ictvt.uny.ac.id

8th International Conference on Technology and Vocational Teachers

POST PANDEMIC CHALLENGES AND OPPORTUNITIES ON GREEN TECHNOLOGY AND ENGINEERING

FACULTY OF ENGINEERING
UNIVERSITAS NEGERI YOGYAKARTA

ICTVT

PROGRAM BOOK

20
22

Co-Host: UST

Table of Contents

Post Pandemic Challenges and Opportunities on Green Technology and Engineering

Welcome Message from the Rector
of Universitas Negeri Yogyakarta

Prof. Dr. Sumaryanto, M.Kes., AIFO.
Rector of Universitas Negeri Yogyakarta

Assalamualaikum warahmatulahi wabarakatuh
Bismillahirahmanirahim, Good morning

The honorable; all vice rectors, deans, heads of institutions, board members of Universitas Negeri Yogyakarta, especially Dean of Faculty of Engineering, board members of faculty, and the committees.

Our distinguished guests, keynote speakers and invited speakers, and dear all participants, ladies, and gentlemen.

It's an honor for me, to welcome you, to Universitas Negeri Yogyakarta, especially on joining, the **8th International Conference on Technology and Vocational Teachers (ICTVT) 2022**.

On behalf of Universitas Negeri Yogyakarta, I would like to welcome you, in this wonderful conference.

Through this conference, we convey the message that post-pandemic, we have to be able to become a sustainable society. This sustainability is manifested in research, innovation, and engineering, in electronics, electronics, informatics, and vocational education.

Future possibilities and difficulties should lead to ideas and solutions we anticipate. As a result, we need to work together in communities, academia, and research. We hope that you all enjoy and benefit greatly from this intellectual gathering. I want to thank you once more for organizing and attending this conference.

Wassalamualaikum warahmatulahi wabarakatuh.

Yogyakarta, 6th October 2022
Rector of Universitas Negeri Yogyakarta
Prof. Dr. Sumaryanto, M.Kes., AIFO.

Welcome Message from the Dean of Faculty of Engineering Universitas Negeri Yogyakarta

Assalaamu'alaikum warrahmatullaahi wabarakaatuh,
May peace and God's Blessing be upon you all, Whom I respect:

1. Coordinating Minister for Human Development and Culture of the Republic of Indonesia Bpk. Prof. Dr. Muhadjir Effendy, M.A.P
2. The Chancellor of UNY, Prof. Dr. Sumaryanto, M. Kes., AIFO
3. Invited Speakers: Prof. Jenq-Shiou Leu, Ph.D., Prof. Dr. Ing. Lee Seonha; Associate Professor Ferry Jie, PhD, FCILT, FCES, and Prof. Dr. eng. Ir. Didik Nurhadiyanto, M.T., IPU
4. The Deans dan the Director of Postgradute Program
5. Direktors of Gunung Kidul and Wates UNY Campus, and
6. Presenters and participants of ICTVT 2022

Let's always give thanks to God Almighty, for the abundance of His loving grace so that this morning we meet in good health.

On this excellent opportunity, I would like to welcome to all of you either online and offline at ICTVT 2022 with the theme "Post Pandemic Challenges and Opportunities on Green Technology and Engineering".

The choice of this theme is based on the current situation and conditions, nowdays the international community is preparing for the post-pandemic period to move to endemic status. People over the world have been able to pass Covid-19 while still paying attention to health protocols and mass vaccinations. This readiness is evidenced by implementing the 17 Sustainable Development Goals (SDGs) to bring about world change. Various SDGs innovations from academics, practitioners, communities, and government have contributed a lot to accelerate the endemic status. Many kinds of research and innovations in green technology and engineering have been streamlined by world researchers and published regularly to show the existence of new adaptation changes to the SDGs in the post-pandemic period.

This theme is also related to the preparations for the G20 meeting, with the theme "Recovery Together, Recover Stronger", in which Indonesia wants to invite the whole world to work hand in hand, support each other to recover together and grow together stronger and more sustainable.

At ICTVT 2022, we invited Mr. Coordinating Minister for Human Development and Culture, as the keynote speaker and 5 speakers at the planery session from five countries, namely: Prof. Jenq-Shiou Leu (Taiwan), Ph.D., Prof. Dr. Ing. Lee Seonha (Republic of Korea)

Assoc. Professor Ferry Jie, PhD, FCILT, FCES, (Australia); Prof. Dr. Ing. Oliver Michler (Germany) and Prof. Dr. eng. Ir. Didik Nurhadiyanto, M.T., IPU (Indonesia). This ICTVT is also in conjunction with three other international conferences that will be held in parallel, namely: the International Conference on Electrical, Electronics, Informatics and Vocational Education (ICE-ELINVO); International Conference on Sustainable on Infrastructure (ICSI); and International Conference on Vocational Education of Mechanical and Automotive Technology.

Based on the last note, in the parallel session this afternoon, at four international conferences there are 160's presenters who will present the results of their thoughts and research which of course will be very useful in supporting the recovery efforts in the fields of education and technology due to the covid 19 pandemic, and also supporting the sustainable development goals and nature conservation.

This is our welcome and we don't forget to say thank you to the entire ICTVT 2022 committee and other parties who have worked hard to prepare for this international conference. To all presenters and participants, we wish you a happy joining the conferences, good luck always.

That is all and thank you
Waassalamu'alaikum warrahmatullaahi wabarakaatuh,

Dean of FT,
Prof. Drs. Herman Dwi Surjono, M.Sc., MT, Ph.D.

Welcome Message from the Chairperson

We are pleased to welcome you to the 2022 8th International Conference on Technology and Vocational Teachers (ICTVT 2022) in Yogyakarta, Indonesia, with the theme "Post Pandemic Challenges and Opportunities on Green Technology and Engineering".

A primary goal and feature of it are to bring academic scientists, engineers, and teaching and learning researchers together to exchange and share their experiences and research results about most aspects of science, technology, and educational research, and discuss the practical challenges encountered and the various solutions proposed and adopted.

We hope you will have a technically rewarding experience and use this conference to meet friends and make many new ones. ICTVT 2022 promises to be both stimulating and promoting with a distinguished keynote, Minister of Coordinating Minister of Human Development and Culture, Prof. Dr. Muhadjir Effendy, MAP, and five invited speakers from Germany, the Republic of Korea, Taiwan, Australia, and Indonesia

The conference consists of plenary and parallel sessions, and discussions with eminent speakers covering a wide range of topics in science, technology, and educational research. This rich conference provides all participants with the opportunity to meet and interact online with one another. We hope your experience with ICTVT 2022 is a fruitful and long-lasting one. With your support and participation, the conference will continue its success for a long time.

We would like to thank the organization staff, the members of the conference committees, and reviewers. They have worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We also would like to express our gratitude to the external reviewers, for providing extra time and help in the review process, and the authors for contributing their research results to the conference. Special thanks go to the American Institute of Physics Press.

We wish all speakers and participants of ICTVT 2022 an enjoyable scientific conference.

Assoc. Prof. Dr. Sudiyatno, ME

Conference Organisation Chair.

1st Invited Speaker

Prof. Dr. Muhadjir Effendy, M.A.P.
Coordinating Minister for Human Development and Culture of Indonesia

Biography: Prof. Dr Muhadjir Effendy, M.A.P, has been the coordinating minister for Human Development and Culture of Indonesia since October 23, 2019. He has also tried as Minister of Education and Culture of the Republic of Indonesia starting July 27, 2016. Previously, he had tried as Chancellor of Muhammadiyah Malang in three periods, namely 2000– 2016. In addition, Muhadjir is the Chairman of the Muhammadiyah Central Executive for Education and Culture. Educational Background Muhadjir Effendy had a baccalaureate education at IAIN Malang, then earned a bachelor's degree at IKIP Negeri Malang (currently the State University of Malang). He then took his postgraduate education at Gadjah Mada University with a master's degree in Public Administration (MAP) in 1996. Then in 2008, Muhadjir Effendy completed his third degree in military sociology at the Airlangga University Doctoral Program. In addition, he has also attended several courses abroad, including at National Defense University, Washington, D.C., in 1993 and Victoria University, British Columbia, Canada, in 1991. Muhadjir is currently a Professor of Sociology Department of Out-of-school Education, Faculty of Education, State University of Malang. In addition, he is also a lecturer at the Postgraduate Directorate of the University of Muhammadiyah Malang in the field of Sociology.

2ⁿᵈ Invited Speaker

Prof. Jenq-Shiou Leu, Ph.D.
Department of Electronic and Computer Engineering
National Taiwan University of Science and Technology,
Taiwan
Email: jsleu@mail.ntust.edu.tw

Web: https://www.et.ntust.edu.tw/et/faculty.php?user=jsleu

Biography: Prof. Jenq-Shiou Leu received his B.S. in mathematics and his M.S. in computer science and information engineering from National Taiwan University, Taipei, Taiwan, respectively, and his Ph.D. on a part-time basis in computer science from National Tsing Hua University, HsingChu, Taiwan. He was with Rising Star Technology, Taiwan, as an R&D Engineer from 1995 to 1997 and worked in the telecommunication industry (Mobitai Communications and Taiwan Mobile) from 1997 to 2007 as an Assistant Manager. In February 2007, he joined the Department of Electronic and Computer Engineering at National Taiwan University of Science and Technology (NTUST) as an Assistant Professor. From February 2011 to January 2014, he was an Associate Professor. Since February 2014, he has become a Full Professor. He was the Chairperson of the Department of Electronic and Computer Engineering during Aug. 2017 to Jul. 2020 and is the Secretary General of NTUST since Feb. 2021. Dr. Leu's research interests include: Heterogeneous Network Integration, Mobile Service and Platform Design, Cybersecurity, Machine-learning based Application Development. He has published extensively in these areas, with 88 SCI indexed journal papers, 68 conference papers or book chapters, and led 8 MOST/NSTC projects, 24 industry-academia projects, and 10 cross-university projects in the past five years (2017~2022).

Speech Title: Introduction to O-RAN and the ML-based Traffic Steering

Abstract: In the past, mobile network operators relied on system solution providers such as: Ericsson, Nokia, and Siemens to provide exclusive, proprietary, and costly software and hardware. To make the mobile network service platform more flexible, Open Radio Access Network (O-RAN) advocates an open interface and open software/hardware, so that hardware can be more easily purchased and upgraded. And through the virtualization and web techniques, mobile services can be rapidly deployed to meet customer needs and increase the revenue or reduce the cost more easily. In this talk, we can understand the development of O-RAN in the B5G or future 6G network. Meanwhile, through a simple use case - the Machine Learning (ML)-based Traffic Steering, we can know how to apply ML to making the network management more intelligent.

3rd Invited Speaker

Prof. Dr. Ing. Oliver Michler
Chair of Transport Systems Information Technology
Director of Institute of Traffic Telematics
Faculty of Transportation and Traffic Sciences "Friedrich List"
Technical University Dresden

e-mail: oliver.michler@tu-dresden.de

Web: http://tu-dresden.de/vkw/vis/itvs

Biography: Professor Michler, studied Electrical Engineering at Technical University, Dresden, where he graduated in 1993. After having received his diploma he continued research work there at the Faculty of Electrical and Computer Engineering about sensitivity and robustness analysis of linear systems. The research was concluded with a PhD from Technical University Dresden on the topic about the "Analysis of uncertainty in linear control systems". In 1997 he started practical scientific working with Video-Audio-Design GmbH, Dresden, as project manager in the areas of digital broadcasting, sensor systems with data fusion in mobile transport vehicles. In 2000 Professor Michler joined the Fraunhofer Institute for Transportation and Infrastructure Systems in Dresden to continue his research work about telematics services in transportation applications, integrated acquisition, transmission and processing of traffic information. In 2005 he was made a professor at the Dresden University of Applied Sciences in signal processing and electronic measurement techniques. Since 2008 he holds the chair for Transport Systems Information Technology which is part of the Institute for Traffic Telematics at the TU Dresden. In professional addition Professor Michler is the Director of this institute since 2019. He is a scientific advisor to various companies, international organizations and conferences and has received numerous awards.

Speech Title: Changes in Engineering or Vocational education from Theory to Practice in the Context of Connected Driving of Cars.

Abstract: Engineering or vocational education is designed to provide skills that students or trainees will need for their future careers. In the last decades many technical systems have changed in a revolutionary way, mostly from simplicity to complexity. In the context of the education of engineers it has always been a special challenge to teach the balancing act between necessary theory and result-oriented and structured or practical learning and working methods. The field of traffic telematics takes on a special role in the context of training. The range of possible disciplines is very wide, which inevitably requires a strong application orientation in order to impart specialized knowledge in a targeted manner. Traffic telematics is a specialized discipline with close links to electrical engineering, computer science, statistics, measurement technology and information technology. The subcomponents range from simple analog sensor technology to very complex planning and design of intelligent mobility systems. Nevertheless, it is essential to be able to understand, classify and use individual subcomponents completely, but ultimately also to be able to repair them. This paper presents a practice-oriented approach from the IoT domain (5G to 6G) that closes the gap between theory and practice without losing the focus on education using V2X (Vehicle-to-Everything) technology as an example.

4th Invited Speaker

Prof. Dr. Ing. Seonha Lee
President of the Korean Transportation Association
Department of Civil and Environmental Engineering,
Kongju National University, Republic of Korea
Email: seonha@kongju.ac.kr

Web: https://tomms-kr.tistory.com/

Biography: Prof.Dr.-Ing. Seonha Lee has been a professor of urban Convergence system engineering at Kongju National University since March 2000. In January 2018, he was elected as the 16th President of ITS Korea, and in March 21, he was elected as the 20th President of the Korean Society of Transportation. After acquiring Civil Engineering Bachelor of Applied Science (B.A.Sc.) from Korea University, He obtained the Civil Engineering Diploma Ing. from Technische Universiẗ Berlin. And then He was later awarded a PhD in Traffic Engineering by Karlsruher Institute für Technologyie (KIT). He is currently PIARC (World Road Association) Chairman of Korea, a Presidential Smart City Commissioner, and an Outside Director of Korea Agency for Infrastructure Technology Advancement. With 30 years of educational experience, including the Ministry of Education, SI company, and university professors, He can provide in-depth consulting in transportation solutions. Studying simulation-based traffic management systems and demand modeling using PTV software. He says, In the new era, Transportation technology led by private experts will be the center. So, Traffic Online Monitoring & Management System (TOMMs) has been developed, installed, and in progress in various cities in Korea.

Abstract: The Digital Twin (DT) system is a solution capable of calculating quantitative (latency, travel time, travel speed, service level, density, etc.) indicators and visual (2D/3D) indicators. The real road environment is modeled as a virtual environment to show various traffic problems through scenario effect analysis. The Digital Traffic Platform we perform is "a customized traffic policy analysis platform tailored to local government characteristics". As a digital twin-based transportation platform, it is used to build a transportation demand model for local governments and analyze traffic operations, traffic signals, public transportation analysis models, and traffic safety and traffic environment. Using the traffic information collected through Digital Twin, it is possible to predict the local-stagnation section and derive problems in advance according to the implementation of the urban development policy project. This can play a major role in establishing traffic countermeasures. Digital twin also performs visual data analysis to derive optimal alternatives when establishing traffic-related policies, it provides quantitative traffic indicators and makes it understandable to non-experts.

5th Invited Speaker

Assoc. Prof. Ferry Jie, Ph.D, FCILT., FCES.
Edith Cowan University, Australia
Email: f.jie@ecu.edu.au

Ferry Jie is the Associate Professor in Supply Chain and Logistics Management, in the School of Business and Law. Ferry is currently a Secretary to the Chartered Institute Logistics and Transport (CILTA) Western Australia (WA) Committee. Ferry is also Supply Chain & Logistics Association of Australia (SCLAA) WA Committee. Associate Professor Ferry Jie has maintained a high quality of research throughout his academic career including international scholarly leadership in the areas of supply chain management and logistics, including being invited to be keynote speaker and to give public lectures at symposiums and international conferences in Indonesia, Malaysia, Vietnam, China, UK and Australia. From 2017 to now, published more than 46 refereed journal articles—including 23 articles in Q1-ranked in the SCImago and 22 articles in Q2-ranked in the SCImago, and 8 refereed conference papers. Furthermore, Dr Jie has received research grants/awards adding up to over $1.85 million between 2010 and 2020.

6ᵗʰ Invited Speaker

Prof. Dr. Eng. Ir. Didik Nurhadiyanto, M.T., IPU
Department of Mechanical Engineering Education, Faculty of Engineering, Universitas Negeri Yogyakarta, Indonesia

Email: didiknur@uny.ac.id

Biography: Prof. Dr. Eng. Ir. Didik Nurhadiyanto, S.T., M.T., IPU is now full professor at Mechanical Engineering Department, Universitas Negeri Yogyakarta, Indonesia. His educational history includes Bachelor Degree in Mechanical Engineering (1996) from Diponegoro University-Indonesia, Master Degree in Mechanical Engineering (2001) from Institute Technology of Sepuluh Nopember-Indonesia and PhD Degree (2014) from Yamaguchi University-Japan.

He works on hybrid carbon/ramie fiber, corrugated metal gaskets, biomass pyrolysis and gasification, material coating. He is passionate about material engineering.

He is actively involved with International Association of Engineers (IAENG) (2018-2022) . He is Association of Indonesian Vocational (ADGVI) member (2015-2022) and Konsorsium Ramie Indonesia (KORI) member (2017-2022). He is also a reviewer for several prestige Indonesian journals indexed by Sinta since 2015-now and international journals indexed by Scopus. Didik Nurhadi not only associate editor chief (2016-now) at Cakrawala Pendidikan (Scopus Q3), Complex Use of Mineral Resources (WOS Index), and Journal Pendidikan Teknologi dan Kejuruan (Sinta 2), but also editor in chief at Journal Dinamika Vokasional Teknik Mesin (Sinta 4) since 2016.

In the last five years (2017–2022), he has led 10 patent title. He has published widely in these fields, with 25 Scopus indexed journal papers, 12 international conference papers, and book chapters.

Speech Title: Development of Corrugated Metal Gaskets For Pipe-To-Pipe Joints

The corrugated metal gasket is still in the early stages of development. However, gasket contact flanges with a high surface roughness (more than 3.5 µm) leak and require a lot of force to tighten. A nickel or copper-coated corrugated metal gasket was designed. A water pressure test was used to measure leaks, and the results revealed that nickel or copper-covered gaskets performed better. The effect of high temperature has not been explored in this study, which only reveals high pressure. The goal of this study is to use copper and nickel coatings to improve the performance of corrugated metal gaskets. Copper or nickel infiltrates the pipe flange's rough surface, preventing leaking. The purpose of this study is to investigate the performance of a coated corrugated metal gasket in a boiler system, which has high temperature and pressure. Corrugated metal gaskets were formed using a cold forming process. The gasket material was SUS304, which is copper or nickel-plated through electroplating. The gasket was installed in a series of pipes in the boiler that flows water at high temperature and pressure. The

water leak was trickling on white paper that had been placed beneath the gasket. Even small water leaks are detected on white paper. The thermal camera can detect vapor leaks. The results of the studies reveal that the coated corrugated metal gasket's performance was improved, as seen by the reduction in leakage. At the highest pressure of 7 bar and the lowest tightening force of 40 kN, neither gasket leaked. This result is different from standard corrugated metal gaskets, where at the same pressure and temperature, steam and water leaks are observed. Both copper and nickel-plating types can be used to coat corrugated metal gaskets made of SUS304.
Keywords: coating, nickel, copper, corrugated metal gaskets, performance, leakage, boiler

Rundown

8th International Conference on Technology and Vocational Teachers (ICTVT) 2022

Time (WIB)	Agenda
07.00 – 08.00	Registration
	all participants joint in zoom meeting
08.00 – 08.05	Opening and Nation Anthem "Indonesia Raya"
08.05 – 08.10	Welcome Speech Chairman Organizer of by Dean of Faculty of Engineering
08.10 – 08.20	Welcome and Opening Speech by Rector of Universitas Negeri Yogyakarta
08.20 – 08.40	**Keynote Speaker** Prof. Dr. Muhadjir Effendy, M.A.P. (Coordinating Minister for Human Development and Culture of Indonesia)
08.40 – 09.20	**Plenary Session I** Moderator: Yuyun Yulia, M.Pd., Ph.D. (Vice Rector of Cooperation and Public Relation Affairs, Universitas Sarjanawiyata Tamansiswa, Indonesia) Speaker 1 : Prof. Jenq-Shiou Leu, Ph.D. (Department of Electronic and Computer Engineering, National Taiwan University of Science and Technology, Taiwan) Speaker 2 : Prof. Dr. Eng. Ir. Didik Nurhadiyanto, M.T., IPU (Department of Mechanical Engineering Education, Universitas Negeri Yogyakarta, Indonesia)
09.20 – 10.00	Discussion
10.00 – 11.00	**Plenary Session II** Moderator : Dr. Phil. Ir. Didik Hariyanto, S.Pd.T., M.T. (Universitas Negeri Yogyakarta, Indonesia) Speaker 3 : Assoc. Prof. Ferry Jie, PhD, FCILT, FCES (Edith Cowan University, Australia) Speaker 4 : Prof. Dr. Ing. Lee Seonha (Department of Construction and Environmental Engineering, Kongju National University, Republic of Korea) Speaker 5 : Prof. Dr. Ing. Oliver Michler (Institut für Verkehrstelematik, Technische Universität Dresden, Germany)
11.00 – 12.00	Discussion
12.00-13.00	Lunch Break
13.00-16.30	Parallel Session

Topic: ICTVT
Time: Oct 6, 2022 07:00 Jakarta

Join Zoom Meeting
https://uny-ac-id.zoom.us/j/92796254182?pwd=Y01lV3RJdDFnY09nWFNHUkt1QVJldz09

Meeting ID: 927 9625 4182
Passcode: ICTVT2022

Parallel Session Guidelines

The 8th International Conference on Technology and Vocational Teachers (ICTVT) 2022

Yogyakarta, October 6, 2022

Distinguished all **8th ICTVT** presenters and all moderators of parallel session

Assalamu'alaikum Warahmatullahi Wabarakatuh
Warm greetings,

Before the breakroom begins, let me convey some information to the presenters and moderator:

1. Presenters must upload presentation materials in PPT format at **https://bit.ly/PPT-ICTVT-2022** before October 5th, 2022; 23:59 pm.
2. For presenters who have not sent the presentation file, please send it immediately.
3. Presenter uses 8th ICTVT Virtual Background. Rename the zoom profile's name to **ICTVT_GROUPX_PRESENTER NAME** (please replace X with your group number).
4. The seminar is coordinated by a moderator and assisted by the IT Technical Team from the ICTVT committee. We ask the IT team to record parallel sessions in each room.
5. The moderator opens a parallel seminar and explains the presentation rules. The moderator arranges the presentation with each presenter being given about 7-10 minutes for presentation and 5 minutes for discussion/question and answer. After finishing the presentation for all presenters, the moderator closed the conference for each room.
6. For presenters who are not presenting, please mute the microphone and unmute it during the discussion session. Presenters who will move to another room can convey to the moderator or the IT technical team.
7. All documents for presenters can be viewed at **https://bit.ly/PPT-ICTVT-2022.**

More detailed information will be explained by each parallel session moderator. Thank you very much.

Parallel Session Group

Group : Group 1   **Room PIC** : Rivandra Rezani, M.Pd.
Moderator : Dr. Tiwan, M.T.   **Zoom** : https://bit.ly/ICTVT-2022-G1

No	Name	Title	Field	Afiliation
1	Tiar Agustianto	Plate Pattern Development Innovation on Sand Casting Using 3D Printer Stereolithography	Mechanical Engineering	Universitas Negeri Yogyakarta
2	Suprayitno	Optimization Injection Molding Parameters of Polypropylene Materials to Minimize Flash Defects Using the Taguchi Method	Mechanical Engineering	Universitas Negeri Malang
3	Suprayitno	Suzuki Carry Front Lower Control Arm Design Development Using Topology Optimization	Mechanical Engineering	Universitas Negeri Malang
4	Didik Nurhadiyanto	Effect of Nickel Electroplating Time on Corrugated Metal Gaskets Performance	Mechanical Engineering	Universitas Negeri Yogyakarta
5	Heri Wibowo	The Effect of Lathe Machine Vibration on Practice Product of PIRI 1 Vocational High School Students	Mechanical Engineering	Universitas Negeri Yogyakarta
6	Sutopo	The Effect of Choosing G Code on the Wear of the HSS Twist Drill and Machining Time	Manufacturing Engineering	Universitas Negeri Yogyakarta

Group : Group 2   **Room PIC** : Tri Adi Prasetya, M.Pd.
Moderator : Achmad Arifin, M.Eng., Ph.D.   **Zoom** : https://bit.ly/ICTVT-2022-G2

No	Name	Title	Field	Afiliation
1	Ahmad Kathri Sansyah	IoT-Based Automatic Sugar Weighing and Packing for Retail Stores	Information Engineering	Universitas Kristen Satya Wacana
2	Dewa Gede Hendra	Simulation of the Weighted Product Method Integrated with the CSE-UCLA Evaluation Model	Information Engineering	Universitas Pendidikan Ganesha
3	P. Wayan Arta Suyasa	User Interface Design of Amalgamation Evaluation Application Based on Provus-Alkin-WP Integrated with Rwa Bhineda	Information Engineering	Universitas Pendidikan Ganesha
4	Purnamawati	Design and Manufacture of Internet of Things (IoT) Based Sensor and Transducer Trainers as Distance Learning Media	Information Engineering	Universitas Negeri Makasar
5	Muhammad Kris Yuan Hidayatulloh	Improving Critical Thinking Ability of Vocational Students through Blended Inquiry Learning Assisted Schoology: Literature Review	Information Engineering	Universitas KH. A. Wahab Hasbullah
6	Apisak Phromfaiy	Classification Testa Color Level of Cashew Kernel by Feed Forward Back Propagation Neural Network	Information Engineering	Pathumwan Institute of Technology

Group   : Group 3   **Room PIC : Yulianto Eko Wibowo, M.Pd.**
Moderator: Febrianto Amri R, M.EngSc., M.Eng.   Zoom   : https://bit.ly/ICTVT-2022-G3

No	Name	Title	Field	Afiliation
1	Khoirudin Asfani	Comparative Analysis of User Experience on Remote Desktop Applications for Distance Learning (Case Study on MikroTik Configuration Practicum)	Information Engineering	Universitas Negeri Malang
2	Mausa Agrevinna	Developing an Android-Based Performance Assessment Instrument for Hot Stone Spa Learning	Information Engineering	Universitas Negeri Yogyakarta
3	Suhendar	Collaboratif Model Design of Virtual Reality For Banten Tourism Sustainable	Information Engineering	Universitas Sultan Ageng Tirtayasa
4	Sulfan Bagus Setyawan	Realtime Road Damage Detection using Transfer Learning with Nvidia Jetson Nano	Electronics Engineering	Politeknik Negeri Madiun
5	Muhamad Ali	Analysis and Investigation Ethylene Plant Electrical System Blackout Due to False Signals Triggering Emergency Shutdown System	Electrical Engineering	Universitas Negeri Yogyakarta
6	Pandung Sarungalio	Design of a Microcontroller Based Programmable Voltage Source Inverter	Electrical Engineering	Universitas Papua

Group   : Group 4   **Room PIC : Chrisna Tri Harjanto, M.Pd.**
Moderator: Virda Hersy Lutviana S, S.T., M.T.   Zoom   : https://bit.ly/ICTVT-2022-G4

No	Name	Title	Field	Afiliation
1	Wiwik Widyo Widjajanti	Bioclimatic Architecture in Durian Fruit Agrotourism Building in Jombang, East Java	Civil and Planning Engineering	Institut Teknologi Adhi Tama Surabaya
2	Wiwik Widyo Widjajanti	Fishermen's Settlements Reviewed from the Socio-Economic Community on the North Coast, Lamongan	Civil and Planning Engineering	Institut Teknologi Adhi Tama Surabaya
3	Fikri Al Latif	Identification of Problem Factors in Dyeing Knitting with Root Cause Analysis and Failure Mode and Effect Analysis	Industrial Engineering	Universitas Mercu Buana
4	Syukri Fathudin Achmad Widodo	Modeling 5S Adoption for the Halal Industry	Industrial Engineering	Universitas Negeri Yogyakarta
5	Marsono	Programming The Automatic Tool Color Changing on Machines of CNC-Based Batik Robot Running GRBL-Plotter Firmware	Mechatronics Engineering	Universitas Negeri Malang
6	Iskandar Yasin	Analysis of Erosion Distribution and Sedimentation Rate in Sermo Dam with Usle Method and SDR (Sediment Delivery Ratio) Equation	Civil and Planning Engineering	Universitas Sarjanawiyata Tamansiswa
7	Suyitno	E-Module Automotive: As an Improvement of Vocational High School Students' Learning Outcomes	Automotive Technology	Universitas Muhammadiyah Purworejo

Group   : Group 5   **Room PIC : Aris Eko Wibowo, M.Pd.**
Moderator: Dr. B. Sentot Wijanarko   Zoom   : https://bit.ly/ICTVT-2022-G5

No	Name	Title	Field	Afiliation
1	Wahyu Noviansyah	A Project-based Learning Approach to Increase Students' Interest and Abilities for Entrepreneurship in Building Engineering Vocational Schools	Vocational Technology	Universitas Sebelas Maret
2	Sintha Wahjusaputri	Hybrid Learning based on Project-based Learning for Vocational High School in Post Pandemic Perspective	Vocational Technology	Universitas Muhammadiyah Prof. Dr. Hamka
3	Dewa Gede Hendra Divayana	Similarities and Differences between the CIPP–SAW Evaluation Model and the CIPP–WP Evaluation Model	Vocational Technology	Universitas Pendidikan Ganesha
4	Kapti Asiatun	Developing Tutorial Video of Fashion Drawing for Fashion Technology Education Students in Post-Covid-19 Condition	Vocational Technology	Universitas Negeri Yogyakarta
5	Wahyu Noviansyah	Investigating the Benefit and Challenges of Implementing Bim-Based Quantity Take-Off (QTO) in a Grand Mosque Project In Indonesia	Vocational Technology	Universitas Sebelas Maret
6	Muhammad Kris Yuan Hidayatulloh	21st Century Skills 4C in Vocational Learning: Literature Study	Vocational Technology	Universitas KH. A. Wahab Hasbullah
7	Bayu Rahmat Setiadi	Experts' Responses to Industrial Product-based 3D Modeling Jobsheets	Vocational Technology	Universitas Negeri Yogyakarta

Group   : Group 6   **Room PIC : Ardani Ahsanul Fakhri, M.Pd.**
Moderator: Arianto Leman S, S.T., M.T.   Zoom   : https://bit.ly/ICTVT-2022-G6

No	Name	Title	Field	Afiliation
1	R. Eka Murtinugraha	Development and Validation of the Vocational Education Management E-Module: PLS-SEM Analysis	Vocational Technology	Universitas Negeri Jakarta
2	Purnamawati	Development of Teaching Industry Model on Industrial Electronic Learning in Vocational High School	Vocational Technology	Universitas Negeri Makasar
3	Laifa Rahmawati	Analysis of The Digital Literacy Skills of Vocational High School Students in Evaluating the Relevance of Information	Vocational Technology	Universitas Negeri Yogyakarta
4	Aulia Nurizzah Rahmajati	Developing Learning Video of Vegetable Cutting for Basic Cooking Subject	Vocational Technology	Universitas Negeri Yogyakarta
5	Siti Nurhalizah	Video Development of Napkin Folding on Food and Beverage Service Subject	Vocational Technology	Universitas Negeri Yogyakarta
6	Nur Kholifah	The Effectiveness of Interactive Multimedia-Based Learning Media on Entrepreneurial Skills	Vocational Technology	Universitas Negeri Yogyakarta
7	Muhammad Nurtanto	The Effectiveness of Learning in AutoCAD using TeamViewer Application: Online Learning in Vocational Education	Vocational Technology	Universitas Sultan Ageng Tirtayasa

Group : Group 7 **Room PIC** : Ahmad Fikrie, M.T.
Moderator : Henny Pratiwi, M.Eng. **Zoom** : **https://bit.ly/ICTVT-2022-G7**

No	Name	Title	Field	Afiliation
1	Rabiman	Android-Based Mobile Learning: AC System in Vocational Education using Four-D Model	Vocational Technology	Universitas Sarjanawiyata Tamansiswa
2	Rabiman	Learning Technology using Flipping Book in Vocational Education: ADDIE Model	Vocational Technology	Universitas Sarjanawiyata Tamansiswa
3	Khusni Syauqi	Students' Ability in Carbon Steel Welding Practice	Vocational Technology	Universitas Negeri Yogyakarta
4	Thomas Sukardi	Implementation of the Collaborative Online Learning Strategy to Increase Student Involvement in the Development of Work Preparation Sheet on Lathe Machining	Vocational Technology	Universitas Negeri Yogyakarta
5	Tinesa Fara Prihandini	Augmented Reality Research in Vocational Education for the Past 5 Year: A Bibliometric Approach	Vocational Technology	Universitas Negeri Yogyakarta
6	Paryanto	Industrial Clinic-Based Industrial Internship Model to Improve Student Competence in Implementing "Merdeka Belajar kampus Merdeka (MBKM)	Vocational Technology	Universitas Negeri Yogyakarta
7	Yuyun Yulia	English Language Teaching in Islamic-Based Vocational School in Rural Area	Vocational Technology	Universitas Sarjanawiyata Tamansiswa
8	Apri Nuryanto	Development of Fusion 360 Module for 2D CAD Online Learning	Vocational Technology	Universitas Negeri Yogyakarta

A Project-based Learning Approach to Increase Students' Interest and Abilities for Entrepreneurship in Building Engineering Vocational Schools

Wahyu Noviansyah[1, a)], A. G Tamrin[2, b)], Muhamad Faisal Aulia Nugraha[3, c)]

[1, 2, 3]*Sebelas Maret university, Indonesia*

a) Corresponding author: wahyunoviansyah@staff.uns.ac.id
b) agtamrin@staff.uns.ac.id
c) mockers.21@student.uns.ac.id

Abstract. The high open unemployment rate for vocational school graduates in Indonesia is inversely proportional to the essence of the purpose of vocational education, ideally vocational education is able to bring their graduates to absorbed in the job market and able to create jobs. To overcome these problems, it is necessary to make efforts to increase entrepreneurial interest and ability for vocational high school graduates through the learning process. This study aims to apply project-based learning as an innovative learning model that can help increase the interest and entrepreneurial ability of vocational high school students in the field of building engineering expertise. This research was conducted at SMKN 5 Surakarta (Surakarta Public Vocational High School 5) by using the classroom action research method in two cycles. The research subjects were students of SMKN 5 Surakarta majoring in Modeling Design and Building Information totaling 36 students. Data collection techniques using observation, questionnaires and documentation. The data analysis technique used descriptive statistics by calculating the average of each measurement aspect. The results showed that the implementation of the project-based learning model in the subjects of creative products and entrepreneurship can increase students' interest and entrepreneurial abilities. This can be seen from the increase in entrepreneurial interest in the first cycle by 71.23% then in the second cycle it increases to 77.97%. Meanwhile, the entrepreneurial ability in the first cycle was 69.89% and increased in the second cycle to 82.15%. Application of the project-based learning model shows a major influence on increasing entrepreneurial interest. This will directly relate to how well students are able to learn entrepreneurship. This statement is supported by the fact that student abilities increase with each cycle. Teachers have the option of using project-based learning models as a method of teaching.

Keywords: Entrepreneurial Ability, Entrepreneurial Interest, Project Based Learning

IoT-Based Automatic Sugar Weighing and Packing for Retail Stores

Achmad Kathri Sansyah[1, a)], Gunawan Dewantoro[2, b)], and Deddy Susilo[3, c)]

[1,2,3]*Faculty of Electronics and Computer Engineering, Satya Wacana Christian University, Jl. Diponegoro 52-60, Salatiga, Indonesia*

[a)] Corresponding author: 612018009@student.uksw.edu
[b)] gunawan.dewantoro@uksw.edu
[c)] deddy.susilo@uksw.edu

Abstract. In Indonesia, the existence of a grocery store is critical because it provides a variety of staples in small amount and weight compared to those sold in minimarkets. Traditionally, the production of sugar retail is done by manually breaking down the weight from a very large quantity of 50 kg into small quantity such as 250 grams, 500 grams and 1000 grams. In addition, manual packing activities require a long time; therefore, decrease the productivity. In this study, an automatic tool is developed to carry out the sugar weighing and packing process automatically, and does not need human supervision because it can be controlled by a smartphone over a long distance or a keypad in a short distance. This tool is run by an Arduino microcontroller which regulates the weighing and packing mechanism repeatedly. The weighing mechanism involves a load cell and servo motors. Meanwhile, the packaging mechanism uses a stepper motor and a modified impulse sealer. Quantitative testing has been carried out for weighing results and gives the best accuracy of 99.2% for sugar weight of 250 grams. Qualitative testing has been carried out to observe the packaging resulting from the packing mechanism and produce a neat package for sugar weighing 250 grams.

Hybrid Learning based on Project-based Learning for Vocational High School in Post Pandemic Perspective

Sintha Wahjusaputri[1, a] Bunyamin[1, b], Tashia Indah Nastiti[2, c], and Johan[3, d]

[1]*Graduate School, University of Muhammadiyah Prof. Dr. Hamka, Jakarta, Indonesia*
[2]*Faculty of Engineering and Computer Science, Indraprasta PGRI University, Jakarta, Indonesia*
[3]*Faculty of Industrial Engineering, Muhammadiyah University of Cirebon, Cirebon, Indonesia*

[a] sinthaw@uhamka.ac.id
[b] bunyamin@uhamka.ac.id
[c] Corresponding author: tashia.indahnastiti@unindra.ac.id
[d] johan@umc.ac.id

Abstract. This study aims to identify conditions, challenges, and innovations in implementing Hybrid learning based on Project-based learning at Vocational Schools in Indonesia after the COVID-19 pandemic. This research is a literature study with English and Indonesian language research journals from 2018 to 2022. Journal was tracing or articles conducted on several journal databases, namely Google Scholar, Scopus, IEEE, and ScienceDirect. The results of this study show that the implementation of hybrid learning can accelerate the mastery of technology by both teachers and students because the implementation of hybrid learning utilizes technological sophistication, but there are still challenges that teachers and students must face after the pandemic, namely learning lost. Therefore, schools and digital businesses have begun to develop innovations in technology to improve the quality of student learning in the implementation of project-based learning-based hybrid learning, such as LMS and e-Learning developed by schools, Google Classroom, Edmodo, Quipper, Zoom, and Moodle. This research will be used as a foundation for future research to identify and develop a project-based learning strategy or hybrid learning model in Indonesian Vocational High Schools following the pandemic.

Experts' Responses to Industrial Product-based 3D Modeling Jobsheets

Bayu Rahmat Setiadi[1, a)], Sudiyatno[2], Jarwo Puspito[3]

[1,2,3] *Department of Mechanical Engineering Education, Universitas Negeri Yogyakarta, Yogyakarta, Indonesia*

[a)] Corresponding author: bayursetiadi@uny.ac.id

Abstract. Quality jobsheets for 3D modeling designs are essential to ensure optimal Computer-aided Design (CAD) learning. The demand to improve the quality can be made by assessing the jobsheet to the expert. The validation method uses construct validity. The data collection technique uses the Delphi technique with repeated improvements based on the assessment of product design experts, learning media experts, CAD experts, and Computer-aided Engineering experts. Data analysis refers to quantitative data based on assessment scores and qualitative data based on expert responses. The results of the expert's assessment stated that the Industrial Product-based 3D Modeling Jobsheets were suitable for use, with the average proportion of the assessments being 87%. Some of the exciting things expressed by the experts are the high opportunities to approach industrial product-oriented CAD learning. Collaborating classroom learning with industry can encourage a new learning atmosphere for students taking these courses.

Keywords: expert responses, industrial product design, 3D modeling jobsheet

Bioclimatic Architecture in Durian Fruit Agrotourism Building in Jombang, East Java

Wiwik Widyo Widjajanti[1, a], Syahrian Najma Alif[2], Brina Oktafiana[3]

[1,2,3]*Architecture Study Program, Adhi Tama Institute of Technology Surabay, Surabaya, Indonesia*

[a] Corresponding author: wiwikwidyo@yahoo.co.id
[b] syahriannajma99@gmail.com
[c] brina@itats.ac.id

Abstract. Jombang Regency is famous for its agricultural products in the form of superior durian fruit. The potential location in the development of durian fruit agrotourism is in Ngoro District. This building has been designed through the application of bioclimatic architecture, namely in the form of the building has an interaction between humans and the environment. As well as providing facilities that can support agro-tourism activities and utilize the environmental potential on the site. The application of bioclimatic architecture to the design of this agro-tourism building, one of which is the availability of a transitional space between the exhibition area and the educational gallery area about durian which functions as a shadow for solar and air heat radiation before entering the building. The application of shapes in buildings is adjusted to the state of the site and the choice of colors and materials on the façade of the building is designed not too conspicuous for the comfort of the occupants of the building, the provision of vegetation will also be applied as air conditioning and add aesthetic value to the façade of the building. This bioclimatic architecture is applied in the form and space in the building so that the building can respond to the climate on the site. In addition, the relationship between the building and the environment also responds to achieve thermal comfort that is expected to be enjoyed by users in the building.

Keywords: Bioclimatic Architecture, Jombang Regency, Durian Agrotourism

Fishermen's Settlements Reviewed from the Socio-Economic Community on the North Coast, Lamongan

Wiwik Widyo Widjajanti[1, a], Achmad Chusnun Ni'am[2], Dian Pramita Eka Laksmiyanti[3], Clora Widya Brilliana[4]

[1,3] *Department of Architecture, Adhi Tama Institute of Technology Surabaya, Surabaya, Indonesia*
[2] *Department of Environmental Engineering, Adhi Tama Institute of Technology Surabaya, Surabaya, Indonesia*
[4] *Department of Industrial and Systems Engineering, Sepuluh Nopember Institute of Technology, Surabaya, Indonesia*

[a] Corresponding author: wiwikwidyo@yahoo.co.id
[b] ach.niam@gmail.com
[c] dianpramita@itats.ac.id
[d] clorabrillie@yahoo.com

Abstract. Fishing communities are a group with low incomes, especially in the new normal era of the Covid-19 pandemic. It is interesting to study the condition of settlements from the point of view of the specific socioeconomics of fishing communities. Fishermen's settlements with poor quality environments require efforts to organize the settlement environment, especially the presence of open spaces, to support the activities of fishermen in meeting the economic needs of their families. By examining the socioeconomic characteristics of its people; identifying and analyzing the socioeconomics of coastal communities to the open space needs of fishermen's settlements and analyzing the factors that influence them. The method used is a mixture of quantitative and qualitative research with a phenomenological approach, a research area on the coast of the North Coast of East Java, with sampling of Brondong beach fishing houses in Lamongan. Target, identify and comprehensive study of socioeconomic aspects of its people. As well as the correlation of socioeconomic aspects to the existence of open space in fishermen's homes. It is hoped that the study of settlement conditions can provide information to improve environmental quality and improve the economy of coastal fishing families in the new normal era of the COVID-19 pandemic in Brondong Lamongan.

Keywords: Social, Economy, Fishermen's Settlements, Lamongan.

Similarities and Differences between the *CIPP–SAW* Evaluation Model and the *CIPP–WP* Evaluation Model

Dewa Gede Hendra Divayana[1,a], Agus Adiarta[2], Nyoman Santiyadnya[2], P. Wayan Arta Suyasa[1] and Made Susi Lissia Andayani[1]

[1] *Department of Informatics Education, Universitas Pendidikan Ganesha, Singaraja-81116, Indonesia*
[2] *Department of Electrical Education, Universitas Pendidikan Ganesha, Singaraja-81116, Indonesia*

[a] Corresponding author: hendra.divayana@undiksha.ac.id

Abstract. This paper aims to show the similarities and differences between the two innovative evaluation models. The innovative evaluation models are called the *CIPP–SAW* and *CIPP–WP* evaluation models. The two evaluation models are models that combine an educational evaluation model called *CIPP* (*Context–Input–Process–Product*) with a decision support system method called *SAW* (*Simple Additive Weighting*) and *WP* (*Weighted Product*). The way to obtain the similarities and differences between those two innovative evaluation models through a calculation simulation approach of the two *SAW* and *WP* methods integrated with the *CIPP* model in determining the best recommendations. There are four evaluation aspects and four *CIPP* evaluation components that are used for the calculation simulation. The simulation results showed five similarities and two differences between the *CIPP–SAW* evaluation model and the *CIPP–WP* evaluation model. The impact of this paper on the field of education is to provide positive information to educational evaluators and education observers regarding the similarities and differences between the two innovative evaluation models that combine the educational evaluation model with the decision support system method.

Keywords: Similarities, Differences, *CIPP–SAW*, *CIPP–WP*.

Simulation of the *Weighted Product* Method Integrated with the *CSE-UCLA* Evaluation Model

Dewa Gede Hendra Divayana

Department of Informatics Education, Universitas Pendidikan Ganesha, Singaraja-81116, Indonesia

Corresponding author: hendra.divayana@undiksha.ac.id

Abstract. The purpose of this paper was to show a calculation simulation of the *Weighted Product* method integrated with the *CSE-UCLA* evaluation model in determining the best recommendations for decision support. There are four evaluation components of the *CSE-UCLA* model that are used as standards for evaluation, including system assessment, program planning, program implementation, program improvement, and program certification. In addition, there are 10 evaluation aspects are used as alternative recommendations. The process of determining the best recommendation was carried out by simulating the calculation of the *Weighted Product* method, which consists of five stages, including preliminary data preparation, weights normalization, Vector-S calculation, Vector-V calculation, and determination of recommendations based on ranking results. The simulation results of the *Weighted Product* method resulted in three aspects of the *CSE-UCLA* evaluation model which became the best recommendations with a preference value was 0.1008. Those aspects included: aspect-1, aspect-7, and aspect-10. This paper has a positive impact on developing the insight of evaluators and education observers about innovation. This innovation demonstrates the use of the *Weighted Product* method in the field of computer science that can be used in determining the evaluation aspects of the *CSE-UCLA* model which are the best recommendations for decision support.

Keywords: Simulation, *Weighted Product*, *CSE-UCLA*.

User Interface Design of *Amalgamation* Evaluation Application Based on *Provus-Alkin-WP* Integrated with *Rwa Bhineda*

P. Wayan Arta Suyasa[1, a)], Dewa Gede Hendra Divayana[1] and I Putu Wisna Ariawan[2]

[1] *Department of Informatics Education, Universitas Pendidikan Ganesha, Singaraja-81116, Indonesia*
[2] *Department of Mathematics Education, Universitas Pendidikan Ganesha, Singaraja-81116, Indonesia*

[a)] Corresponding author: arta.suyasa@undiksha.ac.id

Abstract. The purpose of this research was to show the user interface design of the *Amalgamation* Evaluation Application Based on the *Provus-Alkin-WP(Weighted Product)* integrated *Rwa Bhineda* and determine the quality level of the application. This research was developed using the *Borg & Gall* model, which focused on the design phase, initial trial phase, and revision phase of initial trial results. The research location was carried out at several IT vocational schools in Bali. The subjects involved in the initial trial were 24 respondents, consisting of experts and evaluators. Data collection was obtained using a questionnaire consisting of 12 questions. The data analysis technique of the research results was carried out by comparing the initial trial results with the five's scale quality standards. The research results showed the user interface design was categorized as good by a percentage level of quality of 85.49%. The impact of this research on educational evaluators is to increase the knowledge of evaluators about the importance of user interface design as the initial foundation for realizing a good evaluation application, and ready to use.

Keywords: User Interface Design, Amalgamation, Provus, Alkin, Weighted Product, Rwa Bhineda.

Developing Tutorial Video Of Fashion Drawing for Fashion Technology Education Students in Post-Covid-19 Condition

Kapti Asiatun[1, a] Afif Ghurub [2,] Sri Widarwati[3,] Sugiyem[4, b]

[1,2,3,4] *Yogyakarta State University, Yogyakarta, Indonesia*

[a] Corresponding author: asiatun@uny.ac.id
[b] afif_ghurub@uny.ac.id
[c] sriwidarwati@uny.ac.id
[d] sugiyem@uny.ac.id

Abstract. The COVID-19 pandemic has transformed the learning process from face-to-face to distance learning. Students get accustomed to online learning mode. As Covid-19 cases decline, the current learning must be adjusted with appropriate media to be in line with the digital era, one of which is video tutorials that can also promote students' autonomous learning. This study aims at developing video tutorial media and determining its feasibility. The research method employs Thiagarajan Research and Development consisting of Define, Design, Develop, and Dissemination. (4D). The instrument used construct validity with expert judgment with valid results. The instrument's reliability with Cronbach's Alpha obtained 0.954, which can be categorised as reliable. Video development in the Define stage includes analysing the suitability of the Semester Learning Plan (RPS) to the curriculum demands. The design stage covers a) pre-production, while b) production begins with forming a team, compiling storyboards, recruting video talents, determining locations, taking video scene, and setting sounds. The development stage deals with video editing and sound mixing. The disseminate stage determines the feasibility of the developed media. The video format can be played with computers or smartphones. The material and media experts had declared that the developed video was appropriate to be used as a learning medium. The results of the limited trial for the material aspect showed that half of the respondents mentioned that it was very feasible (50%), and the rest was "feasible" (30%) and "infeasible" (20%), respectively. For the media display, most of the respondents stated that it was "very feasible" (70%), and the remaining was "feasible" (20%), and infeasible (10%). Meanwhile, in the field trials, 67% of respondents said it was "very feasible", 26% was "feasible", and 7% was "infeasible", respectively, for the material aspect. Related to media display, 60% of respondents admitted that it was "very feasible", 27% was "feasible", and 13% was "infeasible". It can be concluded that the video tutorials are appropriate as a learning medium for fashion drawing for fashion technology education students in the post-Covid-19 condition.

Keywords: tutorial video, fashion drawing, post-covid 19

Realtime Road Damage Detection using Transfer Learning with Nvidia Jetson Nano

Sulfan Bagus Setyawan[1a], Hanum Arrosida[1], Aulia Elhakim[1], Dahris Shahab[1], Eryandhi Putro Nugroho[1]

[1]*Department of Computer Control Engineering, Politeknik Negeri Madiun, Madiun, Indonesia.*

[a] Corresponding author: sulfan@pnm.ac.id

Abstract. Based on cases of traffic accidents due to damaged roads that continue to occur every year. Efforts are needed to overcome these problems. Many researchers have made innovations related to road damage detection. Several methods are used to detect road damage, hovewer it need to implemented in real time because road damage location needs to detected. In this paper, real time road damage detection is proposed. This system consist of camera, Nvidia Jetson Nano, GPS sensor. The camera as a road image capture which is then processed by the Nvidia Jetson Nano. The data is processed using the Tensorflow Object Detection framework with lite SSD as trained model of transfer learning. The results of this system are detection and classification of road damage. The detection results are classified into pothole and crack. This system was equipped by GPS sensor to detect road damage location.   Based on the experimental results, the detection process should ideally be carried out at a speed of 20 km/h to 30 km/h which has an average accuracy of 80%. Based on testing the entire system at, Jl. Sumpil Basuki and Jl. serayu. The detection and mapping system can run well when with F1 score 88%.

Investigating The Benefit and Challenges of Implementing Bim Based Quantity Take-Off (QTO) in A Grand Mosque Project in Indonesia

AG. Tamrin[1, a], Taufiq Lilo Adi Sucipto[2, b], Wahyu Noviansyah[3, c], Sukatiman[4, d], Anis Rahmawati[5, e], Miftah Mar`atussoleha[6, f]

[1, 2, 3,4,5,6] *Sebelas Maret university, Indonesia*

[a] agtamrin@staff.uns.ac.id
[b] taufiqlilo@fkip.uns.ac.id
[c] Corresponding author: wahyunoviansyah@staff.uns.ac.id
[d] *sukatiman@staff.uns.ac.id*
[e] *anisrahmawati@staff.uns.ac.id*
[f] miftah_3424@student.uns.ac.id

Abstract. Cost swelling and project delays often occur in construction work. Quantity Take-Off (QTO) job is one of the main factors that can cause cost overruns. In recent years, to reduce this problem, the construction industry has begun to replace the system with new technologies utilizing Building Information Modeling (BIM), which has been proven capable of addressing project cost and time issues. This study aims to analyze the differences between BIM-based QTO using Cubicost TAS with conventional QTO using Ms.Excel and the implementation of the benefits and challenges of using BIM in QTO work at the Great Mosque. The research method used in this study is mixed method research by combining comparative quantitative and descriptive qualitative methods. The results showed that there were significant differences between BIM-based and conventional methods. This research also reveals that BIM can improve project efficiency with easier collaboration and more effective and accurate calculations. In addition to the advantages and benefits BIM technology offers in its implementation, there are still challenges that we must face in the form of enormous costs and limited human resources.

Keywords: Building Information Modeling, Cubicost TAS, Volume, Quantity Take-Off

Design and Produce of Internet of Things (IoT) Based Sensor and Transducer Trainers as Distance Learning Media

Purnamawati [1, a)], Muhammad Akil [1, b)], Nuridayanti [1, c)]

[1] *Makassar State University, Makassar-Indonesia*

[a)] purnamawati@unm.ac.id
[b)] Corresponding author: muhammadakil@unm.ac.id
[c)] nuridayanti@unm.ac.id

Abstract. Learning media that can present distance learning experiences for students as if doing practical work is needed in the new normal era of covid-19. The use of Internet of Things (IoT) technology strongly supports this problem. This study aims to design and produce learning media in the form of IoT-based sensors and transducer trainers that can be controlled and observed by students from home. The method used is a design which consists of several stages including analysis of design models, making layout designs, determining the type of components, and assembling and testing products. The results obtained are IoT-based Sensor and Transducer trainers with several experimental modules including LDR sensors, photodiode, temperature and humidity, PIR, sound, ultrasonic, soil moisture, gas, current, RGB color, and relay modules. The type of communication protocol used between the controller module and the user application is MQTT. The use of this protocol is certainly supported by a server that can provide connection facilities and data storage from sensor devices. The existence of IoT-based trainers in distance learning, especially for practicum subjects, is expected to have an impact on increasing students' understanding of observing, analyzing characteristics, and describing the working principles of components, even though it is done from home. With this IoT-based trainer, limitations in distance learning activities on sensor and transducer practicum subjects can be overcome.

Improving Critical Thinking Ability of Vocational Students through Blended Inquiry Learning Assisted Schoology: Literature Review

Hilyah Ashoumi[1, b] Muhammad Kris Yuan Hidayatulloh[2, a]

[1,2] *KH. A. Wahab Hasbullah University, Jl. Garuda No.9 Tambakberas Jombang, Indonesia, 61419*

[a] Corresponding author: krisyuan@unwaha.ac.id
[b] hira@unwaha.ac.id

Abstract. This study aims to describe blended inquiry learning through schoology in the learning process at the vocational high school level and analyze the improvement of students' critical thinking skills. This research uses library research method. The data obtained in the form of secondary data obtained based on the study of research journals from various online journal sources, the journal articles reviewed were 25 articles. From the articles studied, there are 17 articles with 8 theses from 2018-2020 which discuss according to the topic of the problem. The results and discussion of secondary data show that the blended inquiry learning model with the help of schoology is very suitable to be applied in the 21st century, especially during the transition period due to COVID-19. This model can make it easier for teachers to deliver lesson material and the learning stages can be completed on time. In addition, this model can also improve critical thinking skills in learning at the vocational high school level. Teachers and students' perceptions of the model are also very positive, but this learning model has problems, namely access to the internet, because the application of this learning model requires stable internet access so that the learning process can run as expected.

21st Century Skills 4C in Vocational Learning: Literature Study

Muhammad Kris Yuan Hidayatulloh[1, a)] Hilyah Ashoumi[2,b)] Dewi Farah Khusnus Shofa[3]

[1,2,3] *KH. A. Wahab Hasbullah University, Jl. Garuda No.9 Tambakberas Jombang, Indonesia, 61419*

[a)] Corresponding author: krisyuan@unwaha.ac.id
[b)] hira@unwaha.ac.id

Abstract. Humans are required to be ready to face the development of science and technology, which is developing very quickly, it is certain to be very far behind other nations. For this reason, in the 21st century, schools are required to have creative thinking skills, critical thinking and problem solving, communication, and collaboration or commonly referred to as the 4Cs. The purpose of this study is to provide motivation for formal and informal educational institutions to pay attention to the skills possessed by their students and provide positive debriefing to children for the future. The type of research used is library research with descriptive analysis method, which is a series of activities related to library data collection methods to describe the situation as it is. The data analysis used is content analysis. The results of this study are: 1) with the implementation of 21st century skills called 4C, teachers must communicate well with students continuously in various circumstances. Socialization in students is needed because childhood is a time of play. When students play with their peers, students will naturally engage in social interactions with their friends. Frequently inviting students to communicate has a positive impact on developing children's communication skills. This will stimulate the child's brain to imitate the use of good sentences. Besides 21st century skills, students are trained to explain and exchange information with their friends during the learning process, learn how to convey information correctly, so that it can be understood and understood by their friends. The role of the teacher here is as a facilitator. 21st century skills can grow and increase cooperation in a group to solve certain problems, increase their tolerance for differences of opinion among friends, strive to think critically and creatively to solve problems about linking things.

Development and Validation of the Vocational Education Management E-Module: PLS-SEM Analysis

R. Eka Murtinugraha[1, a)], Shilmi Arifah[2, b)], Riyan Arthur[3, c)], Gilang Septian[4, b)]

1,2,3,4 Pendidikan Teknik Bangunan, Universitas Negeri Jakarta, Jakarta, Indonesia

a) r_ekomn@unj.ac.id
b) Corresponding author: shilmiarifah@unj.ac.id
c) arthur@unj.ac.id
d) gilangwandiatama@gmail.com

Abstract. This study aims to produce teaching material products in the form of E-Modules to assist lecturers in teaching and can be used to develop students' interests and expertise in the field of Vocational Education. The research uses the Research and Development method which refers to the Four-D research model. The feasibility of the product is carried out through validation carried out by material experts and media experts. Quantitative methods were used to test the theoretical models and a quantitative analytical survey was adopted in this study. The measurement items were obtained from the literature review and were considered to be representative of all aspects of the construct and indicators. In this study, Partial Least Square-Structural Equation Modeling (PLS-SEM) was used as a technique to test the research model. The results of the validation carried out through the constructed test using PLS-SEM analysis have met the test validity requirements of the e-module development. Assessment by material experts shows that the valid e-module has a feasibility percentage of 66.00%. The results of the validation carried out by media experts showed that this module was valid with a percentage of 78.00%. The advantage of this e-module product is that it prioritizes the display design that is presented to be as attractive as possible, and as neat as possible to attract students' interest and enthusiasm in learning it.

Keywords: Development, E-Modul, Vocational, Education, Management

Classification Testa Color Level of Cashew Kernel by Feed Forward Back Propagation Neural Network

Apisak Phromfaiy[1, a)], Natita Wangsoh[2, b)] and Prayoon Surin[1, c)]

[1] *Faculty of Engineering, Pathumwan Institute of Technology, Bangkok, 10330, Thailand*
[2] *Faculty of Science and Technology, Pathumwan Institute of Technology, Bangkok, 10330, Thailand*

[a)] Corresponding author: apisak.phr@uru.ac.th
[b)] natita.pit@gmail.com
[c)] Prayoon99@gmail.com

Abstract. The classification testa of cashew kernel is dried in solar dryers is the important process for cashew nuts product. This research applies the feed forward back propagation neural networks to classify the intensity color level of testa of cashew kernel. The CIELAB (L*, a*, b*) color space is three-dimensional, including L*, a* and b* are determined as input data. The output data are peel ability was classified as an impossible, difficult, good, and very good based on the ease of peeling. The result shows that the 3-5-4 topology with the sigmoid function, gives the highest accuracy of the training and testing artificial neural network is 77.5% and 78.33%, respectively.

Development of Teaching Industry Model on Industrial Electronic Learning in Vocational High School

Purnamawati[1, a)], Fitrah Asma Darmawan[2, b)], Edy Sabara[3, c)]

[1,2,3] Electronics Engineering Education, Universitas Negeri Makassar, Makassar Indonesia

a) Corresponding author: purnamawati@unm.ac.id
b) fitrahdarmawan@unm.ac.id
c) edysabara@unm.ac.id

Abstract. This study aims to produce an industrial electronics learning model based on Teaching Industry (TI-based) in Vocational High Schools (VHS) and to produce a TI-based industrial electronics learning module in VHS. This study is a Research & Development (R&D) that follows the development model of Plomp (2007), starting from the initial investigation, model testing, and model implementation. Yet, at the initial step, this study focuses on the design of TI-based learning models and the development of TI-based learning module. The procedures of model development start with a theories study of the teaching industry, and the theories of learning models that are relevant to the TI concept. Furthermore, a TI-based industrial electronics learning syntax was adopted and elaborated from learning syntaxes relevant to TI concepts. The learning module developed starts from the step of determining subjects relevant to TI concepts, analyzing learning objectives and work competencies that must be mastered by students (Hard skills and Soft skills), as well as determining supporting materials for TI-based learning. The module was validated by 2 media experts and 2 learning module content experts. Furthermore, the module was tested on users with 45 respondents. The data were analyzed using quantitative descriptive analysis techniques to describe the feasibility of the learning module.

Keywords: Learning Model, Teaching Industry, module

Analysis of the Digital Literacy Skills of Students in Evaluating the Relevance of Information

Laifa Rahmawati[1, a], Nursida Arif[2, b], Sasiana Gilar Apriantika[3, c], Muhammad Nursa'ban[4, d], and Kurnia Nur Fitriana[5, e],

[1] *Faculty of Mathematics and Natural Sciences, Universitas Negeri Yogyakarta,*
[2,3,4,5] *Faculty of Social Science, Universitas Negeri Yogyakarta*

[a] Corresponding author: laifa.rahmawati@uny.ac.id
[b] nursida.arif@uny.ac.id
[c] sasiana_gilar@uny.ac.id
[d] m_nursaban@uny.ac.id
[e] kurnianurfitriana@uny.ac.id

Abstract. With the development of the digital and information world, the demands for vocational students as generation Z are no longer only traditional skills but also particular skills needed in the industrial 4.0 era and the 21st Century. Digital literacy, especially the ability to search information and evaluate the relevance of knowledge, is a crucial skill for vocational high schoolstudents need to have to answer the challenges of the world of work. This study aims to examine the level of digital literacy of vocational high school students in Yogyakarta on information retrieval ability and evaluate the relevance of information. The research method used is descriptive quantitative. Respondents consisted of 169 vocational high school students in Special Region of Yogyakarta. The sampling technique used is purposive random sampling. The data collection instrument used a questionnaire. The data analysis technique used descriptive statistics. The results of the research data analysis showed that the respondent's abilities for both components were in the "Good" category. Based on these results, it is concluded that the digital literacy skills of vocational high school students in DIY are in the aspect of finding information and evaluating the relevance of information in the "Good" category

Investigation of Ethylene Plant Emergency Shutdown System Failure Due to False Signal

M Ali[1, a)], Y Hermawan[2, b)]

[1] *Electrical Engineering Education Department Faculty of Engineering, Universitas Negeri Yogyakarta, Indonesia*
[2] *Predictive Maintenance Department Manager, PT. Chandra Asri Petrochemical, Tbk*

[a)] Corresponding author: muhal@uny.ac.id
[b)] yacob.hermawan@capcx.com

Abstract. PT. Chandra Asri is the largest petrochemical company in Indonesia. Operations and production require a reliable electrical power supply to ensure smooth operation and safety. The electric power system is supplied by PT. PLN through a 150 kV system in parallel with the gas turbine as a captive generation. The electrical system is integrated with the Emergency Shutdown System (ESD) to protect equipment and people from various disturbances that can cause damage and work accidents. ESD should only work if something happens according to a logic diagram that has been designed as needed. One time, the factory experienced a disturbance that came from the AC power signal being off, thus activating the Emergency Shutdown System (ESD). The power outage caused production to stop, causing huge losses. The incident report on the Distributed Control System (DCS) stated that there was no interruption of the electrical power supply from either PLN or captive generation. This condition cannot occur based on the logic diagram in the ESD system. Therefore, it is necessary to thoroughly analyze and investigate the main causes of total power outages in the company. Investigating the root cause of the active ESD of the ethylene plant using brainstorming techniques and focus group discussions involving operators, technicians, engineers, and outside experts. Analysis of the main causes of failure using fishbone diagram techniques related to the problem, phenomenon, principle, and parameter (4P), men, machines, materials, methods, and the environment (4M + 1E). The results of the investigation stated that there was DC power supply activity that caused the DC charger to turn off. This de-energizes the interposing relay which is used as the ESD signal.

Developing Learning Video of Vegetable Cutting for Basic Cooking Subject

Aulia Nurizzah Rahmajati[1, a)] and Andian Ari Anggraeni[1, b)]

[1]*Department of Culinary Science, Faculty of Engineering, Universitas Negeri Yogyakarta*

[a)] aulianur27@gmail.com
[b)] corresponding author: andian_ari@uny.ac.id

Abstract. Videos are the preferred learning media by generation Z students. This study developed and assessed the feasibility of a video of vegetable cutting for the Basic Cooking subject. This study followed a research and development methodology, namely the 4D model (Define, Design, Develop, and Disseminate). The define stage was performed by analyzing the curriculum, material, student character, learning needs, and school infrastructure. The design stage included material design, script writing, script evaluation, and production team election. The develop stage consisted of video production and feasibility assessment by two material experts and a media expert. Vegetable cutting photos were captured with a Canon EOS 800D and iPhone 11 DSLR camera. The photos were edited using the Lightroom Mobile, Canva, and Photos applications. The narrator's voice was recorded using the Samson CU01 Pro microphone and edited using the Audacity application. Photos, text captions, voice recordings, and background music were combined with Ms PowerPoint. The video was in MPEG-4 movie format at 8 minutes and 58 seconds. The disseminate stage included feasibility assessment by 30 prospective users. The video feasibility assessment confirmed that this video was very suitable for application as a learning medium. The video was sent to the YouTube channel.

Video Development of Napkin Folding on Food and Beverage Service Subject

Siti Nurhalizah[1, a)] and Andian Ari Anggraeni[1, b)]

[1]*Department of Culinary Science, Faculty of Engineering, Universitas Negeri Yogyakarta, Indonesia*

[a)] siti.nurhalizah2016@student.uny.ac.id
[b)] Corresponding author: andian_ari@uny.ac.id
mailto:dian.nurtriyanti20@gmail.commailto:dian.nurtriyanti20@gmail.com

Abstract. The video combines audio and visual displays such as text, images, and animation. Video is the preferred learning media for Generation Z students. This study aimed to (1) develop a video of napkin folding for the subject of Food and Beverage Service and (2) determine the feasibility of the video. This study used the R&D (Research and Development) method with a 4D development model (define, design, development, and disseminate). The video discussed several aspects of napkin folding, such as terminology, function, characteristic, type, shape, treatment and care, and making procedure. The animation pictures were created using the Sketchbook application. Napkin folding photos were taken using a Canon EOS 4000 DSLR camera with the help of a ring light. The sound was recorded with the EZVoice application with the help of the Pop Filter tool and edited using Audacity. Video editing was performed using Ms. PowerPoint 2016. The video duration was 7 minutes 40 seconds with mp4 file format and 720p resolution. The video feasibility test was conducted by two material experts, a media expert, and 30 students of class X Culinary at Vocational High School Muhammadiyah 1 Moyudan. The results of the feasibility test concluded that this video was very suitable to be used as a learning medium.

Identification of Problem Factors in Dyeing Knitting with Root Cause Analysis and Failure Mode and Effect Analysis

Fikri Al Latif[1, a] and Hasbullah[1]

Master of Industrial Engineering, Universitas Mercu Buana, Jakarta 11650, Indonesia

[a] Corresponding author: fikriallatif@gmail.com
[b] hasbullah@mercubuana.ac.id

Abstract. The manufacturing industry sector has an important role in the national economy, especially in the textile sector. The value of textile exports in 2017 experienced a significant increase of around 15%, but in 2017 to 2019 there was a continuous decline. This is because almost the whole world is looking for the latest trading systems and due to the growing technology. This study aims to find the factors that cause defects in dyeing knitting products. The analytical methods used are Root Cause Analysis (RCA) and Failure Mode and Effect Analysis (FMEA) involving experts. The results showed that there are three defects in dyeing knitting. Factors causing problems with dyeing knitting defects include Striped yarn, Auxiliary spot, and Striped dip. Based on the FMEA analysis, the priority problem occurring in the Striped Yarn defect is the troubled fabric in the knitting section with an RPN value of 180. The main cause of the Auxiliary Spot defect is a dirty machine with an RPN value of 216. The main cause of the Striped Dip defect is dirty gray cloth with an RPN value of 216.

Keyword: Dyeing Knitting, FMEA, RCA, Textile

Comparative Analysis of User Experience on Remote Desktop Applications for Distance Learning (Case Study on MikroTik Configuration Practicum)

Khoirudin Asfani [1, a)], Moh Alif Hidayat Sofyan [2, b)], Hary Suswanto [1, c)], Hakkun Elmunsyah [1, d)], Syaad Patmanthara [1, e)], Wahyu Nur Hidayat [1, f)], Irawan Dwi Wahyono [1, g)], and Halizah Binti Awang [3, h)]

[1]*Department of Electrical Engineering, Universitas Negeri Malang, Indonesia*
[2]*Departement of Electronic and Informatics Engineering Education, Universitas Negeri Yogyakarta, Indonesia*
[3]*Fakulti Pendidikan Teknikal dan Vokasional, Universiti Tun Hussein Onn Malaysia, Malaysia*
.

[a)] Corresponding author: Khoirudin.asfani.ft@um.ac.id
[b)] alifhidayatsofyan@uny.ac.id
[c)] hary.suswanto.ft@um.ac.id
[d)] hakkun@um.ac.id
[e)] syaad.ft@um.ac.id
[f)] wahyu.nur.ft@um.ac.id
[g)] irawan.dwi.ft@um.ac.id
[h)] halizah@uthm.edu.my

Abstract. Changes in the learning system supported by technological developments have changed the way people learn and educate by teachers. In this sense, the use of an appropriate technology can make a difference in learning. This study aims to compare the performance of two remote desktop applications (AnyDesk and TeamViewer) for distance learning implementation of MikroTik configuration based on student perspective. The sample of this study were students of the Informatics Engineering Education Undergraduate Study Program at the State University of Malang. Data was collected through a user experience (UX) questionnaire. The results showed that there were significant differences in user experience in using remote desktop applications. AnyDesk application has a better user experience which makes users think AnyDesk is the right application to use on remote computers via the internet and have a tendency to continue using the application.

Keywords: information technology, distance learning, computer network, mikrotik, remote desktop application.

Design of a Microcontroller Based Programmable Voltage Source Inverter

Pandung Sarungallo[1], Adelhard Beni Rehiara[1, a] and Yanty Rumengan[1]

[1]*Electrical Engineering Department, University of Papua, Manokwari, Indonesia*

[a] Corresponding author: a.rehiara@unipa.ac.id

Abstract. A voltage source inverter (VSI) is commonly used in converting DC to AC systems with the constant voltage source input. However, a microcontroller is mostly used in generating the signal to the VSI due to low harmonics output. This paper has built a microcontroller-based VSI with an ATMega 238 microcontroller controller to generate a Sinusoidal Pulse Width Modulation (SPWM). The performance test was done in a set of 40, 50, and 60Hz frequencies. The test results show that the VSI frequency output can meet the frequency setpoint with a total harmonics distortion (THD) of 0.22%, 0.46%, and 12.46% of each frequency settings.

Plate Pattern Development Innovation on Sand Casting Using 3D Printer Stereolithography

Tiar Agustianto[1] , Arianto Leman Soemowidagdo[2], Beni Tri Sasongko[3]

[1,2,3] *Mechanical Engineering Education, Yogyakarta State University, Indonesia*

[a] Corresponding author: tiar.agustianto17@gmail.com

Abstract. Making pattern print is specter problem in the industrial world casting moment this . Difficulty Making pattern print this is very consuming time and cost in the casting process . Development increasingly technology fast so making pattern can be made Becomes more good again use usual technology known with designation 3D printers . Study this use method research and development with the PPE (planning, production, and evaluation) model. Research results this in the form of pattern intake manifold prototype . Printed intake manifold prototype pattern with SLA method using the Anycubic Photon Mono X printer with Anycubic basic ultraviolet resin material . Laying parameters the best position is $X = -45^0/45^0$,$Y = 45^0/-45^0$ and height of $Z = -5$ mm with an exposure of 6 seconds and a bottom exposure of 60 seconds . Measurement result show deviation biggest is 0.05 mm, where the allowable deviation is high layer is 0.05 mm. Result of casting product have deviation by 0.55% or 0.20 mm with provision maximum 6%. With results the pattern from this SLA 3D printer said worthy for casting.

Developing an Android-Based Performance Assessment Instrument for *Hot Stone SPA* Course

Mausa Agrevinna[1, a] Ma'rifani Fitri Arisa[2, b] Elok Novita[3, c]

[1,2,3] Cosmetology Study Program, Faculty of Engineering, Universitas Negeri Yogyakarta, Indonesia

[a] Corresponding author: mausa.agrevinna@uny.ac.id
[b] marifanifitri@uny.ac.id
[c] elok@uny.ac.id

Abstract. This study aimed to 1) investigate the concepts of an android-based instrument for assessing performance in Hot Stone Spa course and 2) assess the feasibility of the instrument. This study was conducted based on the ADDIE design (Analysis, Design, Development, Implementation, and Evaluation). The feasibility test was carried out by means of questionnaires distributed to experts at educational evaluation, teaching materials, and media. Moreover, another questionnaire was filled out by lecturers and students (users). The subject of this study was Cosmetology students taking the Asian SPA course. The results of this study show that the product feasibility percentage is 88.49, so it is assumed that an android-based assessment instrument is highly feasible to use.

Optimization Injection Molding Parameters of Polypropylene Materials to Minimize Flash Defects Using the Taguchi Method

Nur Kholish Ali Fahmi[1, a)], Redyarsa Dharma Bintara[2, b)], Suprayitno[3, c)],
Suwarno[4], Antok Dwi Cahyo[5, e)]

[1,2,3,4,5]*Mechanical Engineering, State University of Malang, Malang, Indonesia*

[a)] Corresponding author: nurkholish26@gmail.com
[b)] redyarsa.dharma.ft@um.ac.id
[c)] suprayitno@um.ac.id
[e)] antokdc234@gmail.com

Abstract. The demands and consumptions of plastic in Indonesia, especially in the food and beverage industry, is high. There are 892 industries that produce a rigid packaging, flexible packaging thermoforming, and extrusion with an average production capacity is more than 23.5 ton per year with 70% utility. The utilization of plastic in many fields is owing to the fact that the characteristics of plastic could replace other materials function. The production process of injection molding machine in bioball spike product in the industry is not completely perfect. There is a flash product defect that leads to loss in the process and production costs. The Taguchi method is selected to get the optimal parameter in minimizing the flash defect. The flash defect of product could be a big problem for a manufacture company specialized for injection molding. The product defect should be avoided or fixed by counting, analyzing, optimizing the parameters which affect its defect. This study was conducted using experimental method by determining the experiment design through fractional factorial L9 (34) for three cycles of injection trial where the test specimen was using bioball spike product with polypropylene material. The parameters used in this study were injection speed, injection pressure, injection time, and melt temperature which all of them was consisted in third level. The study used analysis of means (ANOM) and verified using Taguchi method for getting the average effect in every parameter of its level and getting the plot effect. Analysis of variance (ANOVA) was also used for knowing the average effect of its parameter towards the output, it is aimed to verify the Taguchi method. The result showed that this parameter combination is optimal in minimizing the flash defect and effect of its parameter. The results obtained determine the effect of each parameter, namely the injection speed parameter (IS) has the most significant effect of 37.91%, the injection pressure parameter (IP) has an influence of 32.17%, for the injection time (IT) parameter has an influence of 1.2%, and for the melt temperature (MT) parameter it is 28.72%. The optimal combination of parameters to cause flash defects with a combination of parameters (IS) at level 2 (40 cm/s), (IP) at level 2 (40 kg/cm2), (IT) at level 3 (5 seconds), and (MT) at level 1 (180 ℃). The results of the comparison of S/N Ratio Smaller the Better before optimization (initial design) and after optimization (robust design) get a gain of 5.609.

Keywords: Injection Molding, Flash Defect, Taguchi Method.

Suzuki Carry Front Lower Control Arm Design Development Using Topology Optimization

Cahya Alam Darmatria[1, a)], Redyarsa Dharma Bintara[2, b)], Suprayitno[3, c)]

[1,2,3]*Mechanical Engineering, State University of Malang, Malang, Indonesia*

a) Corresponding author: cahya00alam@gmail.com
b) redyarsa.dharma.ft@um.ac.id
c) suprayitno@um.ac.id

Abstract. Vehicle weight reduction leads to less fuel consumption and reduced CO2 emissions. In this study, the component that is considered for weight loss is the Front Lower Control Arm (FLCA) on the Suzuki Carry. Topology optimization is a method used to reduce the weight of vehicle components. This research uses computer simulation with ANSYS software to test the structural strength and topology optimization process. FLCA geometry modeling is done using 3D Scanning in order to get an accurate geometry. The value of the FLCA design mass after optimization is 4,075 or a decrease in mass of 0.779 kg (16.04%).

Keywords: Front lower control arm, Topology optimization, Mass reduction.

Effect of Nickel Electroplating Time on Corrugated Metal Gaskets Performance

Isa Ibnu Ahbar[1], Didik Nurhadiyanto[2, a)], Mujiyono[3], Febrianto Amri Ristadi[4], Ardani Ahsanul Fakhri[5]

1,2,3,4,5 Department of Mechanical Engineering Education, Universitas Negeri Yogyakarta, Indonesia

a) Corresponding author: didiknur@uny.ac.id

Abstract. Metal gaskets is an alternative to asbestos gaskets, but it still have many weaknesses. The main focus of this research is to find the optimal electroplating time to prevent leakage.This research was started with forming the gasket material, and then followed by coating process. The method that used in coating proses was electroplating with nickel solution. The gasket material used SUS304 sheet with 1,5mm of thickness. Water pressure test was used to test leackage with 2 MPa, 4 MPa, 6 MPa, and 8 MPa presurre for 5 minute test duration. The result this research are (1) electroplating are effected by time, the longer time applied more nickel attached to the gasket, (2) the best performance on nickel electroplated gasket was on 32 minute and 45 second plating time, (3) electroplated nickel gasket performance was better than the original to prevent leakage from 2 to 8 MPa water pressure.

Keywords: Corrugated metal gasket, SUS304, electroplating, performance

The Effectiveness of Interactive Multimedia-Based Learning Media on Entrepreneurial Skills

Nur Kholifah[1, a)], Triyanto[2], Muhammad Nurtanto[3], Reza Rachmadtullah[4,]

[1]*Universitas Negeri Yogyakarta, Karang Malang, 55281 Yogyakarta, Indonesia*
[2]*Universitas Negeri Yogyakarta, Karang Malang, 55281 Yogyakarta, Indonesia*
[3]*Sultan Ageng Tirtayasa University, Raya Palaka Km.3, 42124 Banten, Indonesia*
[4]*Universitas PGRI Adibuana Surabaya, Dukuh Mananggal XII, 60234 East Java, Indonesia*

[a)]Corresponding author: nur.kholifah@uny.ac.id

Abstract. This research is motivated by the low entrepreneurial skills of students in vocational schools. This study aims to determine the effectiveness of interactive multimedia-based learning media in improving entrepreneurship skills. This study uses a quasi-experimental method with a Nonequivalent Pre-Test and Post-Test Control Groups Design. Based on the results of the Mann-Whitney U test of 1671.50. Value of Sig. (2-tailed) was obtained at 0.00. It turned out that the acquisition of Sig. (2-tailed) is smaller than the proposed significance level of 0.05 (0.00<0.05). Other evidence is reinforced by the Mean Rank value between the experimental class posttest and the control class posttest, namely the experimental class of 101.36 while the posttest reached 61.64 with a large difference of 39.72. Seeing the achievement of the Mann-Whitney U test, it can be concluded that the use of interactive multimedia-based learning media in the experimental class and other media in the control class has a positive effect on improving entrepreneurship skills in vocational students. Thus, it can be concluded that there is a significant difference between the post-test of students' entrepreneurship skills in the experimental class and the control class.

The Effect of Lathe Machine Vibration on Practice Product of PIRI 1 Vocational High School Students

Heri Wibowo[1, a)] and Hari Sakti Dwi Setiawan[1, b)]

[1]*Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University*

[a)] Corresponding author: heri_wb@uny.ac.id.
[b)] harisaktids1@gmail.com

Abstract. This research aims to determine the level of vibration of the lathe and the influence between machine vibrations with the results of the practice products of students of machining techniques of PIRI 1 Vocational High School in Yogyakarta. This research is a quantitative research with an experimental approach. The subject of this research was class XII students and the object of this study was the lathe in the machining workshop of PIRI 1 Vocational High School. Data collection techniques using direct observation. Data analysis techniques using descriptive analysis and regression analysis. Based on research results it is known that, lathe number 2 is included in the level of unacceptable (dangerous). Meanwhile, lathes number 3 and 6 are in the satisfactory level. And, lathe number 7 is included in the level of good. Furthermore, there is no influence between the vibration of the lathe with the results of the practice products of the students majoring in machining engineering at PIRI 1 Vocational High School. The contribution of the influence of variable lathe vibration by 9%. And the regression equation is Y = 57,207 + (-11,030) X.

Modeling 5S Adoption for the Halal Industry

Syukri Fathudin Achmad Widodo[1, a)], Betania Kartika Muflih[2], Widarto[3], Apri Nuryanto[4], Tri Adi Prasetya[5], Chrisna Tri Harjanto[6], and Martanto[7]

[1,3,4,5,6,7]*Department of Mechanical Engineering Education, Universitas Negeri Yogyakarta, Indonesia*
[2]*Halal Research and Training, International Islamic University Malaysia, Malaysia*

[a)] Corresponding author: syukri@uny.ac.id

Abstract. With the majority of the Muslim population, the halal industry is a very large market share in Indonesia and Malaysia. The need for workers who understand the halal production process will also continue to grow. The university as an educational institution is responsible for preparing its graduates to enter the world of work. Character strengthening is one of the things that need to be done by universities. Strengthening the 5S character (Sort Set in Order, Shine, Standardize, and Sustain) can be an option in shaping the character of students in accordance with the demands of the halal industry. This study aims to develop a 5S character strengthening model that is in accordance with the demands of the halal industry. Model development is carried out using the Research and Development (R&D) Model by Borg and Gall. The product validity test was carried out by expert judgment. The results of the assessment by K3 experts and halal experts show that the model made is declared good and feasible to use. The final result of this study is a combination of the implementation of the 5S model in the halal industry. This alloy can be used as a guideline for 5S character development which aims to prepare students to work in the industrial world, especially the halal industry.

Android-Based Mobile Learning: AC System in Vocational Education using Four-D Model

Rabiman[1, a)], Arif Bintoro Johan[2, b)], Fakhrul[3, c)]

1,2,3Universitas Sarjanawiyata Tamansiswa, Jl.Batikan, Tuntungan UH III/1043 Umbulharjo

[a)] rabiman@ustjogja.ac.id
[b)] Corresponding author: fakhhrul91@gmail.com
[c)] abeje_janoko@yahoo.com

Abstract. The objectives of this study are (1) to produce learning media for Android-based AC systems at SMK Insan Cendekia Yogyakarta (2) to test the feasibility of the media assessed by material and media experts using a questionnaire. The subjects in this study were material experts for lecturers and teachers, media experts and students of class XI TKR SMK Insan Cendekia Yogyakarta users of the learning media of the Android-based AC system that was developed. This research is included in the research and development (Research and Development) that uses the 4D model. This research model is carried out in the define, design, development and dessemination stages. The results of the research show that (1) the development of learning media for an Android-based AC system can be done using the development of a four-D model consisting of the define, design, develop, disseminate, and (2) the development of learning media for an Android-based AC system is feasible to use as material. teaching, this is evidenced by the results of the percentage validation of Lecturer and Teacher material experts, which is 82.275% and 89.575% is in the "very feasible" category. Meanwhile, media experts get a score of 88.75% in the "very decent" category. The last stage is product testing. The product trial was carried out in two stages, namely a trial with a small group with a number of respondents 14 students obtained a percentage of 76.186% in the "very feasible" category, and a large group trial with 21 respondents getting a score of 82.68% with a category "very feasible" the conclusion of this research is in the category of representation above 75% where in that category the trial on this media is very feasible to use, and suggestions for further developers to be able to develop better about this application.

Keywords: Ancroid-Based Learning Media, AC System, Light Vehicle Engineering

Learning Technology using Flipping Book in Vocational Education: ADDIE Model

Rabiman[1, a], Faisal Oksandi[2], Alfat Khaharsyah[3]

Program Studi Pendidikan Vokasional Teknik Mesin, Universitas Sarjanawiyata Tamansiswa Yogyakarta

[a] Corresponding Author: rabiman@ustjogja.ac.id

Abstract. This study aims to produce Flipping Book-based learning media in Class XI PMKR Learning at Berbah National Vocational School. In addition, to determine the feasibility of the resulting Flipping Book to be used as a learning medium for class XI students at the Berbah National Vocational School, this research is included in the type of research and development (Research and development) using the ADDIE model. The stages used in the Flipping Book media development process are analysis, design, development, implementation and evaluation. Collecting data using observation and questionnaires. This study involved material experts, media experts, teachers and students to get an assessment and student response to the feasibility of Flipping Book-based media. The data analysis technique used is qualitative and quantitative data analysis techniques. The results showed that validation by material experts obtained a percentage of 88% in the very good category, the results of validation by PMKR subject teachers obtained a percentage of 85% in the very good category, the results of validation by media experts obtained a percentage of 87% in the very good category, small class test results obtained a percentage of 90% in the very good category and the results of the large class test obtained a percentage of 89% in the very good category. Based on the data obtained, it can be concluded that Flipping Book-based media is feasible to use in the learning process. So, it is hoped that this research will be tested further to determine the effect of using flipping book-based learning media on PMKR Class XI Subjects for Caring for Main Engine Systems and Valve Mechanisms on student achievement.

Keywords: learning media, based on flipping book, PMKR

Programming The Automatic Tool Color Changing on Machines of CNC-Based Batik Robot Running GRBL-Plotter Firmware

Marsono[1, a] and Yoto[2, b]

[1,2] *Malang State University, Jl. Semarang 5, Malang, Indonesia*

[a] Corresponding author: marsono.ft@um.ac.id
[b] yoto.ft@um.ac.id

Abstract. Coloring the batik fabric is one off the important part of making the batik more beautiful. However, the coloring batik tulis till now is using the traditional method that needs more time too finishing the batik tulis. The goal of this research is to find the effective design of tool color system on batik robot and develop efficient program on coloring batik tulis using automatic tool color changing on machines of CNC-Based Batik robot running GRBL-plotter firmware. The method used in this study is Parallel Throwaway Prototyping, which consists of several direct experiments with the machine made. The outcomes were as follows: 1. There are 4 pens are mounted in one system tool color changing. 2. The system rotating movement using motor stepper motor to change its color; 3. The rotating degrees of pen color are calculated by dividing the number of steps of one rotation by the degree of rotation angle. The findings of this study suggest that we should pay attention to the calibration in the first step of drawing batik tulis used this machine by calculating and synchronization of the stepper motor or the belt and lead screw because it can affect the precision of the stepper motor movement.

Collaborative Model Design of Virtual Reality

For Banten Tourism Sustainable

Suhendar[1,a)], Nanang Krisdiyanto[2, b)], Alif Maulana[3, c)], Hady Sutjipto[4, d)]

[1,2,3,4] *Universitas Sultan Ageng Tirtayasa*
Jl. Raya Palka Km 3 Sindangsari, Pabuaran, Kab. Serang Provinsi Banten

[1, a)] Corresponding Author: suhendar@untirta.ac.id
[b)] krisdianto@untirta.ac.id
[c)] aliefftuntirta@gmail.com
[d)] hadysutjipto@untirta.ac.id

Abstract. The phenomenon of the development of the world of tourism in this era of globalization shows many very significant changes from the business aspects of accommodation, culinary, tourist attractions, and transportation. The impact that occurs is the imbalance of tourism infrastructure with increasing tourists. In addition, the negative effect that occurs is congestion in various traffic lanes so that foreign tourists think about coming to visit Indonesia. This condition is further exacerbated by the COVID-19 Pandemic which has had a negative impact on the drastic decline in the number of tourists since 2020 [1] [2] [3] compared to the previous number of visits in 2019. Therefore, this study aims to design an integrated Virtual Reality (VR). The collaborative design was developed using research and development (Research & Development) method. This virtual tourism vehicle is to increase market interest and the attractiveness of various tourist industry destinations and the creative economy supporting tourism in Banten. The design results show that virtual reality technology can integrate animated tourism models and three-dimensional videos that can be viewed through mobile communication devices. This will really attract potential tourists before they actually visit the location.

Key Word: Collaborative Model, Virtual Reality, Virtual Tourism, Edu-tourism

Analysis of Erosion Distribution and Sedimentation Rate in Sermo DAM with Usle Method and SDR (Sediment Delivery Ratio) Equation

Iskandar Yasin[1, a], Lilik Hendro Windaryanto[2], Hamid Uke Yohana[3], Putri Novia Ningrum[4]

[1,2,3,4] *Universitas Sarjanawiyata Tamansiswa*

[a] Corresponding author: iskandaryasin@ustjogja.ac.id

Abstract. The watershed that has a critical erosion category that must be handled immediately is the Ngrancah River Basin which is the catchment area of the Sermo Reservoir. In this study, the methods used were USLE and SDR with the help of a Geographic Information System application (ArcGis 10.8). The parameters used in this research are rainfall data from two stations (R), soil type map (K), slope class map (LS), and land use and cover map (CP). The results of the research on estimating the rate of erosion at the Sermo dam are 1,474,542 tons/ha/year. As for the results of the SDR value of 0.04, for the amount of sedimentation carrying capacity is 62042 tons/year. Based on these results, the Sermo dam is included in the category of very severe erosion hazard. Therefore, it is necessary to carry out further processing immediately.

Keyword: Erosion, Sedimentation, Ngrancah, USCLE, SDR.

Students' Ability in Carbon Steel Welding Practice

Khusni Syauqi[1, a], Sugoyono[2], Aan Ardian[3], and Putut Hariyarto[4]

[1, 2, 3, 4] *Yogyakarta State University, Yogyakarta, Indonesia*

[a] Corresponding author: khusnisyauqi@uny.ac.id

Abstract. This study aimed to determine the student's ability to practice carbon steel welding. Students' ability in welding is an important factor in obtaining good welding results and as a provision in obtaining certification. This study uses a quantitative descriptive approach. The subjects in this study consisted of 40 students from the mechanical engineering education study program, Faculty of Engineering, Yogyakarta State University. The research instrument uses a Likert scale with four alternative answers. Data acquisition was analyzed using the quantitative description. The results showed that: (1) the preparation of seam welding by most of the students was still in the good category, (2) the seam welding process by most of the students was still low; and (3) the welding results of most of the students are still sufficient. Students' ability in welding practice must be improved through preparation, and good processes, so that they will produce welds that are by standards.

Keywords: Ability, welding, practice

Implementation of the Collaborative Online Learning Strategy to Increase Student Involvement in The Development of Work Preparation Sheet on Lathe Machining

Thomas Sukardi[1, a], Dwi Rahdiyanta[2], Bambang Setiyo Hari Purwoko[3], Widarto[4]

[1, 2, 3, 4] *Yogyakarta State University, Yogyakarta, Indonesia*

[a] Corresponding author: thomas_sukardi@uny.ac.id

Abstract. Online learning has been used massively in learning during the Covid-19 pandemic. Although it has a weakness, namely the decrease in student involvement in learning, online learning will still be used in this new normal period. This research aims to; (1) knowing the differences in student involvement in Lathe Machining learning with collaborative online learning (COL) strategies and online learning (OL) strategies; (2) knowing the difference in Lathe Machining learning outcomes between students in the class with the COL strategy and the class with the traditional OL strategy; ; (3) Differences in Lathe Machining learning outcomes between students with high involvement in class with COL strategy and class with traditional OL strategy; (4) Differences in Lathe Machining learning outcomes for students with low involvement in class with COL strategy and class with traditional OL strategy. This research is a quasi-experimental, the sample selection for the experimental class and the control class is done randomly from eight Lathe Machining classes. Data analysis in this study used 2-way ANOVA with one treatment variable and one attribute variable. The results showed; (1) student involvement in Lathe Machining learning with the COL strategy is higher than with the traditional OL strategy; (2) the learning outcomes of Lathe Machining with COL strategy are higher than those with traditional OL strategies; (3) there is no difference in Lathe Machining learning outcomes of students with high involvement between the COL class and the traditional OL class; (4) there is no difference in students' Lathe Machining learning outcomes with low involvement between the COL class and the traditional OL class

E-Module Automotive: As an Improvement of Vocational High School Students' Learning Outcomes

Suyitno[1, a)] Singgih Fajar Iyanto[2, b)] Dianna Ratnawati[3, c)] Sulaeman Deni Ramdani[4, d)], Muhammad Nurtanto[5, e)] Bayu Gilang Purnomo[6, f)]

[1,2] *Universitas Muhammadiyah Purworejo, Indonesia*
[3] *Universitas Sarjanawiyata Tamansiswa, Indonesia*
[4,5] *Universitas Sultan Ageng Tirtayasa, Indonesia*
[6] *Universitas PGRI Yogyakarta, Indonesia*

[a)] Corresponding author: yitno@umpwr.ac.id
[b)] singgihfi182170074@gmail.com
[c)] dianna.ratnawati@ustjogja.ac.id

Abstract. Study this aim for (1) For knowing how development of E- module on the eye lesson Automotive Basics _ for increase results study students . (2) For knowing how the eligibility of the E-Module to be applied to eye lesson Basic Automotive Jobs in Vocational High School. (3) For knowing enhancement results study student class X TKRO at SMK N 1 Alian after using the E-Module work base automotive . Method used _ in study this is Research and Development (RnD) with the ADDIE development model , namely : 1) Analysis, 2) Design, 3) Development , 4) Implementation, 5) Evaluation. population study student class X SMK N 1 Alian in 2022 there are 34 students . Instrument data collection using tests and questionnaires response each student _ already tested try and already Fulfill condition validation . Data analysis using T-Test test. As for the results research that has been held so could concluded that E-Module development on the eye lesson profession base automotive could increase results study students of SMK N 1 Alian . design beginning consulted to media expert . Validation result showing that the E-Module media on the eyes lesson profession base automotive validated by two _ validator expert, namely validator 1 (media expert) gets percentage 85% of percentage highest 100% and enter category " good " and validator 2 (experts) material) get percentage 92.5% of percentage highest 100% and enter " good " category . Application of media with group small get the percentage of 93.5% is classified as " good ". Next results study post test control class get the average value of 63.5 and post-test class experiment get the average value is 79.5 which means there is increase results study of 16. The results of the paired samples test t-test analysis are obtained score significance (2-tailed) 0.001<0.05 indicates existence significant difference _ to use of E-Module on the eyes lesson profession base automotive.

Augmented Reality Research in Vocational Education for The Past 5 Year: A Bibliometric Approach

Tinesa Fara[1, a)] and Mochamad Bruri Triyono[2, b)] Priyanto [3, c)]

[1,2,3] Department of Technology and Vocational Education, Yogyakarta State University, Indonesia

[a)] Corresponding author: tinesafara.2022@student.uny.ac.id
[b)] bruritriyono@uny.ac.id
[c)] priyanto@uny.ac.id

Abstract. This study aims to reveal research and development trends over the last five years related to Augmented Reality (AR) in Vocational Education using bibliometric analysis. There were 96 articles, which were narrowed down to 92 using the exclude method at the time of the study. The results obtained from this analysis are Bibliography category Country, Bibliography category Most Relevant Source, Bibliography category Authors, Bibliography category Affiliation, Bibliography category Document by subject area, Most Frequent Word from keyword plus, and Co-Occurrences of the Author Keywords. Indonesia has the most publications, supported by the researcher Putra ABNR from the State University of Malang, who has contributed five articles over the past five years and focuses on AR development in Vocational Education. In addition, augmented Reality, engineering education, and vocational education are the top 3 in the Most Frequent Word from keyword plus, which indicates that research in this field is related and still developing. Trends in this research and the development of Augmented Reality in Vocational Education have been discussed in the article.

Effect of Drilling Cycle Selection on the Dimensions, Roughness and Machining Time for St37 Steel

Sutopo[1], Bernadus Sentot Wijanarka[2], Aris Eko Wibowo[3, a], Tiwan[4]

[1,2,3,4] *Department of Mechanical Engineering Education, Universitas Negeri Yogyakarta, Indonesia*

[a] Corresponding author: arisekowibowo@uny.ac.id

Abstract. The drilling process with a CNC machine is required to be able to produce good holes. The drilling process with CNC machines can be carried out in several ways, known as the drilling cycle, namely the G73, G81, G82, and G83 codes. In fact, the selection of drilling cycle (G code) in CNC milling has a significant effect on the size and roughness quality, as well as machining time efficiency. Shortening the cycle time of the machining process is also an effort that is always made to increase production capacity. This study reveals the effect of selecting the drilling cycle (G code) on the dimensions, roughness, and machining time of St37 Steel. This research used an experimental method. This experiment used the HSS drill twist cutting tool. The instrument for measuring the dimensions of the hole diameter was a vernier caliper with an accuracy of 0.01 mm. The instrument for measuring surface roughness is the surface roughness tester. Machining time is recorded on the CNC machine. The experimental results show that the selection of drilling cycle (G code) with the same cutting speed affects the dimensions of the diameter and roughness of the hole and affects the machining time.

The Effectiveness of Learning in AutoCAD using TeamViewer Application: Online Learning in Vocational Education

Muhammad Nurtanto[1, a], Mustofa Abi Hamid[2, b], Suyitno[3, c], Farid Mutohhari[4, d], Nur Kholifah[5, e] and Listy Nurul Fadillah Haely[6, f]

[1]*Sultan Ageng Tirtayasa University, Raya Palaka Km.3, 42124 Banten, Indonesia*
[2]*Sultan Ageng Tirtayasa University, Raya Palaka Km.3, 42124 Banten, Indonesia*
[3]*Universitas Muhammadiyah Purworejo, Purworejo Regency, 54151 Central Java, Indonesia*
[4]*Universitas Negeri Yogyakarta, Kolombo Yogyakata No.1, 55281 Yogyakarta, Indonesia*
[5]*Universitas Negeri Yogyakarta, Karang Malang, 55281 Yogyakarta, Indonesia*
[6]*Sultan Ageng Tirtayasa University, Raya Palaka Km.3, 42124 Banten, Indonesia*

[a] Corresponding author: mnurtanto23@untirta.ac.id

Abstract. AutoCAD is a compulsory subject for students in the Light Vehicle Engineering major. (TKR). Mastery of student learning on AutoCAD material is important to note. However, during the Online class, there is no practical solution to ensure the success of learning AutoCAD. This study aims to determine the effect of learning AutoCAD online by utilizing the TeamViewer application. This study uses a Quasi-Experiment design with Post-test Only Control Group Design. Sampling used non-probability sampling with a purposive sampling technique. A total of 32 students in vocational schools were involved in the control and experimental groups. Data collection in this study was carried out using observation and test techniques. Data were analyzed by descriptive statistics and inferential statistics t-test. The results showed that the average student achievement in AutoCAD subjects was 63,125 in the experimental class and 50,625 in the control class. Based on the results of the t-test obtained the value of Sig. (2- tailed) of 0.027. With an alpha of 0.05, these results indicate that the value of Sig. (2-tailed) < significance level, so H_1 is accepted, and H_0 is rejected. Thus, it can be concluded that the use of the TeamViewer application in online AutoCAD learning has a significant effect on student learning outcomes.

English Language Teaching in Islamic-Based Vocational School in Rural Area

Yuyun Yulia [1, a)], Annisa Cahya Insani [2]

[1, 2]*Universitas Sarjanawiyata Tamansiswa*

[a)] Corresponding author: yuyun.yulia@ustjogja.ac.id

Abstract. Pandemic Covid-19 has been decreasing since vaccination is widely injected across areas, in particular, in Yogyakarta. The teaching learning process shifted from online to offline and some are blended/hybrid learning modes. The objective of this research is to describe English language teaching which is conducted through *Pembelajaran tatap Muka* (PTM) as well as online teaching and learning in an Islamic-based vocational school in rural area. The researchers used qualitative design, in particular, case study to portray English language teaching and learning as well as its challenge. The result shows that teaching activities are in three phases – pre, while and post – with Moodle platform to help teacher and students in learning activities.

Keywords: online, offline, hybrid learning, blended mode, moodle

Industrial Clinic-Based Industrial Internship Model to Improve Student Competence in Implementing "Merdeka Belajar kampus Merdeka (MBKM)"

Paryanto[1, a)], Sudji Munadi[2], Wagiran[3], Edy Purnomo[4]

[1,2,3,4] *Department of Mechanical Engineering Education, Faculty of Engineering, Universitas Negeri Yogyakarta*

[a)] Corresponding author: paryanto@uny.ac.id

Abstract. MBKM is a policy aimed at equipping students with the various skills needed through the right to study for three semesters outside the study program. Various study programs have taken progressive steps to develop various activities to facilitate learning outside the study program, including internship programs, but are not fully based on the results of a comprehensive evaluation, a complete meaning of the nature of learning outside the campus, as well as mechanisms that are still not structured. This study aims to formulate an evaluation of the implementation of the internship program and formulate an internship model based on Industrial Clinics to improve the competence of students majoring in Mechanical Engineering Education in the context of the implementation of MBKM. This research uses mixed methods with concurrent triangulation strategy. The data were collected through questionnaires, focused group discussions complemented by in-depth observations and interviews with respondents including students, lecturers, and industry partners. The data were analyzed quantitatively and qualitatively through the stages of data reduction, data presentation, conclusion drawing and verification.

Development of Fusion 360 Module for 2D CAD Online Learning

Apri Nuryanto[1, a)], Pardjono[1, b)], Yatin Ngadiyono[1, c)], Syukri Fathudin Achmad Widodo[1, d)], and Virda Hersy Lutviana Saputri[1, e)] Tegar Arif Budiman[1]

Author Affiliations

[1]*Mechanical Engineering Education Department, Yogyakarta State University, Yogyakarta 55281, Indonesia*

Author Emails
[a)] *Corresponding author: apri_nuryanto@uny.ac.id*
[b)]*pardjono@uny.ac.id*
[c)]*yatin_ngadiyono@uny.ac.id*
[d)]*syukri@uny.ac.id*
[e)]*virdahersy.ls@uny.ac.id*

Abstract. The impact of the COVID-19 pandemic on learning is felt, and many students have to carry out online learning. This indirectly has an impact on learning the practice of 2D CAD drawing. While in its implementation it still uses Autodesk Inventor which tends to require adequate computer specs, the memory capacity used is large, causing online student learning to not be carried out as expected. The latest development has developed an application for drawing that is lighter and does not require high computer specs, namely Autodesk Fusion 360. This research aims to develop a 2D CAD learning module using Fusion 360. The research method for developing this learning module uses a 4-D development method consisting of 4 main stages: Define, Design, Develop, and Disseminate. The results of the development were validated by experts as validators and tested on students taking 2D CAD courses. The results indicate that the learning module development product has been successfully developed and is feasible to be used as an online learning tool.

ICTVT

8th International Conference on Technology and Vocational Teachers

ictvt.uny.ac.id

CONTACT US

Faculty of Engineering
UNIVERSITAS NEGERI YOGYAKARTA
UNGGUL, KREATIF, DAN INOVATIF BERKELANJUTAN

Jl. Colombo No.1 Kampus Karangmalang Universitas Negeri Yogyakarta 55281
Phone/Fax: +62274 586734, 542663 (ext, 1276), Email: ictvt@uny.ac.id