

2nd ACEIVE 2018

The 2nd Annual Conference of
Engineering and Implementation on Vocational Education
“Empowering engineering and implementation on vocational education for Industry 4.0.”

FAKULTAS TEKNIK

BOOK OF ABSTRACTS



Faculty of Engineering
Universitas Negeri Medan

03
NOVEMBER
2018

VIP ROOM
DIGITAL LIBRARY
UNIVERSITAS NEGERI MEDAN



[ENG-01]

THE EFFECT OF TYPE F ADMIXTURE AND SILICA FUME SUBSTITUTION TO CEMENT ON EARLY STRENGTH SELF COMPACTING CONCRETE

Rahmi Karolina, Larry Djono

Universitas Sumatera Utara

Abstract

High Early Strength Self Compacting Concrete (HESCC) is a new invention in the world of concrete technology that have workability, durability and high initial strength advantages, so it can be applied well in the pre-cast concrete world. In this research, superplasticizer used is Viscocrete 8045 and Silica Fume filler. The purpose of this research is to know the effect of Viscocrete 8045 and Silica Fume on the mechanical properties of concrete. The samples used are cylinders with 15 cm diameter and 30 cm height with a total of 48 samples using Silica Fume variation of 5%, 10%, and 15% and addition of Viscocrete 8045 as much as 1,5%. From the test result, it is obtained that the value of concrete compressive strength increased due to the addition of the material. Compared with normal concrete, the initial compressive strength of concrete is increased with maximum value on the 15% Silica Fume variation of 13.362% while the final compressive strength of the concrete is increased with the maximum value on the 15% Silica Fume variation of 30.266%. The addition of the material has no impact on the value of tensile strength of concrete. However, at the absorbtion value, the addition of Silica Fume causes a decrease in the absorbtion value of concrete.

Topic:Engineering

[ENG-02]

INFLUENCE OF COOLING SLOPE TECHNIQUE ON MECHANICAL PROPERTIES OF COMPOSITES REINFORCED SIC PARTICLES

T. Tugiman

Universitas Sumatera Utara

Abstract

Cooling slopes are the novel technique in the casting process, it suitable applied in the various alloys to modify microstructure and mechanical properties. In this present work, the cooling slope has been designed and applied in the aluminum matrix composites reinforced SiC particles. Effect of sloping plate system on microstructure and mechanical properties of composites were investigated. The results suggested that the cooling slope can influence the morphologies of composite materials, which correspond to the change in mechanical properties

Topic:Engineering

[ENG-03]**STUDY OF PEAT GASIFICATION CHARACTERISTICS IN A SIMPLE STOVE:
EFFECT OF PEAT SIZES AND AIR-FLOW****Janter P. Simanjuntak****Universitas Negeri Medan****Abstract**

The purpose of this research was to assess the ability of peat as fuels based on stove gasification. The stove was designed and fabricated refer to numerous stoves used by resesearchers and used as the appliance for validation. The stoves tested were the forced draft types with a battery mini fan-assisted to force the controlled air for gasification requirement. Flame temperature was recorded and displayed using K-type thermocouple and thermometer indicator respectively. The operational parameters used were the air flow rates and peat sizes. Calorific or heating value of peat was known by the flame temperature. Air fuel ratio (A / F) was used as the parameters to achieve the optimum air flow and peat sizes inorder to obtain the maximum heat generated from the peat. Peat capability was analyzed by quantify the flame temperature of the flue gas. Gas with a high heat value will show high temperature. From the test results, it was found that the peat with moderate diameter sizes (about 3 cm) was achieved high temperature about 700 0C with (A/F) was about 0,34.

Topic:Engineering

[ENG-04]

FACTORS OF LAND USE CHANGE, CASE STUDY: IN KOTA JUANG, BIREUEN, INDONESIA

Aris Munandar

Universitas Sumatera Utara

Abstract

The land use in the city can change after a period of time, because of the growing demand for a land. The land use of Kota Juang began to change in the year of 2001. This case occurs because of the influence of several factors such as urban expansion, topography, accessibility and human growth. This research aims to identify the influence of those factors to the land use in Kota Juang, Bireuen. This study used qualitative method by using descriptive analysis to analyze the impact of the urban expansion, topography, accessibility and human growth to the land use change in Kota Juang, Bireuen. The results of this study suggest that, in 1990-2000 the land use of Kota Juang was more dominant for agriculture area, but after the urban expansion in 2000-2017 most of the land in Kota Juang is used for the residential, commercial, government, and public area. The agriculture area in Kota Juang has been reduced up to 33,8%. This study can benefit the community, developers and others in the industry to obtain information on the land use changes that occur in Kota Juang. The findings can also be used by the government in evaluating the spatial plans in Kota Juang, Bireuen.

Topic:Engineering

[ENG-05]

**EFFECT OF ORGANIC MATTER ON STABILIZATION WORK OF
PROBLEMATIC SOIL**

Ernesto Silitonga, Meuthia Fadila, Jintar Tampubolon, Iskandar Tambunan

Universitas Negeri Medan

Abstract

Topic:Engineering

[ENG-06]

THE EFFECT OF CURRENT ON SHEAR STRENGTH AND NUGGET SIZE IN RESISTANCE SPOT WELDING OF SCGA270D-45 SHEET METAL

Qomaruddin, R. Hengki Rahmanto, Wahyu Setiadi, Kiswiru Yudha Ningsih

Sekolah Tinggi Ilmu Maritim (STIMar) "AMI"

Abstract

The objective of this paper is to present the effect of current on shear strength, nugget size and to determine the optimal current for spot welding SCGA270D-45 sheet metal of 0.8 mm thickness. The experimental steps conducted in the research were preparation of specimens, spot-welding process with variation of current 10.5 kA, 11kA, 11.5kA, 12kA, and 12.5 kA; specimen testing; analysis and conclusion. Shear strength test was conducted by using tension machine and nugget size test by using Chisel test. Based on the research, it was found that the current variation has effected the shear strength and nugget size with highest current 12.5 kA resulting shear strength 167.1 MPa and nugget size 7.3 mm; the lowest current of 10.5 kA with 121.2 MPa and 1.7 mm of shear strength and nugget size respectively. The optimal current for spot-welding SCGA270D-45 material with thickness 0,8 mm is 11 kA for components belong to A-category as per requirement of Toyota Engineering Standard TSH5600G.2012. Spot Welding

Topic:Engineering

[ENG-07]**THE RELATIONSHIP OF PROJECT WORK LEARNING AND PERFORMANCE
OF INDUSTRIAL PRACTICE WITH WORK READINESS IN THE FIELD OF
WELDING 12TH GRADE STUDENTS FIELD OF ENGINEERING SKILLS IN
BINJAI CITY 2017/2018****Eka Daryanto, Arief Muhammad****Universitas Negeri Medan****Abstract**

The purpose of this study were (1) to find out the relationship between project work learning and student work readiness, (2) the relationship between the performance of industry practices with student work readiness, (3) knowing the relationship between the project work learning industry practices and performance on student work readiness,. The object of this research is the 12th grade students of Vocational Schools in Binjai City that add up to 65 people. The design of research using the correlational approach, the data were analyzed using Pearson product moment correlation, and multiple linear regression. The results revealed that: (1) there was a relationship between project work learning and student work readiness with a correlation coefficient ($r = 0,3428$) with a significant $\alpha 0,05$. (2) there is a positive relationship between the performance of industrial practices and job readiness with a correlation coefficient ($r = 0.3646$) with an $\alpha 0.05$ (3) there is a positive relationship between the project learning model work and the performance of industry practices with job readiness with multiple correlation (F_{count}), 5.322 The results of the study show that project work learning I and the performance of industrial practices have a significant relationship student work readiness.

Topic:Engineering

[ENG-08]**Analysis Of The Use Effectiveness Of Lighting Lamps Type For Household Needs****Muhammad Amin and Nelson Sinaga****Universitas Negeri Medan****Abstract**

Lighting is very important in a variety of activities at home, so it becomes dominant in the review of electricity consumption needs. The problems faced by consumers in choosing the use of lighting lamps generally only choose based on the type of lamps with low prices, without taking into account the quality of light and electricity used. This study aims to compare several types of lamps based on the selling price, the quality of light produced and the use of electrical energy. The results of the study recommend the type of lamp that is considered efficient for use in the home. The research method uses an experimental method. The study was conducted by testing the light produced, the amount of electrical power used, and the resistance to extreme voltage. Data collection techniques are carried out by measurement and testing. Data analysis was carried out with a quantitative approach and continued with qualitative analysis. The results of the study show that (1) the type of LED lights has the most efficient use of electric energy, (2) types of energy saving lamps produce effective light, and (3) LED lighting components have better ability to deal with extreme voltages.

Topic:Engineering

[ENG-09]**THE EFFECT OF THE USE OF FUEL TYPES ON TORSION, POWER AND
EMISSION OF GAS FOR K3VE GASOLINE VEHICLES WITH COMPRESSION
RATIO 11:1****Suherman, Khoiri, Andi Bahar****Medan State University****Abstract**

This study aims to: (1) know the effect of the use of fuel types (premium, pertalite, and pertamax) on torque, power, and exhaust gas composition of K3VE type gasoline vehicles with a compression ratio of 11:1. This study was experimental research. The independent variable in this study were (1) premium fuels with Research Octan Number (RON) 88 values, pertalite with RON 90 values, and pertamax with RON 92 values. The dependent variable are (1) the torque resulting; (2) power; and (3) exhaust gas composition. The data in this study were obtained from testing the use of each fuel in a K3VE type gasoline vehicle using the Kernel type rdm 600 dyno test chassis and emission testing equipment at the Automotive Engineering Laboratory, Faculty of Engineering, Medan State University. Tests for each type of fuel are carried out five times. Data from testing the use of each type of fuel is analyzed: (1) descriptively to know the output of torque, power, and the composition of exhaust emissions from each type of fuel; (2) different tests using Kruskall Wallis test. The results of the analysis show that there is no significant difference between torque, power and exhaust gas composition from the use of the three fuels tested.

Topic:Engineering

[ENG-10]

BRICK COST ANALYSIS BASED ON DIMENSIONS

Putri Lynna A. Luthan, Nathanael Sitanggang, Harun Sitompul

Universitas Negeri Medan

Abstract

This study aims to compare the unit price of the cost of a brickworks between the bricks with size based on market and based on with Indonesian National Standard (SNI) 2008 for brick wall instalation. The sample was determined by a random sampling technique with 100 bricks that traded in Medan City. The data collection tool used is open questionnaire. Data analysis done by using descriptive statistical analysis and unit price analysis based on SNI 6897: 2008. The results found that there is a difference in the unit price of the brickworks between bricks with SNI size and brick with market size, that is 11.45%. The installation of a wall with brick size according to SNI is more cost effective compared to the of bricks with market size. This finding can be used by planner and contractor consultants as a basis for making decisions to make offers in accordance with the availability of brick materials traded in the area around the project

Topic:Engineering

[ENG-11]**BOTTOM ASH AS CEMENT SUBSTITUTION IN SUB BASE ROAD PAVEMENT****Indra jaya Pandia, Irwan S Sembiring, Ika Puji Hastuty****Universitas Sumatera Utara****Abstract**

Road pavement is a construction that is built on a subbase layer that serves to sustain traffic loads, so the quality of the subbase must be good. In Indonesia, the bearing capacity of subbase is expressed by the CBR (California Bearing Ratio) value where the CBR value is a value that states the quality of subbase compared to standard material in the form of stone which has a CBR value of 100%. Subbase in the new road construction can be in the form of original soil, embankment or excavated soil that has been compacted to reach a maximum density of 95%. Bottom ash is a material that does not burn perfectly from coal. The bottom ash has a particle size that is larger and heavier than fly ash with the characteristics of dark gray granular shaped pores so that is considered capable of reducing the use of sand. The purpose of the study is to estimate the maximum dry content weight and optimum water content of a sub material and to know the CBR value of the addition of bottom ash in the subbase of pavement. The combination of mixture for bottom ash is 2%, 4%, 6%, 8%, 10%, 12% and 14%, with curing time for 7 days. From the research, CBR testing shows that the use of bottom ash at 14% variation obtained CBR of 8.31%, the estimation with the Goswami Model looks easier and more effective because only requires percent fines, and maximum dry weight and optimum water content have a significant relationship to percent of fines.

Topic:Engineering

[ENG-12]

**EVALUATION OF COMPRESSIVE STRENGTH INVESTIGATION ON JOBMIX
TEST OBJECT AND CORE DRILL TEST OBJECT**

Torang Sitorus

Universitas Sumatera Utara

Abstract

Topic:Engineering

[ENG-13]

VALUE ENGINEERING IMPLEMENTATION ON CONSTRUCTION PROJECT OF SUZUYA PLAZA TANJUNG MORAWA

Syahrizal

Universitas Sumatera Utara

Abstract

A construction project cannot be separated from costs, time, human resources and natural resources. Every project implementer always wants to be able to complete a construction project at the most economical cost possible. But this must be done with techniques that have been tested for success. The cost-saving technique used must still pay attention to the quality, reliability, and usefulness of a building that is being worked on. One of the saving techniques that have been tested for success is value engineering. In an alternative selection, an analysis of the advantages and disadvantages of the ideas obtained in the creative stage is carried out. The assessment factors carried out on the alternatives to be chosen are initial costs, aesthetics, implementation time, level of implementation, durability, level of comfort, and level of environmental friendliness. The alternative chosen is an alternative that has the highest assessment results in the analysis stage, then calculating the costs required in the next stage. Work items that have the highest costs are on roof work with a total initial cost of Rp. 434,560,000.00. After value engineering carried out, it is obtained that the selected alternative is using a 0.35 mm zinalume roof with a savings of Rp. 183,123,584 of the initial cost. The savings are around 3.6% of the total cost of the analyzed structure. Thus, one of the objectives of value engineering application which is cost savings is achieved.

Topic:Engineering

[ENG-14]

LIFE CYCLE COST IDENTIFICATION ON BUILDING MAINTENANCE OF BADAN PENGELOLA KEUANGAN DAERAH PEMATANGSIANTAR

Syahrizal

Universitas Sumatera Utara

Abstract

Badan Pengelola Keuangan Daerah Pematangsiantar has been established since 1981 and has been operating for more than 30 years. In order for the function of the building not to decrease during the life of the plan, routine maintenance is needed. However, maintenance carried out on the building so far has only been carried out in the events of damage or just as needed. Therefore, it is necessary to conduct a Life Cycle Cost study at Badan Pengelola Keuangan Daerah Pematangsiantar to analyze the economic value of the building by considering the operating costs throughout the life of the plan. The purpose of this research is to make a long-term plan of Life Cycle Cost and to identify maintenance components of the building by making a financial schedule of maintenance costs over the life of the plan and to know the biggest maintenance costs. From the results of the research carried out, the total maintenance costs for the next 15 years amounted to Rp 2,052,491,356 which consisted of mechanical components maintenance amounted to Rp 386,534,267, electrical components amounted to Rp 1,078,841,811 and external spatial components amounted to Rp. 578,115,279. As well as the biggest maintenance costs on the maintenance of all components reviewed are the maintenance of the electricity network with an average weight for the next 15 years of 29.86%.

Topic:Engineering

[ENG-15]

ANALYSIS OF BAMBOO MECHANICAL PROPERTIES IN THE MEDAN WITH FINITE ELEMENT METHOD

Muhammad Agung Putra Handana, Besman Surbakti, Hadijah Utami, Rahmi Karolina

Universitas Sumatera Utara

Abstract

For the use of bamboo in the construction field, the mechanical properties of bamboo used are very important to know. Some properties of bamboo mechanics include: flexural strength f_m , k, tensile strength parallel to fibers f_t , 0, k, compressive strength parallel to fibers f_c , 0, k, compressive strength perpendicular to fibers f_c , 90, k, and shear strength. This study aims to analyze the mechanical properties of bamboo in the Medan region in Deli Serdang, Langkat, and Serdang Bedagai districts, with a finite element method simulated using ANSYS Workbench 15 software. And to find out what type of bamboo produces the highest stress. The results of this analysis show that the type of bamboo that produces the greatest stress in the Deli Serdang region is Duri bamboo, in the Langkat region, namely Kuning+ bamboo, and in the Serdang Bedagai region, betung bamboo.

Topic:Engineering

[ENG-16]

**EFFECT OF PARTICLE SIZE DISTRIBUTION OF ADDED MATERIAL ON
IMPROVING CONCRETE STRENGTH**

**Ronald butar-butur, Parulian Purba, Parlaungan Hutagaol, Juanda Sianipar,
Ernesto Silitonga**

Universitas Negeri Medan

Abstract

Topic:Engineering

[ENG-17]

PYROLYSIS OF PLASTIC WASTE INTO FUEL OIL

Siman, Bisrul Hapis Tambunan, Janter P. Simanjuntak

Universitas Negeri Medan

Abstract

Plastic distillation with pyrolysis method is one of the ways that can be used to convert plastic waste into useful chemicals and fuel oil. The purpose of this research is to design a simple plastic waste distillation design model, knowing the oil yield that can be obtained and the calorific value of oil from plastic distillation. The distillation device consists of a 12-liter volume reactor and a condenser with 0.5-inch copper pipe formed spiral with a total length of 1.5 meters and liquid cooled. The test was carried out with 2 kg Polyethylene Terephthalate type plastic material per process with 3 variations of temperature of 300 ° C, 350 ° C, 400 ° C and using LPG as fuel. The test results, the highest amount of oil produced is 65 gr at a pyrolysis temperature of 400 ° C with the heating value obtained from the distillation oil is 1537 J / gr.

Topic:Engineering

[ENG-18]**THE CHARACTERISTICS AND MANAGEMENT MODEL OF A RELOCATION
RESIDENTIAL FOR REFUGEES AFFECTED ERUPTION OF MOUNT
SINABUNG****Rachmat Mulyana, Meuthia Fadila, Kemala Jeumpa****Universitas Negeri Medan****Abstract**

The community holds the key role in the paradigm change of infrastructure management from government subsidies to became independent community-based. The success factors of community-base management infrastructure system of the relocation residential are the behavior change of the community and the active role of community leaders and the government. The study objectives are: (1) to identify the characteristics of the dwelling remains, and (2) to find out the model of community-based residential facilities and infrastructure management. The study locations are the residential relocation area of refugees that affected of Mount Sinabung eruption at Karo Regency of North Sumatra Province. The place named by Huntap Surbakti I and III. The sample is 50 that taken randomly from 113 dwellers. The data collection method is obtained from the secondary data, field observations, structured interviews of the occupants and some community leaders due to maintain the infrastructure management. The data were analyzed by using descriptive analysis of evaluative against fixed occupancy characteristics and technical aspects of systems management, financing and institutional models. The settlement Huntap Surbakti I and III have full facilities and infrastructure for residential namely: water supply, domestic waste management, drainage, integrated waste management facility, park and hydrants. Huntap Surbakti I and III have the following characteristics: most of the house (46%) has a building area of 35 m² of and open space area of 40 m² with the total land area of 75 m². The average number of residents in every house is 3 persons with the status of ownership the majority (92%) belong to themselves. The study finds out that the facilities and infrastructure management model that desired by the occupants is community a community-based management with the source of fund from the community itself. Based on the characteristics and management model, the Huntap Surbakti I and III settlement area could be categorized as the healthy and environmentally friendly residential.

Topic:Engineering

[ENG-19]

DISTINGUISH PERCENTAGE VARIATION OF ADHESIVE ON WASTE BURNING PROMPTNESS OF DURIAN SKIN BIOMASS

Sahala Siallagan and Indra Koto

Universitas Negeri Medan

Abstract

Medan, the third biggest town in Medan, is the center of industry, trade and education. The growth of Medan city has impact on waste problem. Durian fruit, an icon in Medan tourism is famous, available in everyday, nice taste and fragrant. The growth of Medan has side effect with the waste of durian skin significantly and certainly needs to resolve immediately. Innovation by technology development is used to process organic waste to become bricket is one of the ways to solve waste problem with advantage economically as well as reducing unemployment. The technology built is durian skin chopper, rotary bio carbon machine and bricket press with pneumatic system and amount of tapioca adhesive in order to get effective burning promptness (gr/s). The usage of durian skin waste may reduce the waste problem, unemployment and energy needs.

Topic:Engineering

[ENG-20]

**RELATIONS OF ATTERBERG LIMITS AGAINST GRAIN SIZE OF KAOLINITE
CLAY**

Nahesson Panjaitan

Universitas Negeri Medan

Abstract

Topic:Engineering

[ENG-21]**SINGLE TUNED PASSIVE FILTER ANALYSIS TO REDUCE HARMONIC FLOWS
ON THE MANUFACTURING INDUSTRY****Muhamamad Dani Solihin, Surya Hardi, Syafruddin HS****Universitas Sumatera Utara****Abstract**

Harmonics are components of a sinusoidal waveform where the frequency is a multiple of integers of the fundamental frequency. Harmonics is also a disturbance that occurs in electric power distribution systems due to the distortion of current and voltage waves. Single-Tuned Passive Filter is a filter consisting of passive components R, L and C connected in series. Single Tuned Passive Filter will have a small impedance at the resonant frequency so that currents that have the same frequency as the resonant frequency will be deflected through the filter. This study aims to reduce harmonic currents in the manufacturing industry using MATLAB / Simulink in the manufacturing industry. Research Results Shows that from the simulation results before the filter installation, the results of THDi harmonic current data were 18.28% and it was close to the measurement results of 18.72%. From the simulation results after the filter installation, the results of THDi harmonic current data are 11.02%. Harmonics that exceed the limits of the IEEE 519-1992 standard are found in the 3rd and 11th harmonics. After installing a single tuned filter using MATLAB / Simulink on the 3rd harmonic the big harmonics are 15.08% and after installing a large single tuned harmonic filter to be 2.80%. Likewise, the size of the 11th harmonic is 6.33% to 0.36%. In other harmonics there is an increase in harmonics not too large and still below the standard of IEEE 519-1992

Topic:Engineering

[VoE-01]**ANALYSIS OF THE DIFFICULTIES OF VOCATIONAL HIGH SCHOOL
TEACHERS IN MECHANICAL ENGINEERING PROGRAM IN IMPLEMENTING
2013 CURRICULUM IN MEDAN CITY****Robert Silaban, Janter Simanjuntak, Lixpen Saritua Panjaitan, Hidir Efendi****Universitas Negeri Medan****Abstract**

This study aims to: (1) describe the level of difficulty of the teacher in planning, implementing and evaluating mechanical engineering and (2) knowing what dimensions are most difficult for teachers in mechanical engineering learning based on 2013 curriculum in the city of Medan. This research is a descriptive study with a quantitative approach. The population of this study were all SMK mechanical engineering teachers in the city of Medan, amounting to 36 people. Data collection techniques used are questionnaires.. The data analysis technique used is statistical-descriptive analysis. Based on the results of the study showed that: (1) The level of difficulty of the teacher in the main task and function of the teacher generally included in the category of not difficult that is equal to 80.55%. However, there are still some teachers in the very difficult category, which is 5.56%. (2) the teacher in carrying out the stages of planning, implementing and assessing authentic learning based on the 2013 Curriculum falls into the category of not difficult. (3) the dimension that is most difficult for teachers in learning based on the 2013 curriculum in Medan City is the authentic assessment dimension; and (4) male teachers and non PNS teachers have more difficulty in carrying out authentic planning and assessment stages in the 2013 Curriculum

Topic: Vocational Education

[VoE-02]**EFFECTIVENESS OF SCIENTIFIC BLENDED LEARNING – PRODUCT
ORIENTED AGAINST STUDENT COMPETENCY ENHANCEMENT****Muhammad Amin and Asahan Pasaribu****Universitas Negeri Medan****Abstract**

This study aims to determine the effectiveness of using Scientific Blended Learning - Product Oriented (SBL-PO). The effectiveness of learning is measured by increasing the ability of soft skills and student learning outcomes from the aspects of knowledge and skills in the lecture process. This study uses a quasi-experimental method. Data collection techniques used observation sheets, questionnaires, and assessment sheets. Data analysis was performed with descriptive and quantitative statistics. Quantitative analysis was carried out by different tests of the Wilcoxon Signed Ranks Test and the Kruskal Wallis Test. The results of the study show that SBL-PO has proven effective in improving the ability of soft skills and student learning outcomes. This is evident from the students' soft skills ability to increase significantly ($p = 0,000$) at each meeting. Improved student learning outcomes also proved significantly ($p = 0.014$) better after using the SBL-PO learning model compared to before using the SBL-PO learning model.

Topic: Vocational Education

[VoE-03]

ENGINEERING STUDENT'S PERCEPTIONS WITH SELF-ASSESSMENT SYSTEM AS AN EVALUATION OF STUDENT PERFORMANCE IN GENERATING PRODUCT

Kinanti Wijaya, Harun Sitompul, Syafiatun Siregar and Sutrisno

Universitas Negeri Medan

Abstract

This research aims to examine and analyze the perceptions of engineering students against the student performance evaluation using self assessment system in generating products in industrial engineering courses. The design of this study is using method of survey through questionnaire. The populations in this research were 30 students of building engineering education, Faculty of Engineering at Universitas Negeri Medan. Sampling method was using total sampling. Hypothesis testing was using partial regression analysis. The results showed that the assessment by using self assessment system effect positively to increased student performance in generating products.

Topic: Vocational Education

[VoE-04]**ANALYSIS OF NEEDS TO BASED COMPETENCY FOR BUILDING
CONSTRUCTION WORKERS****Zulkifli Matondang, Syafiatun Siregar, Sempurna Perangin-angin, Harun Sitompul****Fakultas Teknik Universitas Negeri Medan****Abstract**

Construction workers are people who are directly involved in the construction of a building. Construction workers who work generally have not competence on the building field. This happens because workers in the construction sector generally have a general education background. The purpose of this study is to analyze the basic competencies needed by construction workers. The research sample consisted of 45 construction workers in Medan. The instrument used is the assessment sheet with the rating scale. Analysis of data used descriptive and qualitative. The results showed: 1) Instructional goodness test showed the average value of Aiken's V was 0.87; 2) Basic competencies needed by construction workers are: Acian Work, Floor Work, Stone and Concrete Works, Ceiling Work; 3) Construction workers need training to improve competence. Needs the means and module can be used to improve the basic competencies of construction workers in the Medan city

Topic: Vocational Education

[VoE-05]**DEVELOPMENT OF ENTREPRENEURSHIP INSTRUCTIONAL MATERIALS
USING PRODUCTIVE CREATIVE INSTRUCTIONAL STRATEGIES****Husni Wardi Tanjung, Sumarno, Firdaus****Universitas Negeri Medan****Abstract**

This research aims to develop entrepreneurship instructional materials using productive creative(PC) instructional strategies. The method used is a method of research and development (R & D) by Borg and Gall. Development of instructional materials using R & D approach of Borg and Gall, which is a process used to develop and validate a product. Phase of development of instructional materials based on the model of the development of instructional Dick and Carey, which were designed in three phase, namely (1) The planning and formulation of instructional objectives, (2) the development phase in the form of making entrepreneurship instructional materials using PC instructional strategies, and (3) the formative evaluation phase and revision by material experts, media experts and learning design experts and evaluating one to one, small group, field trial. Data collection techniques were carried out by observation and questionnaire. The results of expert validation, evaluation of one to one and small group, showed that the instructional materials developed were suitable for use. Increased use of instructional outcomes developed instructional materials obtained from the pre-test and post-test performed on fieldtrial, where there was an increase in the value of nstructional outcomes by 81.08%. This research has implications for the improvement of student creativity in building the business field of mechanical engineering.

Topic: Vocational Education

[VoE-06]**WELDING TECHNOLOGY DEVELOPMENT MODULES FOR ANALYZING THE
POWER WELD JOINTS****Khoiri and Keysar Panjaitan****Universitas Negeri Medan****Abstract**

This study aims to develop a welding technology modules to analyze welding joints based on industrial needs. The method used was Research and Development approaching method (R & D) by Borg and Gall. The modules development phases for the studies referred to the development model of ADDIE (Analysis, Design, Development, Implementation and Evaluation) models, namely (1) Needs analysis, (2) Design and formulation of instructional objectives, (3) Development in the form of modules writing (4) Formative evaluation and revision by subject matter experts, instructional media experts and instructional design experts and the evaluation of one to one, small group, field trial. Data collection technique was performed through observations, questionnaires and objectivity tests. The results of this study are modules that are feasible to be implemented and provides information about the strength of the weld joint. To obtain this information, starting from the welding process with the SMAW method. Static tensile test using welding wire AWS E 7016 (X) and AWS E 7016 (Y) using Ultimate tensile strength tool and fracture shape analysis results of static tensile testing using SEM. The results of static tensile strength testing using AWS E 7016 (X) welding wire 4.12% higher than welding using AWS E 7016 (Y) welding wire. SEM photos show that the welding joint using AWS E 7016 (X) welding wire has 24% less porosity compared to welding joint AWS E 7016 (Y) welding wire. This information can be used as a guide for the industry in selecting welding wire.

Topic: Vocational Education

[VoE-07]**RESULTS OF BASIC LEARNING PATTERN'S LEARNED BY MEMORIZATION
LEARNING MODEL****Dina Ampera, Nurhayati, Farihah, Armaini Rambe, Rosnelli****Universitas Negeri Medan****Abstract**

This study aims to find out the basic learning outcomes of the pattern learned by memorization learning model for students in Vocational High School 3 Pematangsiantar as a population, with the instrument using the learning outcomes test, then analyzed by t test. The results of the analysis showed that the learning outcomes learned by conventional learning showed the average results of (57.03), and the learning outcomes learned using the memorization learning model (72.03). Data distribution of learning outcomes with conventional learning is normally distributed where $0.151 < 0.157$ and student learning outcomes data with learning memorization learning models are normally distributed where $0.079 < 0.151$ and homogeneous variance data for f count $1.71 < f$ table 1.82. It was concluded that learning outcomes with memorization learning models were better than conventional learning where the test results showed $t -4.761 < t$ table 1.67. So it proved that there was no effect of student learning outcomes that were learned using memorization learning models with students who were taught using conventional learning. This means that the use of learning memorization learning models can be used as alternative learning in schools.

Topic: Vocational Education

[VoE-08]

CONCEPTUAL THINKING IN FASHION DECONSTRUCTION (HOW TO BEING CREATIVE)

Nining Tristantie

Universitas Negeri Medan

Abstract

Creative industri one of it is fashion is a backbone filled with steadily ideas creation requiring and competetive dinamic innovation offering. Fashion is built through fashion design creative process to initiate bright idea will be accepted by market. The essence of fashion design is creativity. Creativity, Artistic as well as Innovation aim at how originally an object is built conceptually or through design. Creativity implies world new introductory but not for performing an existing design. Fashion design is claimed to represent new elements or genuin solution for problems for globalized competetive. The presence of deonstrucism is a contemporary culture which stipulates novelty and contemporary. Deonstrucism is a fashion style which displays strong fashion character which contains statement and high originality. Deconstructivism represents different attitude in work, represents fashion which has strong concept and character as a differentiator of other fashion that displays revolutionary fashion as every work has colementnfrontative collection. Through library research, ideas exploration and fashion design creation find creative construction to gain essential aspect in the creative process to prepare visual which contains 'novelty' in it. The Aspect and chategory discussed are manners that is prosecuted in fashion work deonstrucism.

Topic: Vocational Education

[VoE-09]**Efforts To Improve Motivation And Learning Outcomes of Students of
Department Mechanical Education, Faculty of Engineering, Medan State
University Through Interactive E-Material Development for E-Learning-Based
Technical Drawing Course****Selamat Triono, Lisyanto and Nur Basuki****Universitas Negeri Medan****Abstract**

Results of Interactive Development of E-Materials for E-Learning-Based Technical Drawing Courses. The results showed that the level of Interactive E-Material feasibility for E-Learning-Based Technical Drawing Course through testing by, (1) material experts in the Drawing Technique subject were in the Valid (0.91) category; (2) learning design experts are in the Valid category (0.89); (3) software engineers are in the Valid category (0.91); (4) individual trials are in very good qualifications (91.43%), small group trials are in very good qualifications (93.63%), field trials are in very good qualifications (97.96%); (5) the practicality test for the lecturer obtains a percentage of 91.25% (practical), the practicality test for students gets a percentage of 96.07% (very practical). the use of Interactive E-Material for E-Learning-Based Technical Drawing Course for students obtains a percentage of 79, 14% (very feasible) and an increase in the average pre-test and post-test scores of 48.7 0 from 23 students with (9 8.26%) has achieved mastery learning.

Topic: Vocational Education

[VoE-10]**THE USE OF LEARNING MEDIA ABOUT THE BEARING CAPACITY OF THE FOUNDATION****Suhairiani****Universitas Negeri Medan****Abstract**

This study aims to improve the mastery of Foundation Supporting material using Macromedia flash learning media and handouts in the application of the learning process. This research is a research and development conducted by developing multimedia-based learning media using modified 4D research procedures. into 3 stages, namely, the defining stage, the design stage and the development stage. As for the instruments used in this study were media expert validation sheets, material expert validation sheets, media evaluation questionnaires by lecturers, student response questionnaires Response questionnaires were given to 30 D3 Engineering students Civil As the subject of research. The results of the research are (1) the definition phase, analyzing the material carrying capacity of the foundation in the Foundation Engineering course, (2) the design stage, the making of media design, in the form of macromedai flash multimedia and Handouts containing an explanation of macromedia flash, (3) , making media products in the form of typing and revision from experts who then tested the product on D3 Civil Engineering students. Based on the validation of experts, lecturers and students it can be concluded that the learning media have good criteria and the results of the student learning interest questionnaire analysis on average all aspects are 86.74% with positive categories.

Topic: Vocational Education

[VoE-11]

**IDENTIFICATION OF LEVEL OF QUALITY OF AROMATHERAPY MESSAGE
OIL FROM PURIFICATION PROCESS OF AROMATIC LEMONGRASS OIL ON
STUDENTS AT SMK NEGERI 8 MEDAN.**

Lina Pangaribuan, Indah Novitasari Tanjung, Ernesto Silitonga

Universitas Negeri medan

Abstract

Topic: Educational Tecnology

[VoE-12]**THE DEVELOPMENT OF STUDENT ABILITY IN MECHANICS AND HEAT
SUBJECT IN BLENDED LEARNING BY USING EDMODO PROGRAM****Muhammad Kadri, Teguh Febri Sudarma****Universitas Negeri Medan****Abstract**

The purpose of this study is to develop the ability of the student based on the blended learning model. Blended learning model is the learning process by using conventional learning model and electronic learning model or it is best known as E-Learning. Since the modernization of technology, the evolution of learning process is also needed. So, the mix of the learning process is frequently used. Therefore, the sresearch of the belend learning is been done. The electronic learning that be used in this study is by using edmodo program. In order to increase the quality of the student on mechanics and heat subject the research has been done by using blended learning. Based on the result of the research, data analysis and the discussion of the result can be concluded that the increasing of the ability of the student in the mechanics and heat subject especially in the problem solving has the average score is from 52,67 in pretest by using only conventional method increases to 88,87 in post test by using blended learning method. Finally the general increasing from student participation in increase to 36, 20.

Topic: Educational Tecnology

[VoE-13]**THE INFLUENCE OF LEARNING STRATEGIES AND LEARNING MOTIVATION
TOWARDS UNDERSTANDING OF READING TEXTS FOR STUDENTS OF
CLASS X SMK PAB 12TH SAENTIS YEAR 2018/2019 ACADEMIC YEAR****Suriwaty ,Naeklan, Mukhtar****Universitas Negeri Medan****Abstract**

SURIWATY .The Influence of Learning Strategies and Learning Motivation towards Understanding of Reading Texts for Students of Class X SMK PAB Saentis 12 Year 2018/2019 Academic Year .Postgraduate Program of Medan State University ,September 2018 Vocatinal High School Education is one of the formal education institutions in the category of secundary education that is quite strategic in realizing the mandate of the government in the field of education .The purpose of this study is determine the improvement of student learning outcomes in English subjects taught by inquiry learning strategies and expository learning strategies in SMK PAB Saentis. The research method is an experimental method that involves two study groups,namely the experimental group with the inquiry strategy and the control group given expository .And students who have high and low learning motivation . The design of the study is presented in a factorial 2x2 design with variance analysis techniques(Anava).To obtain data in this writing reseachers conducted data collection by doing student learning outcomes and learning motivation questionnaires. The result of the study showed that learning using inquiry strategiies had a higher influence on student leaning outcomes compared to expository learning .High and low levels motivation can give different influences significantly to learning outcomes where F count >F table so that for the first and the second research hypotheses ,Ha is accepted and Ho is rejected.Interaction learning strategies with motivation for learning outcomes obtained Fvalue calculated <F table so that for the third research hypothesis ,Ha is accepted and Ho is rejected

Topic:Educational Tecnology

[VoE-14]**THE INFLUENCE OF TRANSFORMATIONAL LEADERSHIP, INTRINSIC
MOTIVATION, AND JOB SATISFACTION ON AFFECTIVE COMMITMENTS OF
STATE VOCATIONAL TEACHERS IN WEST NIAS REGENCY****Jusup Debataraja, Sukarman Purba, Wesly Hutabarat****Senior Vocational Schools Teacher of West Nias****Abstract**

The purpose of this study was to determine the influence of transformational leadership on teacher job satisfaction, the influence of intrinsic motivation on teacher job satisfaction, the influence of transformational leadership on teacher affective commitment, the influence of intrinsic motivation on teacher affective commitment, and the influence of job satisfaction on teacher affective commitment in state vocational schools. West Nias Regency. This research was conducted at State Vocational Schools in West Nias Regency. The study population was 160 teachers and to determine the number of samples used Issac and Michael tables, as many as 110 people with proportional random sampling technique. Data collection was carried out using a questionnaire, after the first trial was conducted. The data analysis technique used consisted of descriptive analysis, requirements analysis test, and path analysis with a significance level of α of 0.05. The results showed that transformational leadership was directly positive towards job satisfaction, Intrinsic motivation had a direct positive effect on job satisfaction, transformational leadership was directly positive towards Affective Commitment, Intrinsic Motivation had a direct positive effect on Affective Commitment and Job Satisfaction had a direct effect on Teacher Affective Commitments. To reduce the Affective Commitment the teacher can be done by increasing Transformational Leadership, Intrinsic Motivation and teacher's job satisfaction.

Topic: Vocational Education

[ICT-01]

A STUDY ON INTERNATIONAL COOPERATION INFORMATION SYSTEM OF UNIVERSITAS NEGERI MEDAN

Maya Oktora, Abil Mansyur, Winsyahputra Ritonga

Universitas Negeri Medan

Abstract

The realization of international cooperation managed by the International Office is still ineffective. The documents between parties involved is recorded in separate form of excel / word files, the process of compiling and searching data requires a long process and time. The work plan of the collaboration is also still experiencing problems, UNIMED must require and record the desires of each party and collect the activity reports manually. This study aimed to analyze and design the web-based information systems of international cooperation in facilitating better preparation of documents, accelerate the search records and monitor the planned activities (work plan) to foster the efficacy of international cooperation in UNIMED. Stages and procedures for the implementation of the research includes the analysis of the documents, drafting the standard management and information systems, data retrieval, data analysis research, and design the information systems of international cooperation uses Waterfall, database design uses MySQL and the programming language uses PHP. The results show that the existence of a web-based international cooperation information system will be very helpful in the preparation of documents, accelerate the search for archives and monitoring work plans online.

Topic:ICT and Education

[ICT-02]**MACROMEDIA FLASH MEDIA DEVELOPMENT IN CONTINENTAL FOOD
KNOWLEDGE LEARNING****Mastarina Barus, Frida Dinar, Adikahriani, Pertiwi Septiana Siregar****Universitas Negeri Medan****Abstract**

This study aims to develop Macromedia Flash media in the Tata H learning process of inventory processing materials, soups and sauces, floor plans for XI grade students of the Imelda Tourism Vocational High School Medan. This research is Research and Development, with procedures that are: 1) Needs analysis; 2) developing products; 3) Validation and revision; 4) Small group trials; 5) Medium group trials; 6) Large group trials; 7) Final product. The research subjects were conducted through 5 students for small groups, 12 students for the medium group and 30 students in the large group, while the instruments were validated by 2 media experts and 2 material experts. The data instruments used were questionnaires and tests. Validation results for media experts with a percentage (88.56%) in wells, and material validation with a percentage (90.5%) with very good ratios, 2) results of small group trial percentage (67.7%), in good criteria while the medium group test with percentage (80.33%) in good criteria and large group trial with percentage (90.17%), in very good criteria, 3) user test in percentage (90%). Thus, the development of Continental Learning Macromedia Flash Learning Media at the Imelda Tourism Vocational High School in Medan is considered effective and feasible to be used as a learning media for court planning.

Topic:ICT and Education

[ICT-03]

INTERACTIVE VIDEO TUTORIAL DEVELOPMENT BASED ON CURRICULUM BASED ON INDONESIAN NATIONAL QUALIFICATION FRAMEWORK ON COMPETENCY MACHINING BASIC BASIS

Muslim, Selamat Riadi

Universitas Negeri Medan

Abstract

Topic:ICT and Education

[ICT-04]**THE DEVELOPMENT OF INSTRUCTIONAL VIDEO MEDIA FOR CHARACTER MAKE UP BASED ON DICK AND CAREY ON COSMETOLOGY EDUCATION COURSES STATE UNIVERSITY OF MEDAN****Rohana Aritonang, Lina Pangaribuan, Dian Maya Sari, Irmiah Nurul Rangkti****Universitas Negeri Medan****Abstract**

This Study aimed to: (1) produce instructional video media for character make up which decent to be used, easy to learn by students and be used for individual learning, (2) to discover the effectiveness of instructional video media for character make up that developed on character make up taking theme witch. This research type is a development research which use the product development model Borg and Gall combined by a learning development model of Dick and Carey. This model includes six stages, namely: literature studies, planning or design development, product development, expert validation, testing, revision, and anda final product. The subjects consist of two experts of character make up subjects, two experts of instructional design, two experts of video and graphic design, three students for individual testing, nine students for small group testing, and fifty eight students for field testing. The Data on product development quality are collected by questionnaire. The collected data were analyzed by qualitative descriptive analysis techniques. The results showed: (1) expert test of instructional subject is in excellent qualifications (93.75%), (2) expert test of instructional design is in good qualifications (80.08%), (3) expert test of video media is in excellent qualifications (89.99%), (4) individual testing is in excellent qualifications (88.32%), (5) small group testing is also in excellent qualifications (87.63%), and (6) field testing is in excellent qualifications (98.30%). The final product of development this learning video media is continued to the effectiveness test of the product. This research was conducted by fourth/even cosmetology education courses faculty of engineering, state university of medan. The hypothesis results proves that: (1) the video media is worthy to use for character make up on cosmetology course state university of medan, (2) there is significantly difference between student learning outcomes who applied by instructional video media for character make up and student learning outcomes who applied by using instructional media text book. This is indicated by the data processing obtained with significance level $\alpha = 0,05$ with dk 56 obtained , so , the effectiveness of instructional video media for character make up = 80,46%. The results of group student who doesn't apply the learning media is 71,72%. This data prove that the use of instructional video media for character make up is more effective in improving the competency and knowledge of students in learning character make up than without using the learning video media.

Topic:ICT and Education

[ICT-05]**DEVELOPMENT OF PHYSICS LEARNING BASED ON WEBSITE WITH
PROBLEM BASED LEARNING****Teguh Febri Sudarma, Ratna Tanjung,****Universitas Negeri Medan****Abstract**

The purpose study to develop a web-based physics learning with Problem Based Learning (PBL) models in Physics courses and to find out how effective web-based learning media with Problem Based Learning models in Physics. subjects are Research Research and Development with a development model from Borg & Gall. The results of the material validator were 80.5% material content quality, linguistic use aspect material 83%, material visual appearance 85%, sound aspect on material 83%, material ease of use 90%, 84% problem based learning model with 84 eligibility criteria , 3%. The assessment category is "very feasible", this means that the website-based physics learning with Problem Based Learning models are in accordance with the learning materials and are suitable for use in learning. The results of media validators are 86% media effectiveness and efficiency, 83% of media reliability, Maintainabel is 87%, Ease of using 85%, Accuracy of type of authoring tools 85%, compatibility 83%, Integration 85%, documentation 82%, Consistency 80%, with criteria for feasibility of 84%. The assessment category is "very feasible", this means that the website-based physics learning media with the Problem Based Learning model is in accordance with the learning media and suitable for use in learning.

Topic:ICT and Education

[ICT-06]**DEVELOPMENT OF TRADITIONAL DANCE VIDEO TUTORIALS
INTERNALIZED CHARACTER EDUCATION IN ARTS AND CULTURE
SUBJECTS****Indaria Anggita , Dr. Dina Ampera, M.Si****Universitas Negeri Medan****Abstract**

This study aims to produce traditional dance video tutorial products internalized with decent character education for students of class X Medan Private High School, and to know the effectiveness of traditional dance video tutorial products internalized by the character education produced. This study uses research and development (R & D) research models with 50 test subjects as well as 10 people as media, material and learning design validator experts. The results of this study are as follows: (1) produce traditional dance video tutorial products internalized character education that is "very feasible" is used. (2) The effectiveness of the use of products developed shows that there are significant differences between learning outcomes before and after using the product, obtained $t_{count} > t_{table}$ or $6.82 > 2.03$ with $df = 35$, learning outcomes after using multimedia is higher than before using multimedia. Besides being able to develop the character of students, namely cooperation with an average percentage of 87.50%, tolerance of 84.72% and polite at 81.25%.

Topic:ICT and Education

[ICT-07]**THE EFFECT OF USING ADOBE PREMIERE-BASED INTERACTIVE
MULTIMEDIA ON STUDENTS' TATA HIDANG ACHIEVEMENT OF TATA BOGA
STUDY PROGRAM OF ENGINEERING FACULTY IN MEDAN STATE
UNIVERSITY****Nikmat Akmal****Medan State University****Abstract**

This study aims to know the effect of using Adobe Premiere-Based Interactive Multimedia on Students' Tata Hidang Achievement including table setting, table service, table manner on Tata Boga Study Program students of Engineering Faculty, Medan State University. This study used experimental quasi, namely the design of the pretest-posttest control group. The subjects of this study were students of Tata Boga Study Program, Engineering Faculty, Medan State University stambuk 2016 which consisted of 2 classes, namely class A as many as 20 students as a control class using learning modules and class B as many as 24 students as an experimental class using Adobe Premiere-Based Interactive Multimedia. The instrument of collecting data was the result of multiple choices as many as 35 questions. The results of the study concluded (1) The average of students' achievement that used modules was 80 and students' achievement that used Adobe Premiere-Based Interactive Multimedia was 84; (2) students' achievement that used Adobe Premiere-Based Interactive Multimedia was higher than using modules.

Topic:ICT and Education

[ICT-08]**THE INTERACTIVE INSTRUCTIONAL MULTIMEDIA DEVELOPMENT OF
MATERIAL TESTING****Erma Yulia, Izwar lubis.****Fakultas Teknik Unimed****Abstract**

This study aims to develop instructional media for material testing by using interactive multimedia. The method used is a method of research and development (R & D) by Borg and Gall. Stages of development of instructional media based on the model of Gerlach and Ely consisting of the stage of determining the material, determining the goal, assessing entry behavior; determine strategies, create groups, allocate time, allocate places, choose learning resources, evaluation, and feedback. The subjects were students of the 5th semester totaling 30 students of Mechanical Engineering Education UNIMED. Data collection techniques were carried out by observation and questionnaire. The feasibility of instructional media was determined by formative evaluation, namely expert validation, evaluation of one to one, evaluation of small groups and field trials. The conclusions of this study are (1) e-learning instructional materials have been produced that provide understanding of material about destructive and non-destructive testing, (2) through the pre-test and post-test there is an increase in the value of student learning outcomes by 80.02%, this proves that e-learning instructional media has been effective.

Topic: ICT and Education

[ICT-09]**DEVELOPMENT OF INTERACTIVE LEARNING MEDIA IN INDONESIAN
LANGUAGE LESSONS IN THE FIRST CLASS VIII OF JUNIOR HIGH SCHOOL****Merry Damaik, Abdul Hasan Saragih, R. Mursid****UNIVERSITAS NEGERI MEDAN****Abstract**

Abstract- This research and development aims to (1) Producing interactive Indonesian language learning media with Adobe Flash CS6 news text material Class VIII Tanjung Morawa Junior High School (2) find out the feasibility and effectiveness of developing interactive learning media with Adobe Flash CS6 on Indonesian subjects, news text material for eighth grade students of Tanjung Morawa junior high school type of research is a development research that uses Borg and Gall product development models. The results of testing the hypothesis indicate that there are significant differences between the results of Indonesian language learning material in the text of the news Class VIII Junior High School by using Adobe Flash CS6 interactive learning media with Indonesian language learning material news text material Class VIII Tanjung Morawa junior high school. without using Adobe Flash CS6 interactive learning media. the effectiveness of the use of learning media is as big as 82,44 %, without media namely 74,37 %. Data proves that the use of interactive learning media News text is more effective in improving student learning outcomes.

Topic:ICT and Education

[ICT-10]**DEVELOPMENT OF E-BOOK MEDIA AS A TEACHING MATERIAL IN EYEES
ANATOMY PYSIOLOGY****Desy Afyanti Lubis , Marnala Tobing , Dian Mayasari , Lina Pangaribuan , Siti Wahida****Universitas Negeri Medan****Abstract**

This study aims to: (1) to find out the influence of e-book media on learning outcomes of anatomy and beauty physiology in student. (2) to increase knowledge of student in the subject of beauty anatomy and physiology. (3) for improve students competency in the practice of materials anatomy and beauty physiology. The type of research used in this study is Research and Development (R & D) by using adapted stages or procedures, namely covering; 1) Needs analysis; 2) developing products; 3) validation and revision; 4) Test try a small group; 5) Test the medium group; 6) Test large groups; 7) Final product. The subjects of this research trial were 30 first semester students of Unimed Makeup conducted a trial on 3 small group students, 9 middle and 30 students large group students. Expert validation consists of 1 media expert and 2 material experts. Instrument data collection used is using questionnaires and tests; validator questionnaire and effectiveness questionnaire includes rating scale with data analysis techniques using scale likert. Media expert research results with a percentage of 88.56% with the criteria of "very good" and research of material experts with a percentage of research results of 90.5% with criteria "very good ", 2) the results of a small group trial with a percentage of 67.7%, with criteria "Good", while the medium group trial with a percentage of assessment is 80.33% with "Good" criteria and a large group trial with a percentage of 90.17% with the criteria of "Very Good", 3) Trial the effectiveness of students with an assessment of 91% with "Very Good" criteria. Thus the development of Media E-book as teaching material in the subject of Beauty Physiology Anatomy is considered effective and worthy to be made instructional Media.

Topic:ICT and Education

[ICT-11]

LEARNING INNOVATION THROUGH MEDIA E-BOOK ON COLLEGE FOOD AND CENTRAL INDONESIAN FOOD PROCESSING

Sulistiwikarsih , Mastarina Barus , Siti Sutanti, Mawaddah Azizah

Universitas Negeri Medan

Abstract

This study aims to assist teaching staff in developing learning media, especially learning innovations in improving e-book teaching materials for eastern and central Indonesian food processing as learning media for students and to improve students knowledge and competence in processing and serving Indonesian food seen from the results of student culinary testing. in eastern and central Indonesian food processing courses. This study uses the research and Development (R&D) method. Learning media produced in the form of e-book media. data obtained through questionnaire techniques, assessment sheets from media experts and material experts. the subjects of this study were the third semester students of tata boga Unimed with amount to 30 undergraduate students.

Topic: ICT and Education

[ICT-12]**THE DEVELOPMENT OF BOOKLET MEDIA CONSTRUCTION WITH VARIOUS PATTERNS - VARIOUS COLLAR MODELS FOR FASHION DESIGN STUDY STUDENTS, UNIVERSITAS NEGERI MEDAN.****Halida Hanim, Farihah, Nurhayati****Universitas Negeri Medan****Abstract**

This study aims to discover the feasibility of booklet media with various collar construction patterns to the students of Fashion Design Study Program, Universitas Negeri Medan. Drawing the pattern construction with the breaking pattern of various collar models to be appropriate as the learning media for the students of Fashion Design Study Program, Universitas Negeri Medan. The research methodology used in this research is Research and Development method. The steps to develop the booklet are as follow : (1) analysis; (2) data collection; (3) development; (4) validation and experiment; (5) the product. After producing the booklet media, the pattern construction of various collar models and pattern breaking method, will be proceed to feasibility or validation test which is conducted by the material and media experts. At this stage it was concluded that various booklet drawing construction with various collar models and pattern breaking methpd that is developed; included into "Excellent" category and the percentage of assessment for several aspects as follow : materials assessment (100%) "excellent", the quality of learning materials (95,83%) "excellent". According to the media experts toward the function and benefit of the media (97,5%) "Excellent", media visual aspect (93,75%) "excellent", the excellence and attractiveness of the booklet (93,75%) "excellent". Comments and suggestion from the validation result by the materials experts and media experts were used to revise the product. Then proceeding to the small group experiment with percentage (62%) "Good", the experiment was conducted to five students; the result of experiment towards a medium group consisting of ten students result (86%) "Good"; and the experiment to a large group consisting thirty seven students result (95,02%) "Excellent". The result shows that the usage feasibility of students booklet test results the percentage of (95,56%) which is in "Excellent" qualification; and the feasibility test with teachers as the respondents is in (94,74%) "excellent" qualification. Therefore, the feasibility of various booklet media construction with various collar models and pattern breaking method is appropriate to be applied to the students of Fashion Study Program in Universitas Negeri Medan.

Topic:ICT and Education

[ICT-13]**MODEL OF FEASIBILITY ASSESSMENT AND EFFECTIVENESS OF
MULTIMEDIA BASED LEARNING****S Sriadhi, Ulibasa Sidabutar, Amirhud Dalimunthe****Universitas Negeri Medan****Abstract**

Media is one of the determining components of learning outcomes. Reality in the field shows that many learning media used are not feasible. This study aims to develop the instrument of feasibility and effectiveness of learning multimedia for three aspects, namely (1) media material, (2) media construction, and (3) media acceptability. While the effectiveness of learning is tested through quasi-experiments. Validity test for four instruments using item analysis, and reliability testing using Spearman Brown technique. Whereas the effectiveness of learning uses the t-test comparative analysis, and the gain-score analysis. The results of the study stated that all instruments had high validity and reliability, although there were about 2% of instrument items dropped (invalid). Experimental results show that multimedia learning that is developed effectively improves learning outcomes of students

Topic:ICT and Education

[MaE-01]**EMPOWERING VISIONARY LECTURERS IN THE DEVELOPMENT OF
INDUSTRIAL ENGINEERING LEARNING DEVICES AT THE FAKULTAS
TEKNIK UNIVERSITAS NEGERI MEDAN****Rosnelli, Fahmi Syahputra****Universitas Negeri Medan****Abstract**

This study aims to examine the visionary role in developing Industrial Engineering learning devices. The specific objectives of this research are to develop: 1) Learning Outcomes Course, 2) Learning Outcomes, 3) Indicators of Achievement of Learning Objectives, 4) Study Materials on Industrial Engineering learning and 6 student assignments. The Research method is Research and Development. Research samples are lecturers and students who use the KKN curriculum. Data collection techniques used and studies to analyze the development needs of learning devices. Interviews, questionnaires and library of lights to see the needs of classroom learning activities. The results of the study show that the implementation of learning starts from the superior product design in the area of ??expertise that is of interest to students, to produce ideas of engineering and student-managed exhibitors; The evolving assessments are customer needs analysis, competition analysis, measurement of needs and materials, determination of items that match product specifications, measurement of minimum needs, steps for making products that are effective and efficient, producing idea engineering works, designing product exhibits, making reports the results of the work in the form of scientific articles, making product exhibitions and making reports on product exhibition activities resulting from the operation of ideas

Topic: Educational Management

[MaE-02]**THE INFLUENCE OF MANAGERIAL SUPERVISION OF PRINCIPAL TO ORGANIZATIONAL CLIMATE, AND WORK SATISFACTION ON PERFORMANCE OF ELEMENTARY SCHOOL PRINCIPAL IN MEDAN****Tirauyah, Paningkat Siburian, Abdul Muin Sibuea****UNIVERSITAS NEGERI MEDAN****Abstract**

This research aims to discover the effect of school principal managerial supervision, organizational climate, and job satisfaction towards the performance of school principals at State Elementary Schools in Medan simultaneously and partially. This study uses quantitative methods, the model used is path analysis techniques and inferential analysis. The research population included all school principals from State Elementary Schools in Medan comprising 382 individuals from 224 schools as the sample of this study obtained determined by using Proportional Random sampling. The research findings showed that all five hypotheses formulated were accepted. The findings showed that: (1) there was a direct effect of managerial supervision towards performance with path coefficient 0,210. (2) there was a direct effect of organizational climate towards performance with path coefficient 0,211. (3) there was a direct effect of job satisfaction towards performance with path coefficient 0,502. (4) there a direct effect of managerial supervision towards job satisfaction with path coefficient 0,509. (5) there was a direct effect of organizational climate towards job satisfaction with path coefficient 0,393. Meanwhile there was an indirect effect of managerial supervision towards performance through job satisfaction with 0,2555, and an indirect effect of organizational climate towards performance through job satisfaction with 0,1972.

Topic: Educational Management

[MaE-03]

IMPLEMENTATION OF PERMENDIKBUD POLICY NUMBER 28 OF 2016 CONCERNING QUALITY ASSURANCE OF PRIMARY AND SECONDARY EDUCATION IN MEDAN CITY

Bahgie Mahtonami, Darwin, Arif Rahman

Universitas Negeri Medan

Abstract

This study aims to determine the implementation of Permendikbud policy number 28 of 2016 concerning quality assurance of primary and secondary education in the city of Medan (case study at the North Sumatra Provincial Education Office). Data collection methods by observation and interview with the head of service. Checking the validity of the data was done by interviewing several heads of private vocational schools. The results of the study showed that the communication process was not carried out even by unscheduled socialization in the official work program. The consistency of staff communicating permendikbud to principals has not been implemented and scheduled regularly. The disposition that has been carried out is still in the form of information submitted from the Head of Service to official employees. but the information provided is not fully controlled by the staff, and related to internal coordination in the implementation of the policy has not run well and the external coordination between the Education Office and the headmaster is still not effective. The level of consistency in policy implementation has not been good, as seen from the absence of a specific schedule for training principals and to implement the policy.

Topic: Educational Management

[MaE-04]**THE DEVELOPMENT OF PRODUCTION MANAGEMENT MODEL OF BASED
ON COMPETENCE EXPERTISE AT SMK NEGERI 1 PANYABUNGAN****Ahmad Imadi Batubara, Rosmala Dewi, Ibnu Hajar****Senior Vocational Schools Teacher of Penyabungan****Abstract**

This Study aims to (1) find a model of management based on competence expertise in Management Business in production unit SMK Negeri 1 Panyabungan; (2) to know operationalstandar product (SOP) management competence based management expertise the right one is applied in production unit SMK Negeri 1 Panyabungan. (3) to know the result (output) application of the model management based on competence the expertise in production unit SMK Negeri 1 Panyabungan. The number of research sample is 90 students with purposive sampling technigue. Data were colcted with absevation, inventory, questionnaire and documentation. Hypotesis testing was done by t test and the calculation process with SPSS. Of the two times trial found the average result of Management Production Unit, trial I of 93.12 % and trial II of 96 %. And result of research indicate that : (1) Model Management of based on skill competence in Management business to be used in the implementation in production unit SMK Negeri 1 Panyabungan. (2) set operational standart (SOP) management based expertise competence in management business rigt implanted in production unit SMK Negeri 1 Panyabungan. (3) produse management model based expertise competence in management business in unit SMK Negeri 1 Panyabungan consist of two competent namely the production unit as resources funding concludes that 96,5 % this model very good if implanted.

Topic: Educational Mangement

[TEL-01]**THE EFFECT OF LEARNING MODEL AND CRITICAL THINKING TOWARD
LEARNING OUTCOME IN ECONOMICS OF THE TENTH GRADERS IN SENIOR
HIGH SCHOOL****Hermidayani, Mukhtar, Hamonangan Tambunan****UNIVERSITAS NEGERI MEDAN****Abstract**

Abstract : This study aims to: (1) know the comparison of students' learning outcome in economics which are taught by problem based learning (PBL) model and think pair square (TPS) model. (2) To know whether the students with higher learning outcome have an ability in high critical thinking and low critical thinking. (3) To know the interaction between learning model and critical thinking ability toward the learning outcome in economics. The research method used is quasi experiment with research design of 2 x 2 factorial. The technique in analyzing the data uses ANOVA with two lines at the significance level of $\alpha = 0.05$. The results of this study show that: (1) The students' learning outcome in economics who are taught by PBL model is higher than students who are taught by TPS model, with $F_{count} = 6.17 > F_{table} = 3.99$. (2) The students' learning outcome in economics with high critical thinking ability is higher than students with low critical thinking ability, with $F_{count} = 40.80 > F_{table} = 3.99$. (3) There is interaction between learning model and critical thinking ability toward the learning outcome in economics with $F_{count} > F_{table} 12.77 > 3.99$.

Topic: Teaching and Learning

[TEL-02]

**ELECTROTECHNICALS' BLENDED LEARNING IN THE VARIOUS TYPES OF
LEARNING STYLE**

Hamonangan Tambunan, Marsangkap Silitonga, Nelson Sinaga

Universitas Negeri Medan

Abstract

Topic: Teaching and Learning

[TEL-03]

EFFECTIVENESS OF USING JOB SHEETS ON CONCRETE STONE WORK PRACTICES

Syafiatun Siregar, Harun Sitompul, Kinanti Wijaya, Ahmad Andi Solahiuddin

Universitas Negeri Medan

Abstract

Learning media is a tool needed during the learning process. The benefits of media learning include: teaching will be more interesting, material taught is more clear, teaching methods are more varied, students will be more interactive in learning activities, can facilitate students in absorbing material and efforts to improve effectiveness and quality during the learning process of students. The use of job sheet learning media which is a learning medium that is very concise and precise, especially for practical subjects. Concrete stonework practice courses that are needed require job sheet in the process of scientific submission. Therefore, it is necessary to design a learning media, namely job sheet. Job sheet designed contains learning objectives, equipment, and materials, design drawings, work steps and work safety. The purpose of this study is to improve the ability/competency of students in practice and to improve the effectiveness of student learning outcomes in stone and concrete work practices

Topic: Teaching and Learning

[TEL-04]**COMPETENCY AND CAPABILITY TEACHING ANALYSIS FEP STUDENT'S
EDUCATION BUILDING STUDY PROGRAM ENGINEERING FACULTY UNIMED****Nono Sebayang, Zulkifli Matondang, Kinanti Wijaya****Universitas Negeri Medan****Abstract**

The purpose this study was to determine the competence and teaching ability of Field Experience Practice (FEP) student's. The competencies are pedagogic competencies, and teaching ability are eight basic abilities, consisting of skills: opening and closing, asking questions, giving reinforcement, conducting variations, explaining, guiding discussions, managing classes and teaching small groups. The population was all FEP students of Educational Building Program Study, Engineering Faculty Unimed, as 42 people. Samples taken as 30 people with proportionally based on the school. The research instrument is the form observation to measure pedagogic competence and teaching ability. Data analysis techniques are description and correlational analysis. The results showed that the pedagogic competence and teaching ability of students was the good category. The best basic skills are reinforcement skills while the lowest skill is to open lessons. There is a positive and signifikan correlation between pedagogic competence and the teaching ability of students FEP. To improve the teaching ability students' can be done by improving pedagogic competence

Topic:Teaching and Learning

[TEL-05]**ANALYSIS OF RESISTANCE FACTORS IMPLEMENTATION KKNI ORIENTED
CURRICULUM WITH SIX'S TASK AT ELECTRICAL ENGINEERING
DEPARTMENT****Adi Sutopo, Dadang Mulyana, Mustamam****Universitas Negeri Medan****Abstract**

KKNI Oriented curriculum implementation in teaching and learning activities in the Unimed developed with six's task student in the learning system. The success of the implementation of the six's tasks are not only from the resistance factors and support that can be derived from the students, lecturers and the availability of infrastructure facilities. The results of the study showed that the resistance factors faced by students is the availability of the ingredients and the appliance (58%), The clarity of the task of the lecturers (48%), feel less creative (49.4%). Resistance Factors from a lecturer is time to assess the task students (53%) and feel student motivation in performing tasks still low (76.4%). six's task implementation can be done better when the institution provides more good soft copy or and hard copy reference. Such is the case of lecturers give the task more clearly and the number of credits to be interdicted proportional so enough time to assess the student tasks.

Topic:Teaching and Learning

[TEL-06]**DEVELOPMENT OF A "PRODUCT DESIGN" GUIDELINES BOOK BASED ON
INDONESIA NATIONAL CURRICULUM FRAMEWORK (KKNi) TO DEVELOP
CREATIVE INDUSTRIES STUDENTS OF EDUCATION DEPARTMENT OF
FAMILY WELFARE STATE UNIVERSITY OF MEDAN****Fatma Tresno Ingtyas, Nuwairi Hilda, Dina Ampera****Universitas Negeri Medan****Abstract**

Product Design is a new subject that is compulsory in the Department of Family Welfare Education, so that all of these courses must be in the Fashion Design Education Study Program, Catering Education, Cosmetology and Nutrition Education. The discussion of a quality learning process in accordance with the curriculum is conducted intensively, but the reality in the field shows that there are not many lecturers who want to practice when conducting lectures. Students view the material as too theoretical, giving no contextual examples. Creative learning has a strategic position in developing student competencies, both technical competence (hard competence) and entrepreneurial skills (soft-competence). This study aims to develop a product design learning tool to enhance the creative industry, including, Product Design Guidebook, Semester Program Design, teaching materials, learning methods, and evaluation of learning outcomes, which can develop creative industries. Learning material needs to be designed by focusing on joint exhibition activities (creating or creating products both goods and services in accordance with the study program) that emphasize character, assignment or project-work learning methods, and evaluation of learning outcomes need to apply performance evaluation techniques by emphasizing evaluation processes and products. This research is a development research, with the instruments used are questionnaires and interviews. Data were analyzed using qualitative descriptive analysis techniques and quantitative descriptive statistical analysis. The results of this study are: (1) the existence of a product design guide book on the family welfare education department that is validated and suitable for student use. It is expected that there will be a Product Design Guidebook to improve the creative industry which is measured from the effectiveness of the experts and validators of learning design, so that the character of the student creative industry.

Topic: Teaching and Learning

[TEL-07]

DEVELOPMENT OF THE EXPERIMENTAL FOOD BOOK AS A RESEARCH GUIDE FOR FOOD AND NUTRITION STUDENT

**Lelly Fridiaty, Esi Emilia, Yuspa Hanum, Erli Mutiara, Rasita Purba, Risti Rosmiati, Yesica
Marcelina Romauli Sinaga**

Universitas Negeri Medan

Abstract

Product development is an essential activity in the food industry and it is a required competency of food and nutrition student. The objective of the study was to develop the experimental food book as a research guide for food and nutrition student. The study used research and development method with 4D (define, design, develop and dissemination) research model was conducted from May to October 2018 in Medan City. The experimental food book has been designed according to the food and nutrition students need and validated by food and nutrition, educational and media experts. The book consists of the early presentation of necessary information on methods, planning, and evaluation for those who will be doing food experimental. Moreover, how to reporting the results. The food experimental food could be used as a research guide for food and nutrition student.

Topic: Teaching and Learning

[TEL-08]

RESEARCH ON THE DEVELOPMENT OF TEACHING MATERIALS OF MICRONUTRIENT METABOLISM BASED ON KKNi CURRICULUM AND CONTEXTUAL CONTENT

Esi Emilia, Rasita Purba, Ana Rahmi, Yesica Marcelina Romauli Sinaga, Risti Rosmiati

Universitas Negeri Medan

Abstract

The Higher Education Curriculum oriented to the KKNi (Kerangka Kualifikasi Nasional Indonesia) is mandate for institution to make educators present professional learning to produce qualified graduates. Research on the development of teaching materials of Micronutrient Metabolism based on KKNi curriculum and contextual content has been done to improve the quality of learning in the Nutrition Study Program. Research and development method consists of initial analysis, development, validation and implementation (trial) was used in this research. Validation results based on the National Education Standards Agency (BSNP) showed that teaching material that has been developed was categorized as very feasible both in contextual content and in fitness to KKNi curriculum and categorized feasible in presentation of material and language.

Topic: Teaching and Learning

[TEL-09]

DEVELOPMENT OF PRODUCT DESIGN TEACHING MATERIALS FOR CONSTRUCTION SECTORS

Sarwa

Universitas Negeri Medan

Abstract

This research was developed to create a course profile and Product Design teaching materials (PD) in the construction sector. Research methods applied in R & D. R & D Stages began with literature studies and inventories of pioneering implementation courses, the results obtained are defined as drafts of course profiles. The results of the course profile formulation had been validated by FGD techniques and justification by experts as Product Design Course Profiles. The development of teaching materials had been carried out by inventorying teaching materials that had been implemented at the pilot stage and combined with the results of literature studies. Research results include: 1) description of courses and learning outcomes; 2) learning material that has been packaged as a learning module that will be used for subsequent PD implementation.

Topic: Teaching and Learning

[TEL-10]**THE EFFECT OF COOPERATIVE LEARNING AND LEARNING INTEREST ON
STUDENTS' ICT ACHIEVEMENT****Baharuddin, Juhriyansyah Dalle, Riswan Sianturi, Abdul Hamid K, Muhammad Dani Solihin****Universitas Negeri Medan****Abstract**

The purpose of this study are (1) to investigate the students' ICT achievement which are taught with the jigsaw cooperative learning strategy and the discovery cooperative learning strategy; (2) investigate the students' ICT achievement who have high and low interest in learning; (3) investigate the interaction between cooperative strategy and interest in learning of students' ICT achievement. For those purpose, Quasi experimental research method with 2X2 factorial research design was used. The study is conducted on 2016-2017 academic year, a total of 64 students of public senior high school school (consisted of 34 student of public senior high school 1 Tanah Jawa and 34 students of public senior high school 1 Hutbayaraja) which taken by cluster random sampling from 496 students in 14 classes. The dependent variable was learning achievement, moderator variable was learning interest and independent variable was study's strategy. While two ways Analysis of Variance and Scheffe Advanced Test were used. The result of the study indicated (1) The average value of the students' ICT learning achievement which are taught with the jigsaw higher than discovery; (2) the average of the students' high learning interest ICT achievement higher than the students' who were taught with the discovery cooperative learning strategy; (3) there are interaction between learning strategy and interest in learning to the students' ICT learning achievement.

Topic:Teaching and Learning

[TEL-11]**DEVELOPMENT OF COMPETENCY ON THE MODULE TO DRAW VARIOUS PARTS OF CLOTHING FASHION LAYOUT STUDIES PROGRAM STATE UNIVERSITY OF MEDAN****Hotmaria Tampubolon, Nurhayati, Ermidawati, Eka Rahma Dewi****Universitas Negeri Medan****Abstract**

This research aims to: (1) produce a worthy module to use, easy to learn and can be used for individual learning, (2) to find out the effectiveness of the developed modules on competence to draw various parts of clothing. This type of research is the development of research using Research Development Research and Development (R&D) with the subject of the 52 steps in developing these learning media, namely: (1) the stage of analysis; (2) the stage of data collection; (3) The development phase; (4) the stage of validation and testing; (5) the final stage of the product media. The results of this research are (1) produce a decent product for drawing various parts of the clothing (2) the effectiveness of the use of the product. The end product of this module development continued with the effectiveness of the product. Hypothesis testing results prove that there is a significant difference between the results of the study before and after using the product. This is demonstrated by the results of the processing of data obtained $t = 7.6216 > t_{table} = 2.0105$, with $dk = (n_1 + n_2 - 2)$ at significance level $\alpha = 0.05$. It was concluded that the results of the study after the dibelajarkan by using the module of 78.38% higher than that have yet to acquire learning by using the module of 66.98%.

Topic: Teaching and Learning

[TEL-12]**THE INFLUENCE OF THE USE OF PROBLEM BASED LEARNING MODEL ON
THE RESULTS OF FOOD LIFE PRACTICES****Frida Dinar, Mastarina Barus, Ana Rahmi, Siti Sutantie****Universitas Negeri Medan****Abstract**

This study aims to determine how the effect of the application of problem based learning models on learning outcomes of the Food Practice Practices students of Tebing Tinggi Vocational High School 3 students. The method used in this study is Quasi Experiment with two group pretest-posttest research design. This research was conducted at Tebing Tinggi Vocational High School 3. The study population was class X students. The results of the study were that after being treated by applying the problem based learning model as an experimental class the results of trend test (63%) were obtained on the sufficient criteria, with an average (43,5) and standard deviation (3, 51). Furthermore, in the control class using expository learning obtained the results of the trend test (53%) on the less criteria, with an average count (25,6) and a standard deviation of 2,60. The results of the calculation of the hypothesis test for posttest were obtained $t_{count} > t_{table}$ ($54,24 > 1.671$), then the hypothesis was accepted which meant that there was a positive and significant influence with the application of problem based learning model on learning out comes of waste handling class X Vocational High School 3 Tebing Tinggi.

Topic: Teaching and Learning

[TEL-13]**DEVELOPMENT OF WORK SHEET MATHEMATICAL STUDENTS BASED ON
GUIDED DISCOVERY LEARNING ON DIFFERENTIAL AND ITS APPLICATION
OF STUDENTS OF BUILDING ENGINEERING EDUCATION****Enny Keristiana Sinaga, Nono Sebayang, Suhairiani****Universitas Negeri Medan****Abstract**

The need for teaching materials that are able to facilitate and guide students for independent learning, makes it easier for students to find and understand concepts correctly as the background of this research. Text books have not been able to help students understand and remember mathematical concepts well. Therefore, Student Work Sheet Of Mathematical based on guided discovery learning on matrix material was developed. This study aims to develop Student Work Sheet of mathematical based on guided discovery learning that is valid, practical, and effective. The development procedure used follows the 4-D development model, but in this study only used 3-D consisting of 3 stages, there are define, design, and develop. This Student Work Sheet is developed by containing six principles of guided discovery based learning, are explaining objectives, orientation of students on the problem, formulating hypotheses, finding activities, presenting the results of discovery activities, and evaluating. Based on the data analysis it was concluded that this study produced guided discovery based worksheets that were valid, practical, and effective in the material material for students of Building Engineering Education Study Program at the State University of Medan.

Topic: Teaching and Learning

[TEL-14]**MANAGEMENT OF ENGINEERING PHYSICS LEARNING IN THE ELECTRICAL
ENGINEERING EDUCATION STUDY PROGRAM FAKULTAS TEKNIK
UNIVERSITAS NEGERI MEDAN****Rosnelli, Dadang Mulyana****Universitas Negeri Medan****Abstract**

Management of Physics Engineering learning is a development research to develop an appropriate learning model design for the study of Engineering Physics in the Electrical Engineering Education program of the Fakultas Teknik Universitas Negeri Medan. The research method used is Research and Development. The research sample is students who actively carry out learning Physics Engineering. Observation techniques and documentation studies are used to analyze learning needs and design learning models. Interviews, questionnaires and class observation sheets are used to see the success of the learning process. The test of student learning outcomes is used to see the effectiveness of the developed learning model prototype. The results of the implementation of the learning model indicate that student learning outcomes tend to be high. The average value of student learning outcomes is 85.83. 94% of students can exceed the pass limit for the Engineering Physics course, which is a value of ≥ 70 . There were 25% of students categorized as quite competent, 34% of students categorized as competent and 38% of students categorized as very competent. However, there are still 3% of students categorized as not competent.

Topic: Teaching and Learning

[TEL-15]

IMPROVED LEARNING OUTCOMES OF ELECTRIC POWER TRANSMISSION COURSES THROUGH PROJECT-BASED LEARNING MODELS

Dadang Mulyana, Mustamam, Arif Rahman, Rosnelli

Universitas Negeri Medan

Abstract

Project tasks that will be used as objects include the Electric Power Distribution System Network Components, Electric Power Distribution Transformers, Electric Power Distribution Loads, and Electric Power Distribution Network Planning. Research and development methods in the following order: preliminary studies, planning project project material, expert project subject matter testing, and dissemination. In the first phase of this study, content analysis was developed regarding topics and sub topics of project assignments to enhance students' creativity in accordance with the tasks that had been prepared. The preliminary study material on the four components of the task is the development of the results of previous studies in the development of teaching materials for Electric Power Distribution Systems that have been prepared. The results of the study conclude that the Project Based Learning model is very helpful for students in developing their insight and creativity through direct observation in the field. The teaching material material presented helps students in studying various components of the electric power distribution system used in the field. Learning guides help students make field observations, so that various components of the distribution network are subject to discussion of lecture material.

Topic: Teaching and Learning

[TEL-16]**THE EFFECT OF LEARNING MODEL AND CRITICAL THINKING SKILL
TOWARD LEARNING OUTCOME IN CULTURE-ART OF THE EIGHTH
GRADERS OF JUNIOR HIGH SCHOOL****Marlina Uli Silaen, Muhammad Badiran, Dina Ampera****UNIVERSITAS NEGERI MEDAN****Abstract**

This study aims to know the effect of learning model and critical thinking skill toward students' learning outcome in Culture-Art. This study is an experimental research, divided into two groups that are taught by using Discovery Learning (DL) model and Direct Instruction (DI) model. The research method used is quasi experiment with design of 2 x 2 factorial. The technique in analyzing the data used ANOVA with two lines at the significance level of 0.05. After examining the normality and homogeneity, it was continued by further test Scheffe: there is a difference of the average mark in Culture-Art between students who were taught by Discovery Learning (DL) (81.5) model and the ones who were taught by Direct Instruction (DI) model (79.34) with Fcount (4.59) > Ftable (4.00), there is a difference of the average mark in Culture-Art between students with high critical thinking skill (82.60) that are higher than the ones with low critical thinking skill (63.21) with Fcount (41.39) > Ftable (4.00), there is interaction between learning model and critical thinking skill toward students' learning outcome in Culture-Art with Fcount (4.59) > Ftable (4.00).

Topic: Teaching and Learning

[TEL-17]**THE INFLUENCE OF ORGANIZATIONAL CULTURE, PRINCIPAL'S
LEADERSHIP AND ACHIEVEMENT MOTIVATION ON TEACHER'S
PERFORMANCE IN PRIMARY SCHOOLS IN PATUMBAK DELI SERDANG
DISTRICT****Marthen MW Dandirwalu, Sukarman Purba, Saut Purba****Middle High School Teacher Medan Patumbak****Abstract**

This study aims to determine the influence of organizational culture on achievement motivation, the influence of the principal's leadership on achievement motivation, the influence of organizational culture on teacher performance, the influence of the principal's leadership on teacher performance, and the influence of achievement motivation on the teacher's performance of elementary school in Patumbak Serdang District. This study uses path analysis with 149 teachers as respondents at the Patumbak Deli Serdang District. Skill technique uses Proportional Random Sampling. Before testing the hypothesis, the analyst requirements are tested first, namely the research data with normal distribution and the relationship between variables shows a linear relationship. Data collection was obtained through questionnaires. The research findings show that organizational culture has a direct positive effect on achievement motivation. Principal's leadership has a direct positive effect on achievement motivation, organizational culture has a direct positive effect on performance, principals' leadership has a direct positive effect on performance, and achievement motivation has a direct effect on performance. Based on the research findings, the most significant effect on performance was organizational culture, leadership of school principals and achievement motivation. To improve the performance of elementary school teachers in Petumbak sub-district, it can be done by improving the organizational culture, leadership of the principal and achievement motivation.

Topic: Teaching and Learning

[TEL-18]

THE EFFECT OF LEARNING STRATEGIES AND CREATIVE THINKING TOWARD LEARNING OUTCOMES OF SCIENCE LEARNING IN SDN 10 SINABANG

Husnah Lubis, R. Mursyid, Keysar Panjaitan

Public Elementary School 4 and 10 Sinabang

Abstract

This study aims to find out: (1) The difference in learning outcomes of science students taught by discovery and strategy of expository learning strategies; (2) The differences in science learning outcomes students who have high creative thinking and who have low creative thinking; (3) Interaction between learning strategies and creative thinking on science learning outcomes. The results showed that: (1) The average science learning outcomes of students taught with discovery learning strategies were higher than students taught with expository learning strategies; (2) The average science learning outcomes of students who have high creative thinking are higher than students who have low creative thinking; (3) There is an interaction between learning strategies and creative thinking on students' learning outcomes.

Topic: Teaching and Learning

[TEL-19]**A Review of Research On The Teaching and Learning
Of Database Course Problems****Nuraeni Dahri****Students of Doctoral Program, Technology and Vocational Education
Padang State University, Padang, Indonesia****Abstract**

The global issue of problems in learning and teaching database subjects is a factor causing learning difficulties for students. Various problems of learning and teaching database systems lead to low learning outcomes, lack of learning motivation and lack of modeling and database design skills by students. In addition to teaching errors in managing learning, the models and approaches used in teaching and learning are not appropriate because they are not in accordance with the characteristics of the subjects and characteristics of students. The problem solution of learning and teaching database systems from previous researchers is to collaborate learning models based on the relevance between learning models with the characteristics of database subjects and characteristics of students so that database competencies can be fulfilled so that graduates can compete in the work industry.

Topic: Teaching and Learning

2nd ACEIVE 2018

The 2nd Annual Conference of
Engineering and Implementation on Vocational Education
"Empowering engineering and implementation on vocational education for Industry 4.0."

DIGITAL LIBRARY
Universitas Negeri Medan

2nd ACEIVE 2018