocational Schools in distance education increased during the pandemic process. In the first stage of the quiz trials conducted in the Digital Design course of the Electronic Communication Technologies department, Ege University distance education website Egeders has experienced problems. As a temporary solution to this, homework was given and an evaluation was made. During this period, problems with distance testing and assessment and evaluation were experienced. In the study, successful schools in practice in distance education were also examined. One of the oldest and institutions with the highest number of students in distance education in Turkey were examined Eskisehir Anadolu University distance education examination system and describes techniques that are set forth in the related work. At the end of the study, suggestions for a more reliable assessment and evaluation system are presented. As a result, distance education is inevitable in the next period. A healthy assessment and evaluation in distance education is also of great importance. In the study, a fair and mixed (with more than one evaluation criteria) assessment and evaluation system is recommended. In doing so, the necessity of developing plagiarism measures due to the developing technology has been put forward and technical recommendations have been presented in this regard.

Keywords: COVID-19 pandemic, distance education, vocational training, face-to-face education, Assesment and evaluation.

Rethinking Architectural Education In Response to Digital Age and Advanced Technologies

Omar Algburi[1]

[1]PhD, İstanbul Sabahattin Zaim University Faculty of Engineering and Applied Science,
omar.algburi@izu.edu.tr, İstanbul, Turkey

Abstract

The recent advances in the digital technology have made changes in the way education is delivered in almost all fields, including the field of architecture. These technologies, such as Virtual Reality, Drones, Artificial Intelligence, etc., just to name a few, are the key drivers in making changes to the traditional education system. On the other hand, the rapid changes in the environmental, economic, and socio-political situations demand for redesigning the architecture education system to maximize the learning. Therefore, this study aims to fill the gap between the qualification acquired in architecture schools and those required in professional practice. Two main areas are investigated and analyzed for architectural education: the existing educational setup and the application of advanced technology in professions. First, the limitations in the existing educational setup are highlighted by conducting surveys, seminars and studying literature. Then, a questionnaire survey was conducted on a sample of local and foreign architecture companies to investigate current and future needs of the profession. Moreover, this online survey was also sent to 30 national and 30 international architecture schools to investigate the current academic setup to teach subjects of architecture. The results were compiled, analyzed and concluded by offering guidelines and methods that will help academia to adopt modern ways to teach architecture that will help the institutions produce graduates who can fulfill the needs of the recent market demands. The main audiences of this study are academic researchers, educators and decision-makers who are interested in updating the educational setup, as well as seeking new solutions. Finally, this study shows the importance of teaching computer-aided programs, sustainability knowledge, and advanced digital technologies for new graduate architects and provides guidance on how to implement them in the current architectural schools.

Keywords: Architecture education, architecture design, profession, digital technologies.

Analysis of the Perspective of the Faculty of Engineering Students on Higher Education Mentoring Practices

Ferhat Bahçeci[1], Tuğba Tümen[2], Vedat Tümen[3]

[1]Asst. Prof., Fırat University Institute of Education Science, fbahceci@firat.edu.tr, Elazığ, Turkey
[2]Phd, Fırat University Institute of Education Science, tugbatumenn@gmail.com, Bitlis, Turkey
[3]Phd, Bitlis Eren University Faculty of Engineering and Architecture, Department of Computer Engineering, vtumen@beu.edu.tr, Bitlis, Turkey

Abstract

Mentoring practices that direct the career development of individuals and contribute to various areas in their development processes have recently begun to be mentioned in higher education. Mentoring practices, which are widely accepted in universities in order to improve academic performances and create an effective mechanism in order to ensure permanence in certain disciplines such as engineering, computer, medicine or facilitate interdisciplinary transitions, include both academic and career-oriented applications in higher education institutions. Especially in the field of engineering, mentoring prepares students for life with the experiences of experts by ensuring that students discover their talents, become aware of their own competencies, grow up as well-equipped individuals, graduate successfully and prepare for life. In order to convey the corporate culture to engineering students, to solve all kinds of problems, and to graduate as a qualified individual from the first year of their start, we come across various types of mentoring practices within the framework of volunteering with individuals who are experts in the field. In order for the practice lessons to be more efficient and to take an active role in the projects, the mentor-mentee relationship must progress positively. With this study, it was tried to determine the perspectives of the engineering faculty students studying at Bitlis Eren University on mentoring practices. It is aimed to determine what kind of support students receive from people who are role models in achieving academic goals, coping with the problems encountered in university-related issues and whether the lecturers involved in mentoring practices have mentor competencies. In the study, it was aimed to investigate the compatibility of Higher Education Student Mentorship Scale, which was created by Crisp (2009) in order to improve mentoring competence in higher education, with students studying in the Turkish higher education system. A total of 40 students studying at the Engineering Faculty of Bitlis Eren University participated in the study. In the reliability analysis of the scale, the Cronbach alpha value was determined as 95. SPSS package program was used in the analysis of the data. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to determine the validity of the scale. As a result of the factor analysis, it was determined that the scale is a reliable and valid measurement tool. In addition, it was determined that the scores of the Higher Education Student Mentoring Scale caused significant differences in terms of gender variable. In the light of these findings obtained in the study, various suggestions and opinions on the subject are included.

Keywords: Higher education, mentoring, mentee, university student mentoring scale

Disturbance Rejection Controller Design of Unmanned Aerial Vehicle for Control Laboratory

Emre Kemer[1], Hasan Başak[2]

[1]Asst. Prof. Dr., Usak University Engineering Dept. Electrical-Electronics Eng., emre.kemer@usak.edu.tr, Uşak, Turkey
[2]Asst. Prof. Dr., Usak University Engineering Dept. Electrical-Electronics Eng., hasanbasak@artvin.edu.tr, Artvin, Turkey

Abstract

Unmanned aerial vehicle (UAV) have become increasingly popular due to their important applications in many tasks such as aerial video making, inspection, data collection, package delivery, search and rescue missions as well as military applications. UAV systems must have capability of disturbance rejection in their control systems because these vehicles are sensitive to environmental conditions such as gust and external disturbances, which affect their operation performance and may lead to a crash. In this paper, a hexacopter UAV model is taken into consideration as an example of UAV systems. This UAV system has six rotors positioned on the vertices of a standard hexagon structure with the counter-rotating three rotors. A tool based on MATLAB app designer is developed to help students comprehend the topic of optimal control theory and its application to the hexacopter UAV model. Using this tool, students are able to linearize nonlinear dynamics of the hexacopter UAV model and check controllability and observability of the linear model around a hovering position. A disturbance rejection controller consists of an optimal controller and an observer. Therefore, these controller and observer are designed selecting suitable weighting matrices by students. Disturbance rejection controller can prevent the hexacopter UAV model from instability. The vehicle is able to track the desired roll, pitch and yaw rotations under the sinusoidal external disturbances. In addition, the designed controller can regulate altitude of the vehicle efficiently. Here, users can adjust the amplitude and frequency parameters of the disturbance function to evaluate the disturbance rejection performance of their designs. Students can design these disturbance rejection controllers with best performance for the hexacopter UAV model and compare their results with other students' results.

Keywords: Unmanned aerial vehicle, disturbance rejection controller, control laboratory, simulation, MATLAB app designer.

A Mathematical Model for the Exam Scheduling Problem and A Case Study of Engineering Faculty

Oğuzhan Gökbayrak[1], Hakan Altunay[2]

[1]MSc Student, Suleyman Demirel University, oguzhangokbay@gmail.com, Isparta, Turkey
[2]Asst. Prof., Süleyman Demirel University, Department of Industrial Engineering, hakanaltunay@sdu.edu.tr, Isparta, Turkey

Abstract

Scheduling refers to assigning a limited amount of resources to the most appropriate tasks using a variety of mathematical or heuristic methods. Preparation of exam schedules, which is frequently encountered in universities, is also one of the complex and time consuming scheduling activities. Without using any information system, exam schedules prepared manually may cause some conflicts in terms of students and lecturers, such as assigning more than one exam on the same day or even at the same time. In addition, parameters such as classroom capacities and the number of instructors are also among the factors that should be considered when scheduling the exams. The exam scheduling problem is a timetabling problem that states that each exam defined for a group of students responsible for courses will be held in which classroom, in which day and time slots, and by which invigilator. The factor that makes this NP-Hard type problem difficult is that the problem includes many dimensions such as exam, classroom, time slots and invigilator. Despite the difficulty of solving the problem, effective mathematical models can be developed for some case studies with relatively small size problems. Thanks to the solution of the developed models, many exam scheduling problems, which are almost impossible to solve manually, can be solved within the existing constraints, by using a minimum number of classrooms and invigilators, to meet the demands of students and faculty members. One of the most important points in exam scheduling is to create a balanced schedules that meets the demands of both students and instructors at the highest possible level. In this study, a mathematical model is proposed for the scheduling of the final exams for a department in the engineering faculty of a state university. The mathematical model proposed as a 0-1 integer programming model is designed to meet the demands of lecturers and students as well as meeting the specified hard constraints. MPL (Mathematical Programming Language) software and Gurobi solver are used to solve the developed model. The exam schedules obtained as a result of the study are compared with the existing exam schedules prepared manually. The results obtained show that the satisfaction levels of the exam schedules produced with the model are higher than the existing ones. In addition, it is predicted that the proposed mathematical model can be easily used in other applications by making some modifications.

Keywords: Exam scheduling problem, 0-1 integer programming, timetabling, scheduling, operational research.

E-DigiLit Project: An Investigation of Digital Literacy Needs of Students in the View of Stakeholders‡

Kürşat Arslan[1], Yasemin Kahyaoğlu Erdoğmuş[2], Ercan Akpınar[3], Bahar Baran[4], Daniel Villar-Onrubia[5], Sylvester Arnab[6], María del Mar Rodríguez Rosell[7], Violeta Vidaček-Hainš[8], Irene Melgarejo Moreno[9], Raquel Galián Sabater[10]

[1]PhD, Dokuz Eylül University, Buca Faculty of Education, kursat.arslan@deu.edu.tr
[2]PhD, Dokuz Eylül University, Buca Faculty of Education, yasemin.kahyaoglu@deu.edu.tr
[3]PhD, Dokuz Eylül University, Buca Faculty of Education, ercan.akpinar@deu.edu.tr
[4]PhD, Dokuz Eylül University, Buca Faculty of Education, bahar.baran@deu.edu.tr
[5]PhD, Coventry University, Disruptive Media Learning Lab, ab8455@coventry.ac.uk
[6]PhD, Coventry University, Disruptive Media Learning Lab, aa8110@coventry.ac.uk
[7]PhD, UCAM Universidad Católica San Antonio de Murcia, mmrodriguez@ucam.edu
[8]PhD, University of Zagreb, Faculty of Organization and Informatics, vvidacek@foi.hr
[9]PhD, UCAM Universidad Católica San Antonio de Murcia, imelgarejo@ucam.edu
[10]PhD, UCAM Universidad Católica San Antonio de Murcia, rgalian@ucam.edu

Abstract

Digital literacy refers to the ability of individuals to search efficiently, obtain information, compare the acquired information, and work effectively with various digital tools. Since digital literacy is crucial in this digital era for individuals, an ERASMUS + project (E-DigiLit) is carried out to improve students' knowledge and skills related to digital literacy. In this study, as the first step of the project, in order to capture and understand where the stakeholders are on the spectrum, a survey was prepared and implemented in order to present the relevant contents to the stakeholders. A survey model was used to examine decision makers' opinions on the needs of students about digital literacy. A total of 77 participants participated in the study from four different countries. distribution of participants by country are as follows; Turkey 35.1%, Croatia 32,5%, 18,2% in England and 14.3% participants from Spain. The participants were managers, directors, teachers, course / curriculum designers, researchers and other (education and training support provider / Learning and teaching support-one person) professions. A survey, developed with the contributions of all project partners, is used as data collection tool to set priorities of digital literacy within the scope of ERASMUS+ project. The survey comprises of 5 categories based on five factors of European Digital Competence Framework (Information and Data Literacy, Communication and Collaboration, Digital Content Creation, Safety, Problem Solving). Descriptive statistics, analysis of variance, independent samples t-test were used in data analysis. When the arithmetic means of the Digital Literacy Key Competence Sections are examined, it is seen that "Problem Solving" basic competence section is at the highest level ($\bar{x} = 4.60$). Safety section is $\bar{x} = 4.57$; Information and Data Literacy section is $\bar{x} = 4.36$ and the Communication and Collaboration section is $\bar{x} = 4.27$. In this respect, it can be said that these chapters are within the "very important" level. Digital Content Creation section was found to have the lowest value with $\bar{x} = 4.01$. By comparing these values in terms of variables such as age, gender and country, suggestions for future studies are presented.

Keywords: digital literacy, ERASMUS + project

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Contributing to Development of Woman Entrepreneurs in Engineering – The Benefits of Multi-national European Approach[§]

Katarzyna Lobacz[1], Magdalena Malinowska[2], Przemysław Różewski[3]

[1]Dr., University of Szczecin, katarzyna.lobacz@hotmail.com, Poland
[2]Dr., University of Szczecin, malinowska_magdalena@o2.pl, Poland
[3]Dr., West Pomeranian Uni of Technology, Fac of Computer Science and Information Systems, prozewski@wi.zut.edu.pl, Poland

Abstract

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." But, it is widely documented in available data that presence of the problem of lack of woman entrepreneurs in the engineering fields is not equally distributed in all European countries. Thus by taking multi-national European approach it is possible to create an environment in which good practices are transferred between regions and joint effort lead to development of more spectacular results, which are still regionally-oriented. The presentation goal is to discuss how joint multi-national initiative taken with support from the Erasmus+ project EMERGE contributed to development of woman entrepreneurs in engineering. Thus the main objective is to share main benefits and challenges of multinational European approach, share good practices and results earned in years 2018-2020 by contribution from Turkish, Polish, Irish, Danish and Norwegian organizations. 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 the partner regions and subsequently outwards to the rest of Europe. The key element of the project was 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 enabled to propose the appropriate curriculum and content of open educational resources improving business potential, product markets, and positive brand awareness. All the materials have been distributed on the collaborative learning and knowledge exchange platform. To strengthen the development of entrepreneurship-related competences the apprenticeship style learning placements was introduced. All presented activities had the aim to apply the complex approach to strengthen the key entrepreneurial competence in female engineers.

Keywords: Engineers, woman, entrepreneurship, empowering, EMERGE

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What Holds Back Women in Taking the Next Step as Entrepreneurs in the Engineering Sector?**

Dimitris Raftopoulos[1], Eva Fabry[2], Maria Sotıropoulou[3]

[1]EU Affairs Project Manager, ECWT, dimitris@ecwt.eu, Oslo, Norway
[2]Director, ECWT, eva.fabry@ecwt.eu, Oslo, Norway
[3]FRICS, SPS, maria@sotiropoulou, Athens, Greece

Abstract

Over the last decade the issue of attracting women into the STEM sector and the benefits it will have for the national Economies has been discussed extensively both in official and unofficial fora. European Union, World Bank, United Nations, World Economic Forum among others, raise the importance that we need more women in STEM and in particular in Engineering. The global effort undertaken that will help to build and enhance the capacity of women generally and in STEM specifically is becoming imperative and recognized by everyone. According to Yetunde Holloway, Chair of Committee on Women in Engineering "It is a clearly established fact that Communities where women are leading, contributing and participating thrive better than those where women are repressed". Also at a recent article from the World Economic Forum Building a more sustainable world will need more women engineers it was stated that "Attracting and supporting more women in engineering benefits everyone by increasing the potential to develop inclusive, innovative solutions for the complex problems the world is facing". So, the question that is raised is how still despite all the efforts both in terms of raising awareness, of providing funding, of financing ideas, solutions and programs that will help in achieving that, the sad figures remain very low? Although according to official reports the percentage of women in the engineering sector is between 11%-43%, women that had entered the sector, according to a 2013 survey by the UK Royal Academy of Engineering, 80% of female engineers are either happy or extremely happy with their career choice, and 98% find their job rewarding. Sadly, the reasons are interlinked in our education systems, in the way we raise our children and of course in our society itself. More in detail: 1) We need to start from early stages to seed the importance and fun side of STEM into girls. According to Lucy Gill, a qualified engineer, Stem ambassador and founder of Digills consulting, "There's so much embedded in our culture saying engineering isn't for girls, and people still think of engineers as the men who fix your washing machine, not the people at the forefront of designing creative solutions to the world's problems." 2) Everyone should understand that STEM is involved horizontally in everything we do and affects every aspect of our daily lives. According to Jodie Howlett, that works at the European Space Agency, and was awarded as the Undergraduate of 2017 in UK, "Engineering involves everyone and has an effect on all our lives, whether it's biomedical engineering when you have a surgical procedure, or electrical engineering when you're watching TV." 3) Gender pay parity. The gender pay gap for engineering sector amongst men and women are one of the lowest in EU level. The pay gap for first salaries is just 1.19% compared to the European average that is around 10%. 4) Women

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Tend to question their ideas. According to Croatian MEP Biljana Borzan who was S&D group rapporteur for an EU report on the external factors presenting hurdles to European female entrepreneurs "women tend to question their ideas more, are more cautious when taking business decisions and are unwilling to take risks when starting a business. And second is that even though women are more often successful in steering their businesses they face more difficulties obtaining loans and support". 5) Notion of Unsuccess. According to an event co-organised by the authors in the European Parliament in 2017, "Women need to challenge the deeply-rooted notion that they cannot be entrepreneurs that holds them back from taking that vital next step".

Keywords: Engineering, women, entrepreneurship, empowerment, EMERGE

EMERGE Entrepreneurship Internship Programme for Woman Engineers††

Aysun Demirdöğen[1], Özge Andiç Çakır[2], Fırat Sarsar[3]

[1]Expert, Ege University EBİLTEM Technology Transfer Office, aysun.demirdogen@ebiltem.ege.edu.tr, İzmir, Turkey
[2]Assoc. Prof. Dr., Ege University Faculty of Engineering, Civil Engineering Department, ozge.andic@ege.edu.tr, Izmir, Turkey
[3]Assoc. Prof. Dr., Ege University Faculty of Education, firat.sarsar@ege.edu.tr, Izmir, Turkey

Abstract

Emerge is a European Union Project who focused to increase the number of female entrepreneurs in engineering. EMERGE brought experts from five countries (Poland, Denmark, Norway, Turkey, and Ireland), to the aim of empowering young women engineers and engineering students. Engineering is a significantly important area to focus across Europe, not only because of the scale of the gender gap but also because of its ability to generate high growth businesses that drive innovation and economic development forward in Europe. For engineering disciplines, an internship helps bridge the gap between technical inputs in class and actual application in real-time transactions. Promoting Female entrepreneurship is increasingly viewed as a key source of job creation and innovation and a necessary step for addressing income inequality and social exclusion. Many Reports show that women are not as active as men in planning and starting new businesses in the countries. The rate of entrepreneurship among women is lower in ranks both globally and especially in Europe. With the aim of empowering female engineers in the Entrepreneurship Internship Program, we tried to eliminate the gaps in female entrepreneurship such as; perceiving less access to finance, lower levels of self-confidence, fear of failure, lacking visible role models, or lack of technical expertise. Program is focused on experiencing the entrepreneurship culture and ecosystem inside of the firm and aims to provide the motivation for an intern to become an entrepreneur. In this program, we have tried to create and investigate the interrelationship between the roles of the intern and firm, with a particular focus on project success during an entrepreneurship internship program. We have facilitated firms to create conditions that provide interns with a meaningful experience for skill development to generate the benefits. With this aim, we created a challenge-based experience for interns and firms. At the end of the program, we will expect interns to grab relevant experience to help them to find their future working area.

Keywords: Woman entrepreneurship, virtual intership program, entrepreneurship, internship program, woman engineering, female entrepreneurship

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The Effect of the Application of Produce and Sale Project with a Small Capital on the Level of Understanding the Subjects Covered in Statistical Quality Control Course which is Taken in Industrial Engineering Education Program

Münire Berna Beşkese[1]

[1]PhD, Üsküdar University Faculty of Natural Sciences and Engineering, munireberna.beskese@uskudar.edu.tr, İstanbul Turkiye

Abstract

Statistical Quality Control is one of the core courses of Industrial Engineering education. According to the results of the survey filled out by 106 industrial engineers working in the industry three months ago, 48.1% of the participants work in the Quality Control departments. In order for the graduates who want to take responsibility in this field to be successful in their jobs, the subjects of this course must be well understood. In order to achieve this goal, project-based learning which is one of the most effective training methods, was preferred. As a first step, the class size of 36 students is divided into groups of three at most. Each group produced at least 30 products, measure the quality of these products on 5 factors, and determine the final product standards with the necessary quality improvement studies (DMAIC-Define, Measure, Analysis, Improve and Control). The biggest obstacle when making a new investment is the lack of capital. What is expected from these groups is that the initial capital of 50 TL. (Turkish Liras) given to each group in an envelope by the instructor at the beginning of the semester will be reached at the end of the term by making a profit at least as much as the capital by selling the products they produce. Thus, at the end of the semester they will have repaid the entire capital that the instructor gave them. six months after the project study, the students who took the course were asked to evaluate the amount of effect this activity has on their understanding of the content of the Statistical Quality Control course. All twelve students who responded stated that this project enabled them to understand not only Statistical Quality Control subjects, but also the planning of processes such as purchasing, marketing, sales, capital management. They also got the opportunity to experience risk taking, problem solving, and handling the whole production system. Other stated benefits include encouraging students to entrepreneurship, developing communication skills, and equipping them with management and control experience. In this study, application of the project-based learning method, which is one of the most effective learning methods, and using real money to solve problems similar to real life situations enabled the students to consolidate what they learned in the course theoretically with practice. They enjoyed the project and were happy while producing by hand and making money after the sale. Since the information is stored in long-term memory with emotions, the positive emotions experienced during the project increased the permanence of the information given in the course.

Keywords: Project based learning (PBL), engineering education, statistical quality control project, deep understanding, real life simulation in mini scale

The Effect of Drama Activities Applied Before the Lesson on Preparing the Students for the Course

Münire Berna Beşkese[1]

[1]Assit. Prof. Dr., Üsküdar Üniversity, Department of Industrial Engineering,
munireberna.beskese@uskudar.edu.tr, İstanbul, Turkey

Abstract

Lesson preparation activities are necessary for students to focus on the lesson and topics to be covered. Depending on the teacher's preference, an engaging question, a video on the topic, or drama activities known as ice breakers help students to adapt to the lesson more easily. In this report, the contribution of the drama activities performed before the Statistical Quality Control course was investigated with a questionnaire filled out by the students who took the course six months after the application. When the results are analyzed, it can be said that such an activity has many contributions to the lesson. First of all, heavy traffic, which is one of the difficulties of living in the big city, inevitably affects people negatively and creates stress. Many studies have shown that under stress, the brain's ability to perceive, record and recall is reduced. In the answers given to the effect of drama, it was emphasized that, because of its fun, exploratory and communicative feature, it reduces stress, enables to express ideas without fear, facilitates adaptation and prepares students for learning by creating a positive atmosphere. It has also been stated that it helps to relieve morning sleepiness. It has been noted that in a positive atmosphere with smiling faces, the perception is increased and the topics covered become more understandable. Increased interest and motivation in the course are among the answers given. They expressed themselves freely, got together for the event with their classmates whom they have never spoken to for three years, and gained courage with different experiences are the additional benefits mentioned. When all these comments are evaluated, it can be said that doing a few warm-up and preparation activities before starting the lessons allows the adaptation to the lesson, the opening of the perception and the start of personal development. Again, another change especially noted by the students every week is the increase in the participation in the lesson. Our brain is ready to perceive and store information in a comfortable and relaxed state rather than under stress. It is possible to do this easily with drama activities. Playing games called ice breakers before the Statistical Quality Control course had a positive effect on the perception of the topics covered and finding the solution to the questions asked.

Keywords: Drama, Ice Brakers, Engineering Education, Motivation

Data Layer Level Vulnerabilities Analysis in the Transition Process of Educational Institutions from Ipv4 to Ipv6

Fatih ÖZYURT[1]

[1]PhD, Firat University Faculy of Engineering, ozyurtfatih@gmail.com, Elazig, Turkey

Abstract

The power of information and communication technologies helps to accelerate continuous improvement. It provides the ability to support and reach individuals even in rural and remote corners of the country. Today, it is an undeniable fact that digital technologies are used in the education process, from pre-school education to higher education. Internet access is essential to ensure sustainable development in education. Internet access can improve the quality of education in many ways. It provides access to rich information and educational resources and increases learning opportunities inside and outside the classroom. In addition, teachers, as well as students, use online materials to prepare lessons and to extend their learning space. Internet usage has become mandatory, especially with the distance education model that gained importance during the pandemic period. This situation has made the new generation internet protocol mandatory. Internet protocol is used to connect to different nodes in a network, so all devices need IP addresses to connect to any IP application on the internet. IPv4 is the fourth version of IP development and it specifies a 32-bit address. But IPv6 specifies the latest version with a 128-bit address. It is important that the new internet protocol Internet Protocol version 6 achieves at least the security and service quality provided by Internet Protocol version 4. Internet Protocol version 6 was developed to extend and ultimately replace the capabilities of Internet Protocol version 4. Along with the internet-based models used in education, data communication in all areas of our lives will be provided by the infrastructure of Internet Protocol version 6 technology. Internet Protocol version 6 is expected to improve many aspects of Internet Protocol version 4, solve most of its problems, and most importantly, make the Internet more secure. However, the study on the security vulnerabilities of the Internet Protocol version 6 is one of today's hot topics. In this paper, the vulnerabilities of the internet protocol version 6 technology that can be used in internet-based learning models will be examined at the data link layer level. The new threats brought by Internet protocol version 6 technology will be analyzed under the headings of fake routers, discovery studies using version 6 technology, neighbor discovery (Request / Ad Message) spoofing, denial of service attacks with IPv6 features failed neighbor inaccessibility check, network parameters spoofing.

Keywords: Internet-based learning; Ipv6 vulnerability; OSI reference layer.

Energy Efficiency Analysis with the Design Creator Program of an Educational Structure

Hanife Büşra Koç[1], Hatice Derya Arslan[2]

[1]Master's Student, Necmettin Erbakan University, Institute of Science, Department of Architecture, hanifebusra.koc@ogr.erbakan.edu.tr, Konya, Turkey
[2]Assoc. Prof. Dr., Necmettin Erbakan University, Faculty of Engineering and Architecture, Department of Architecture, deryaarslan@erbakan.edu.tr, Konya, Turkey

Abstract

Energy is one of the important resources in the development of the economy and society. Depending on this development, the need for energy is increasing day by day. For this reason, concepts such as energy conservation, use of renewable energy resources, and energy efficient design should be integrated into projects in the process of future planning. Energy-efficient design or energy-efficient improvement methods in buildings play an important role in solving problems arising from energy needs and developing sustainable design. The purpose of energy efficient design is to provide the indoor conditions required with minimum energy consumption in outdoor conditions of the buildings. For this reason, the design of the outer shell-facade system is an important factor in the building. The facade system chosen as the subject of the study; They are double skin facade systems consisting of two glass curtain wall panels and the air gap between them. The space between the shells; It is a component where ventilation, cleaning, maintenance and repair and solar control elements are placed. The gap width may vary between 20-200 cm depending on climatic changes, intended use and performance requirement. Within the scope of the study, energy efficiency analysis was performed on the façade system of the faculty building designed for common use in Konya Necmettin Erbakan University Köyceğiz Campus. In this context, it is aimed to compare the energy efficiency of the single skin facade system used in the building and the double skin facade systems, which are proposed for improvement, in terms of thermal comfort level. For this purpose, Design Builder simulation program, which is a computer modeling and simulation program, was used. First of all, the heating energy load was calculated by modeling the current state of the building. Then, a double-skinned facade system was created by adding a glass layer to the appropriate facades of the building. As a result of the analysis, it was seen that there was a need for heating in the period between November and April. When the building is analyzed in two different ways with the single-skin facade system and the double-skin facade system, which is an improvement proposal, for the periods when there is a need for heating, it has been determined that the double-skin facade system is more efficient in terms of thermal comfort level in terms of energy efficiency in terms of heating load. In line with the results obtained, it is recommended to implement double skin facade systems in terms of energy efficiency in buildings located in a moderate-dry climate region such as Konya Province and with high annual energy consumption.

Keywords: Energy efficiency analysis, facade systems, design builder, Konya NEÜ faculty building

Generation Z In Higher Education: International Students Experience and Achopint

Aylin Poroy Arsoy[1], Aslı Öcal[2]

[1]Professor, Bursa Uludag University Faculty of Economics and Business Administration, aporoy@uludag.edu.tr, Bursa, Turkey
[2]Teacher, International Murad Hudavendigar AIH High School, ocalasli@yahoo.com, Bursa, Turkey

Abstract

Generation Z, (born 1995 through 2010), born with technology, and are known as digital natives. They are always connected to the networks and are fast in all the activities they perform, including taking decisions. They grew up in an entirely digital world. From the year 2020, the students of HEIs are from Gen Z, while the oldest ones have been just entered to the labor market. Gen Z has different characteristics, communication methods and learning styles than ever. Gen Z HEI students identified with the characteristics of being loyal and open-minded, which appear to be associated with making an impact on others. According to the AFS Global Research Study (2017), Mapping Generation Z, the Gen Z are more motivated than ever to study abroad. This makes them sojourners. International education combined with Gen Z characteristics can cause complicated problems for HEIs. International education mechanisms currently have unsolved problems in HEIs. Bringing these problems together with a new generation of students require HEIs to review their social/academic/cultural activities in their campus. AcHopInt, Academic Hospitality for International Students in Higher Education: Building Guidelines for Academic and Non-Academic Staff is a Project of Erasmus+ KA2 - Cooperation for innovation and the exchange of good practices KA203 Strategic Partnerships for Higher Education, funded by Turkish National Agency. AcHopInt seeks for solutions for enhancing academic hospitality in higher education institutions in both academic and non-academic aspects. The aim of this paper to highlight the characteristics and learning behaviors of Gen Z students in HEIs and combine these data with the solutions of AcHopInt.

Keywords: Generation Z, teaching, international education, academic hospitality

ThinkBS - Promoting Deep and Wide Thinking / Early Dual Degrees in Basic Sciences

Ayşe Hümeyra Bilge[1]

[1]Prof, Kadir Has University Faculty of Engineering and Natural Sciences, ayse.bilge@khas.edu.tr, İstanbul, Turkey

Abstract

ThinkBS project is a minor program in Mathematics for engineering students and/or graduates. The program aims to provide a strong background in Mathematics with the purpose of preparing engineers to either a post-graduate study in Mathematics or a career as a research engineer. Our partners in the project are Universidad San Jorge(Spain), Universitatea Politehnica Din Bucuresti(Romania), Debreceni Egyetem (Hungary). The project's major impact is the incorporation of engineering students from different institutions (in Istanbul) to the on-line courses conducted by Kadir Has University.

ThinkBS Objectives:

- Identify those students that are talented/oriented for basic sciences, i.e, misplaced in applied science departments, in an early stage of their education;

- Guide them through their educational life and mentor them for either undertaking a career in basic sciences or working as an R&D engineer, provide for them high quality education in specielized institutions and to follow their career to ensure the sustainibility of the learning platform.

In the project, the lectures were given to a group of about 30 students from engineering schools in Istanbul, via the on the "Learn", the online education platform of Kadir Has University, as synchronous, interactive sessions for 2 courses. All partners had access to this platform; most of the sessions were recorded for future use. Partners sent contents for courses they would be responsible. The website of the project http://thinkbs.khas.edu.tr/ was activated. The web site is used to share and publish all of the work done.

Keywords: Mathematics, basic sciences, engineering

Smart Rural Tourism: Development, Implemenation, Management

Yaşar Sarı[1], Rasa Pranskuniene[2], Cemile Ece[3], Efnan Ezenel[4]

[1]Prof.Dr., Eskişehir Osmangazi University, Tourism Faculty, ysari2000@gmail.com, Eskişehir, Turkey
[2]Assoc.Prof., Vytautas Magnus University, Tourism Faculty, rasa.pranskuniene@vdu.lt, Kaunas, Lithuania
[3]Eskişehir Osmangazi University, Tourism Faculty, cemilece5@gmail.com, Eskişehir, Turkey
[4]Eskişehir Osmangazi University, Tourism Faculty, efnan_ezenel@hotmail.com, Eskişehir, Turkey

Abstract

The world is under the influence of rapidly developing technology. With digitalization, many applications and tools that make life easier have been developed. Along with the development of technology, the industry has entered an era and has not been able to resist this change. Smart tourism applications are one of them. Nowadays, smart tourism applications developed in order to provide better service to tourists are seen and smart destinations emerge. This change, which started in city centers, spread over time to rural areas and rural tourism destinations were included in smart applications. Smart rural tourism has started to develop and is in demand in many countries, which has increased the interest in this field. However, the integration of smart tourism applications into rural tourism destinations has brought many important points to be considered. Smart rural tourism applications contribute to the development of rural areas, the technological needs of local people and tourists, the development of infrastructure and superstructure, creating employment in rural areas and preventing unemployment, as well as contributing to the country's economy by spreading tourism from city centers to rural areas. In this study, smart rural tourism studies applied in the world was examined within the framework of development, implementation and management. The aim here is to highlight smart rural tourism destinations with good practice examples and to produce solutions for the shortcomings in implementation. For this purpose, the projects of countries that have good practice examples were examined in the study. As a result, smart rural tourism destinations should have smart applications, have communication technology, and the infrastructure and superstructure of the villages or rural areas where the applications will be made should be suitable for smart technologies. In addition, technology provides a great attraction for tourism to be made in rural areas and can play an active role in the promotion of rural areas.

Keywords: Smart tourism, smart rural tourism, applications

High Technology Applications Effective in the Education of Children with Autism Spectrum Disorders: Virtual Reality‡‡

Feyzullah Şahin[1], Fidan Özbey[2], Hakan Özak[3]

[1]Assoc. Prof. Dr, Duzce University Edu. Fac. Special Edu. Dept., feyzullahsahin@duzce.edu.tr, Düzce, Turkey
[2]Asist. Prof, Duzce University Education Faculty Special Education Department, Düzce, Turkey
[3]Asist. Prof, Duzce University Education Faculty Special Education Department, Düzce, Turkey

Abstract

The general aim of this study is to investigate the effects of virtual reality application on the education of individuals with Autism Spectrum Disorder (ASD). The study continued based on the literature review. ASD is defined as a neurodevelopmental disorder with symptoms such as decreased social interaction and communication, limited interest, and the presence of repetitive behaviors. Its prevalence has been increasing rapidly in the last decades. While the prevalence rate from the 2000s was evaluated as 1/500, according to the 2018 data of the National Autism Center, it is stated that 1 out of 59 babies born each has ASD. The prevalence rate in boys is 4 times higher than that of girls. Individuals with ASD are a group that differs from their peers with their social communication, language deficiency and repetitive (stereotypical) behaviors. These differences cause differentiation in educational needs. One of the approaches used to meet educational needs is technology supported applications. Technologies can be classified as low, medium and high technology products depending on the intensity of its use. High-tech applications, tools and strategies are more complex than others and usually require higher costs and expertise to use (Video cameras, computer software, augmented reality applications, special software and hardware…). Virtual reality, which can be defined as a technology that enables three-dimensional pictures and animations created in the computer environment to interact with these objects in the environment and gives the feeling of being in a real environment in people's minds with technological tools, can be used effectively in all skills where individuals with ASD are limited. It is stated that applications using virtual environment have positive effects on understanding and expressing emotions, making eye contact, sharing attention, playing and security skills. Virtual reality helps the learner perceive the real world with the help of simulation by interacting with visual, emotional, touch, smell and taste based options. Virtual reality applications enable learners to have various experiences in the computer-generated artificial world, to direct that world and to generalize their experiences to the real world at the highest level. In virtual reality applications, students have the opportunity to act in the virtual world they find, just like in the real world. It can create environments that cannot be created in real life, the individual differences of the student can be taken into account more and students can experience the learning life in these environments. Students can learn more effectively by participating in as many applications as they want according to their own learning pace. Learning in virtual reality environments provides an opportunity to recreate learning experiences that are seen as dangerous and / or costly. Thus, the injuries that are common in childhood can be minimized. Considering that individuals with ASD have a strong interest in computers, television and video, it can be concluded that the application can be easily maintained. In a study where the effectiveness of assistive technology usage was compiled, it was reported that 97% of those with ASD focused on computer-based applications. While the success rate in the lesson objectives of the lessons offered only by the teacher was 41%, this rate was found to be 74% in computer-based applications.

Keywords: Autism spectrum disorder, high-tech products, virtual reality, education

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Better & Effective Nursing Education For Improving Transcultural Nursing Skills (BENEFITS)

Betül Tosun[1], Ayla Yava[2], Ezgi Dirgar[3], Eda Başustaoğlu Şahin[4], Emel Bahadır Yılmaz[5], Katalin Papp[6], Valérie Tóthova[7], Věra Olišarová[8], Mirko Prosen[9], Sabina Licen[10], M. Dolors Bernabeu Tamayo[11], Juan Manuel Leyva[12], Sandra Tricas-Sauras[13], Mehmet Ali Çıkımoğlu[14]

[1]RN, PhD, Hasan Kalyoncu University, Faculty of Health Sciences, Nursing Department, tosunbetul@gmail.com, Gaziantep, Turkey
[2]RN, Prof. Hasan Kalyoncu University, Faculty of Health Sciences, Nursing Department, Gaziantep, Turkey
[3]RN, MSN, Hasan Kalyoncu University, Faculty of Health Sciences, Nursing Department, Gaziantep, Turkey
[4]RN, PhD, Giresun University, Faculty of Health Sciences, Nursing Department, Giresun, Turkey
[5]RN, PhD, Giresun University, Faculty of Health Sciences, Nursing Department, Giresun, Turkey
[6]RN, Assoc. Prof. University of Debrecen, Faculty of Health Sciences, Nyíregyháza, Hungary
[7]RN, Prof. University of South Bohemia, Faculty of Health Sciences, České Budějovice, Czech Republic
[8]University of South Bohemia, Faculty of Health Sciences, České Budějovice, Czech Republic
[9]RN, Assoc. Prof., University of Primorska, Faculty of Health Sciences, Izola, Slovenia
[10]RN, PhD, University of Primorska, Faculty of Health Sciences, Izola, Slovenia
[11]RN, PhD, Universitat Autònoma de Barcelona, Faculty of Medicine, Department of Nursing, Barcelona, Spain
[12]RN, PhD, Universitat Autònoma de Barcelona, Faculty of Medicine, Department of Nursing, Barcelona, Spain
[13]RN, PhD, Erasmus Hogeschool, Department of Health care and Landscape Architecture, Brussel, Belgium
[14] Gaziantep Provincial Directorate of Health (GPDH), Gaziantep, Turkey

Abstract

Nurses must be prepared to recognize patients' needs that derive from culture. Transcultural nursing (TN) is an emerging area focusing on providing culturally competent care to all patients and families with maximum respect to cultural values, beliefs and different lifestyles. Nurses should not neglect these features while providing care. In nursing education, TN approach is not well known in countries such as Turkey. Nurses suffer from lack of knowledge on TN and precise skills needed in their actual practice. These difficulties may derive from insufficient and obsolete nursing syllabus.

This study is prepared to present the preliminary outputs of the BENEFITS project between September 2019 and September 2020. This transnational partnership works on developing the most up-to-date and evidence-based curricula on transcultural nursing skills as a result of this global collaboration.

The partners will meet six times in total and work on a collaborative manner on the project in three years. In the first phase, the competency level of our nursing students on TN and potential gaps in Hasan Kalyoncu University (HKU) and Giresun University was determined. The first project management meeting took place in Turkey. A systematic review has been prepared about transcultural nursing education in the world. As part of the project, partners began to develop an assessment tool to evaluate intercultural nursing education. Also in the second and third phases, our partners examined nursing education curricula on TN and best practices in the Czech Republic. The transcultural project meeting, which was planned to take place in Spain in October 2020, will be held online due to the pandemic. In the third phase, our collaborative network will implement a workshop on transcultural nursing education and identify practical training opportunities in medical care facilities in Gaziantep, Turkey. Afterwards, final draft of TN curricula will be developed. The fifth phase of the BENEFITS project intends to

implement a collaborative one week intensive training program on transcultural nursing. In the sixth phase, assessment of the results of our implemented TN program will discussed.

In summary, this project will create an evidence based curriculum for Transcultural Nursing Education. This change in the nursing education curriculum will enable students to learn these methods during their studies and to incorporate knowledge and specific skills into their practice. Our partners will recommend the implementation of specific changes in curriculum of nursing education in their home countries. Global stakeholders will be hence briefed on the achievements of the BENEFITS project and future recommendations will be made. Due to our evolving multicultural societies, this project will be a good example for nursing education across Europe. We believe that not only nursing students and nurses but also patients and societies having respectful and culture sensitive care will benefit from this program.

Keywords: Transcultural nursing, education, curriculum, cultural knowledge, cultural skills, cultural care, nursing students

Discussing Modernizing Engineering Education through the Erasmus + Project Titled "Open Educational Resources on Enabling Technologies in Wearable and Collaborative Robotics (WeCoRD)"

Ebru Kilic-Bebek[1], Kostas Nizamis[2], Zeynep Karapars[3], Ali Gokkurt[4], Ramazan Unal[5], Ozkan Bebek[6], Mark Vlutters[7], Emmanuel Vander Poorten[8], Gianni Borghesan[9], Wilm Decré[10], Erwin Aertbelien[11], Olga Borisova[12], Ivan Borisov[13], Sergey Kolyubin[14], Melike İrem Kodal[15], Barkan Ugurlu[16]

[1]Ozyegin University, Sectoral Education Program, ebru.kilicbebek@ozyegin.edu.tr, Istanbul, Turkey
[2]University of Twente, Department of Design, Production and Management, k.nizamis@utwente.nl, Enschede, The Netherlands
[3]Ozyegin University, Faculty of Architecture and Design, zeynep.karapars@ozyegin.edu.tr, Istanbul, Turkey
[4]Ozyegin University, Faculty of Architecture and Design, ali.gokkurt@ozyegin.edu.tr, Istanbul, Turkey
[5]Ozyegin University, Department of Mechanical Engineering, ramazan.unal@ozyegin.edu.tr, Istanbul, Turkey
[6]Ozyegin University, Department of Mechanical Engineering, ozkan.bebek@ozyegin.edu.tr, Istanbul, Turkey
[7]University of Twente, Department of Biomechanical Engineering, m.vlutters@utwente.nl, Enschede, The Netherlands
[8]KU Leuven, Department of Mechanical Engineering, emmanuel.vanderpoorten@kuleuven.be, Leuven, Belgium
[9]Gianni Borghesan, KU Leuven, Department of Mechanical Engineering, gianni.borghesan@kuleuven.be, Leuven, Belgium
[10]KU Leuven, Department of Mechanical Engineering, wilm.decre@kuleuven.be, Leuven, Belgium
[11]KU Leuven, Department of Mechanical Engineering, erwin.aertbelien@kuleuven.be, Leuven, Belgium
[12] ITMO University, Department of Mechatronics, borisowa.o.v@yandex.ru, Saint Petersburg, Russia
[13]ITMO University, Department of Control Systems and Informatics, borisow.i.i@yandex.ru, Saint Petersburg, Russia
[14]ITMO University, Faculty of Control Systems and Robotics, s.kolyubin@itmo.ru, Saint Petersburg, Russia
[15]Senior Manufacturing Quality Engineer, Ford Otosan
[16] Ozyegin University, Department of Mechanical Engineering, barkan.ugurlu@ozyegin.edu.tr, Istanbul, Turkey

Abstract

The Erasmus + project titled “Open Educational Resources on Enabling Technologies in Wearable and Collaborative Robotics (WeCoRD)", can serve as a model to establish strategic international and multidisciplinary partnerships to modernize engineering education. WeCoRD project is a collaboration among internationally renowned institutions from Turkey, Belgium, Russia, and the Netherlands to create an innovative course on wearable and collaborative robotics with Open Educational Resources (OERs) and an online Virtual Lab aimed at accessibility across Europe. This collaboration involves many fields from engineering, health and design disciplines as well as an industry partner from the automotive manufacturing sector. The main objectives of the project are to: (1) prepare a graduate level course in wearable and collaborative robotics, (2) enhance EU higher education capacity in the field with clear use-case scenarios from the industry and medical applications, (3) provide open-source materials including a virtual lab, and (4) fill the skill gap between the industry and the academia while also aiming a continued professional development. With these goals which aim to modernize

engineering education and make it more relevant to industry, the WeCoRD project brings both multidisciplinary and interdisciplinary aspects of robotics education to a new level. Each intellectual output (IO) of the project is allocated to a project partner based on their expertise. The course module design and development is planned as follows: The IO1 (the first course module) on "Components for wearable and collaborative robots" is led by Ozyegin University, Turkey; the IO2 (the second course module) on "Modeling, design and control or wearable and collaborative robots as systems" is led by ITMO, Russia; the IO3 (the third course module) on "Human-robot interaction for wearable and collaborative robots" is led by KU Leuven, Belgium; the IO4 (the fourth course module) on "Medical applications" is led by U.Twente; the IO5 (integration of the first three course modules into one course) on the graduate level course to be integrated into graduate degree programs and to be adopted for continued professional development (CPD) training programs, as well as the translation of the course materials into Turkish is led by KU Leuven, Belgium; the IO6 on the "Virtual Lab" is led by ITMO, Russia; and finally IO7 on the "Video Collection" is led by Ozyegin University, Turkey. FORD-Otosan, which is one of the industry partners from Turkey will host students, provide site visits and offer workshops. Each project partner and their contributions will be addressing the fundamental need for modernizing engineering education through students' active participation and boosting students' skill development. In addition to a multidisciplinary and interdisciplinary exposure, students will get a chance to work with industry partners and learn through authentic problem solving and relevant feedback. Providing a deeper and more effective learning experience will be among the core design principles of the course modules, labs, videos and industry collaborations.

Keywords: Engineering education, modernization, active learning, skills development, open educational resources

ERASMUS + Project for Enhancing Digital Literacy of University Students: E-DigiLit §§

Yasemin Kahyaoğlu Erdoğmuş[1], Bahar Baran[2], Ercan Akpınar[3], Kürşat Arslan[4]

[1]PhD, Dokuz Eylül University Buca Faculty of Education, yasemin.kahyaoglu@deu.edu.tr, İzmir, Turkey
[2]Prof. Dr., Dokuz Eylül University Buca Faculty of Education, bahar.baran@deu.edu.tr, İzmir, Turkey
[3]Prof. Dr., Dokuz Eylül University Buca Faculty of Education, ercan.akpinar@deu.edu.tr, İzmir, Turkey
[4]PhD, Dokuz Eylül University, Buca Faculty of Education, kursat.arslan@deu.edu.tr, İzmir, Turkey

Abstract

Developments in information and communication technologies have affected every field as well as the field of education and have changed the learning environment rapidly. As the most fundamental value of the 21st century is knowledge, the production and sharing of knowledge has become compulsory. In the process of sharing information, the concept of literacy is important. Today's literacy, which is the result of rapid development of technology and different disciplines, is gathered under the title of digital literacy. Individuals with digital literacy skills have the ability to use, access and produce the right information, and to use technology in the learning-teaching process. In other word, digital literacy is considered as the most important basic skill that an individual must have in this digital age. Therefore, The European Commission has brought digital literacy skills to the agenda as one of the competencies that information societies should have. Likewise, Turkey Council of Higher Education has started to work on the development of digital literacy skills in the context of digital transformation in higher education. As Dokuz Eylül University, we developed this project by bringing together higher education institutions with the same common problem in Europe. In project team, there are researches from Turkey, Croatia, United Kingdom and Spain. The team prepared the E-DigiLit Project to meet the need of university students by improving their ability of surviving in the digital age. In this context, project aims "Develop a learning environment for digital literacy skills", "Improve the digital literacy skills of university students, "Contribute to the capacity building of universities on digital literacy" and "Facilitate the access to sources related to digital literacy".

Keywords: Digital literacy, ERASMUS + Project

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Creativity Techniques for Higher Education Teachers (CHET Project)***

Patricia Wolf[1], Manon van Leeuwen[2], Fırat Sarsar[3], Özge Andiç Çakır[4], Alper Başbay[5]

[1]Prof. Dr., University of Southern Denmark, pawo@sam.sdu.dk, Odense, Denmark
[2]EOLAS S.L., eolas.manon@gmail.com, Badajoz, Spain
[3]Assoc. Prof. Dr., Ege University Faculty of Education, firat.sarsar@ege.edu.tr, İzmir, Turkey
[4]Assoc. Prof. Dr., Ege University Faculty of Engineering, Civil Engineering Department, ozge.andic@ege.edu.tr, İzmir, Turkey
[5]Assoc. Prof. Dr., Ege University Faculty of Education, alper.basbay@ege.edu.tr, İzmir, Turkey

Abstract

Creativity for Higher Education Teachers (CHET) Project is funded under EU ERASMUS+ Strategic Partnerships programme by Turkish National Agency. CHET focuses on engineering education, contributing to the demands for modernization of Higher Education (HE) systems in Europe. HE institutions have to provide their students education that will enable them to adapt to an increasingly globalized, competitive, diversified and complex working environment, in which creativity, the ability to innovate, entrepreneurship and a commitment to continuous learning are just as important as the specific knowledge of a given subject. Current educational systems lack of answering the demands of the labour market for professionals with innovative, problem- solving and entrepreneurial capacities. It is thus necessary to make HE engineering teachers aware about the need for renewal of teaching methods to promote the competences in creative and innovative skills of their students. A paradigm change was observed in the last decade in the characteristics of HE students, due to economic pressures and demands of the labour market as well. CHET project aims to provide a curriculum and course contents to be presented in a digital learning environment to enhance the skills and competencies of HE teachers for implementing creativity techniques in their courses. This research presents the findings of analysis of the needs of engineering teachers in leveraging creativity methods for their classes. It was concluded that the most of the HE teachers do not have sufficient awareness and knowledge on creativity techniques, lack skills of how to implement these techniques in their courses, in addition, they are eager to learn and use these techniques. After the needs analysis, CHET learning outcomes and curriculum will be designed, CHET learning content will be developed and CHET learning platform will be launched and tested by the learners. The outputs of the project can be followed via, http://chetproject.eu/index.html

Keywords: creativity, engineering, learning, needs analysis

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Creativity and Innovation in Higher Education and CHET Project: Assessing the Needs of Teachers†††

César García-Aranda[1], Agustín Molina-García[2]

[1]PhD, Universidad Politécnica de Madrid, cesar.garciaa@upm.es, Madrid, Spain
[2]PhD, Universidad Politécnica de Madrid, agustin.molina@upm.es, Madrid, Spain

Abstract

Creativity and innovation are crucial skills to face challenges in economy, environment and social context today. European Higher Education System considers STEM studies (science, technology, engineering and mathematics) play a key role to lead the global labour market and address our economic system towards more sustainability and equality model. In this context, the CHET (Creativity for Higher Education Teachers) project emerged, supported by Erasmus+ (Key Action 2), focuses on STEM Higher Education teachers. Project´s main objective is providing STEM HE teachers with the skills and pedagogical competences to embed innovation and creativity in their teaching activities. CHET project is formed by six partners, four universities: Technical University of Madrid (Spain), Ege University (Turkey), University of Southern Denmark (Denmark) and Vilnius Gediminas Technical University (Lithuania), joined together with two methodology support and technology companies: Avaca Technologies Consulting, Informatics AE (Greece) and EOLAS S.L. (Spain). CHET Project methodology is step-by-step process, the first action to define a learning approach has been a global survey with university professor partners. This analysis allows us to know the needs of teachers in this area, and results use to define the framework to curriculum design methodology in the next step. In total 98 Higher Education teachers participated in the survey, it had two rounds, using the Delphi method with a panel of experts to guide and carry out the questionnaire according to the analysis of the responses in each round. One of the most important result is that 97 % of the respondents think that there is a need for a training on how to use creative teaching techniques/methods. Besides, mainly Higher Education teachers believe that creativity techniques will offer students more solutions to tackle specific problems (i.e.: problem based learning, desing thinking…). Creative teaching methods / techniques could improve the motivation and engage students, make them experiment more, open up different perspectives when analyzing a problem, even find a subject more interesting and develop critical thinking skills. In summary, a first remarkable result of the CHET project, Higher Education teachers need more training, tools and resources in creativity, and they consider creativity skill has great potential to improve student aptitudes during their university studies in other fields.

Keywords: Creativity, teacher role, innovation

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Chargers of Electric Vehicles in Learning (C-EVIL)‡‡‡

Mutlu Boztepe[1], Fırat Sarsar[2], Özge Andiç Çakır[3], Abdullah Kalay[4]

[1]Assoc. Prof. Dr., Ege University Faculty of Engineering, Department of Electrical & Electronics Engineering, mutlu.boztepe@ege.edu.tr, İzmir, Turkey
[2]Assoc. Prof. Dr., Ege University Faculty of Education, firat.sarsar@ege.edu.tr, İzmir, Turkey
[3]Assoc. Prof. Dr., Ege University Faculty of Engineering, Civil Engineering Department, ozge.andic@ege.edu.tr, İzmir, Turkey
[4]MSc Student, Ege University Institute of Education Sciences, wlabdullahkalay@gmail.com, İzmir, Turkey

Abstract

Electric vehicles (EV) first appeared in 1850s. EV cars were not popular for a long time due to the limitations of batteries at that time, such as long charging time and short driving range when compared with Internal combustion engine (ICE) cars. Today, the environmental concerns are high, and therefore zero emission without fossil fuel cars are needed. Thus, EV cars are in focus and transport sector may be transformed to full electric cars in near future. To produce emission free EVs, their energy must be generated from renewable sources. Some barriers to deployment of EVs are relatively high cost, long charging time, uncertainties about battery life and need for widespread charging infrastructure. In addition, charging infrastructure is a very important parameter for EVs, for comport and efficiency the most important barrier is the necessity of fast charging. Installation of an EV charging station needs to follow: location selection, licencing and certifications, code compliant installation procedures, safety standards (electric shock, fire etc.), periodic maintenance, signage against dangerous situation, all these requirements necessitate the training of qualified technicians. To stay ahead of development in the market for electric mobility, there is a vast need to educate future electricians about the key technical elements of EV charging. A joint effort of international partners was initiated to develop new learning and training materials on EV chargers to fill the gap in electricians' education. Chargers of Electric Vehicles in Learning (C-EVIL) project aims to contribute to those who will work with electric vehicles now or in the future to have the attitude, knowledge and competencies demanded by the rapidly changing industry. The work plan of C-EVIL project consists of four parts: (1) EV charger curriculum, (2) Knowledge base, (3) Digital learning materials, (4) Dissemination. The C-EVIL curriculum is published in www.c-evil.eu and the course content and the online learning platform is being developed.

Keywords: Electric vehicles, EV chargers, technical education, distance learning

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