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Padang, November 9-11, 2017

PROCEEDINGS

4th International Conference on Technical and Vocational Education and Training (TVET)

Theme :
Technical and Vocational Education and
Training for Sustainable Societies



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FOREWORDS

This proceeding aims to disseminate valuable ideas and issues based on research or literature review in the field of vocational, technical and engineering studies, which have been presented in 4th International Conference on Technical and Vocation Education and Training. This conference has taken place in Hospitality Center Universitas Negeri Padang, November 9-11, 2017.

The theme of Conference focused on the perspective of technical and vocational education and training for sustainable society to face the challenges of 21st century, globalization era, and particularly Asian Economic Community. To overcome the challenges, we need the innovation and change in human resources development. Technical vocational educational and training have essential roles to change the world of education and work in order to establish sustainable society.

Undoubtedly, TVET need to enhance the quality of learning by developing various model of active learning, including learning in the workplace and entrepreneurship. Create innovation and applied engineering as well as information technology. Improvement of management and leadership in TVET Institution, and development of vocational and technical teacher education.

Many ideas and research findings have been shared and discussed in the seminar, more than 176 papers have been collected and selected through scholars, scientists, technologist, and engineers'. as well as teachers, professors, and post graduates students who participated in the conference.

Eight keynote speakers have taken a part in the conference, namely Prof. Intan Ahmad, Ph.D. (Director general of learning and student affairs, Kemenristek Dikti) and Prof. Josaphat Tetuko Sri Sumantyo, Ph.D. (CEReS Chiba University) and Prof. Dr. Maizam Alias (UTHM Malaysia) and Prof. Ganefri, Ph.D. (Rector of UNP) and Prof. Dr. Ramlee bin Mustapha (UPSI Malaysia) and Prof. Nizwardi Jalinus, Ed.D. (Chair of TVET doctoral program, FT UNP) and Prof. Michael Koh, Ph.D. Dr. Fahmi Rizal, M.Pd., MT (Dean of FT UNP). They all have a great contribution for the success of the conference.

Finally, thank a million for all participants of the conference who supported the success of 4th International conference on TVET 2017 and most importantly, our gratitude to all scholars who support and tolerated our mistake during the conference.

Padang, 9 November 2017

Prof. Dr. Nizwardi Jalinus, M.Ed
Chair of Scientific Committee



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SMART CLASSROOM DESIGNS IN THE SMART EDUCATIONAL ENVIRONMENT

Yasdinul Huda dan B Herawan Hayadi

DEVELOPING ENTREPRENEURSHIP TRAINING MODULE BY USING "*SMART ENTREPRENEUR MODEL*"(SEM) AT UNIVERSITAS NEGERI PADANG

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THE ANALYZED OF TAR AS WASTE MATERIAL OF BITUMINOUS COAL GASIFICATION BY USING GASCHROMATOGRAPHY

Rijal Abdullah dan Hengki Ade Satria



DEVELOPMENT OF EMPLOYEE INFORMATION SYSTEM -BASED WEB IN MAN 1 PADANG

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ABSTRACT: Information Systems have a role as a tool to manage service in organization to be more accurate, effective and efficient. In MAN 1 Padang chief of TU still difficult to manage employee data because there is no database management that can store, process, and maintain integrity of employee data. To improve service in MAN 1 Padang needed employee Information System-based web that is able to manage employee services, start from employee data input process, employee leave process, employee mutation process and employee retirement process are mutually integrated as a whole. This design implemented by PHP programming language with MySQL database and CodeIgniter framework. In system design involved Use Case diagrams, Activity diagrams, Context Diagrams, flow map, Normalization and Entity Relationship Diagram. This system involves 3 users namely: Employee, Admin (administrator), and Principal. The three levels that registered have a private account to enter into system that is username and password for the admin and principal while the employee enters used NIP and Password with MD5 encryption. Employee information system produced applications -based web that can help Administrative Officers in improving the effectiveness and efficiency in the implementation of employee management activities as well as displaying actual information in the form of employee data reports, employee retirement information, history of employee mutation and employee leave history.

Keywords: Employee Information System, PHP, MySQL database, CodeIgniter framework.

TWO SPECIES OF TERMITE DAMAGING TO BUILDING AND HOUSES AT BANDA ACEH (SUMATRA, INDONESIA)

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ABSTRACT: In general, termites are one of insects playing important role in ecosystem of tropical rain forests. On the other hand, some species of termites have been reported to causing serious economic loss. Moreover, lack of information on their biology and technology of termite control have highly contributed in termite problem to buildings and houses in Banda Aceh. Termites were collected in four sub-districts of Banda Aceh city, namely Syiah Kuala, Kuta Alam, Banda Raya and Ulee Kareng. Termites were identified by using morphological and anatomical characters of soldier and workers castes. Result showed that these two species were found as two dominant termites in causing bad damages on buildings and houses around Banda Aceh, Lack of knowledge of termite control methods, low quality on timber usage, and sanitation surrounding constructions have been found as significant problems for increasing termite attacks on the buildings and houses at Banda Aceh.



ACADEMIC INFORMATION SYSTEM OF STIKES PERINTIS PADANG

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ABSTRACT: The aim of this research is to know how the use of Academic Information System in STIKes Perintis Padang. Academic Information System is a system which is applied to analyze data and a process of academic activity involving students, lecturers, and academic administration officer. It is a qualitative research in which the data collection have been obtained from observational result and direct interview with the informant such as lecturers, administration staffs, students and other related stakeholders in STIKes Perintis Padang. Moreover, the data were analyzed by using data reduction, data presentation, and drawing conclusion or verification.

Keywords: Information System, Academic, User

REVIEW DEVELOPING OF PROJECT BASED AS INNOVATION INSTRUCTIONAL

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ABSTRACT: Objectives: To examine primary research articles published between December 2010 and November 2016 that focused on the issues review of project based learning as innovation instructional. The literature was systematically reviewed, critically appraised and thematically analyzed. Data Sources: Online databases including Social and Behavioral Sciences, International Journal of Project Management, Procedia Computer Science, Mechatronics, Journal of Cleaner Production, Learning and Instruction, Computers & Education, Robotics and Autonomous System, Computers in Human Behavior and Science Direct were used. Methods: The criteria used for selecting studies reviewed were: primary focus on project based learning and issues faced by innovation Instructional; all articles had to be primary research studies, published in English in peer reviewed journals between December 2010 and November 2016. Results: Analysis of the 15 reviewed studies revealed the following three themes: issues project based learning as innovation instructional. Conclusion: The review through project-based learning, learners will work within a team, find the skills to plan, organize, negotiate, and make a consensus about issues of tasks that will be done, who is responsible for each task, and how the information will be collected and presented scientifically.

Key word: Project based learning, instructional media, innovation

IMPROVING LEARNING MOTIVATION THROUGH IMPLEMENTATION PROBLEM SOLVING LEARNING STRATEGY

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ABSTRACT: The problem of research is the low motivation to learn the students to lesson the auxiliary driving machine has not run as expected. The purpose of research on the implementation of problem solving learning strategies in SMK N 10 Padang. This type of research is a classroom action research model using strategy. The research subjects of class X TKN amounted to 23 students. The research instrument is a questionnaire. Data were analyzed by using T-Test. Guidelines for decision making in this study if significance > 0.05 then H_0 accepted and vice versa if significance < 0.05 then H_0 rejected and H_a accepted That is a difference between learning motivation cycle 1 with cycle 2 and the application of problem-solving learning strategies managed to improve student learning motivation from cycle 1 to cycle 2. Data processed by using SPSS 17 program. The results obtained significance $0.00 < 0.05$ which means H_0 rejected and H_a accepted, be the difference motivation learning cycle 1 with cycle 2 and implementation of learning strategy problem solving successfully increase student learning motivation from cycle 1 to cycle 2.

Keywords: Learning Motivation, Problem Solving, Solso

THE DESIGN OF THE SIGNAL MEASUREMENT DEVICE OF BODY'S BIOELECTRICAL IMPEDANCE By USING THREE ELECTRODES

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ABSTRACT: This article aims to design the signal measurement device of body's bioelectrical impedance (bio-impedance). Previous measurement methods are less effective, because they used four electrodes. While this device is using three electrodes. The device consists of three integrated circuits, i.e. stimulate's circuit, instrumentation's circuit, and minimum system. The design used three electrodes method which one electrode is mounted on the left shoulder, one electrode on the right shoulder, and another is functionalized as ground which is mounted between the left and the right shoulder. The measured voltage is represented bio-impedance's value. Based on the the experiment, the device is able to measure bio-impedance's signal of human's body. The obtained signal could be used as control signal.

Keywords: bio-impedance, three electrodes, control signal, measurement

EFFECT OF ENGINE TEMPERATURE CHANGES ON INJECTION TIME OF FUEL AND GAS EMISSION OF GASOLINE ENGINE

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ABSTRACT: This paper aims to reveal the effects of changes in engine temperature on the injection time of fuel and the exhaust gas emissions produced by gasoline motors. Engine cooling temperature is measured by engine temperature sensors sent to the computer, which will regulate the time of spraying of fuel by the injector, this will affect the exhaust gas emission content. The data of cooling water temperature change and duration of injector work were measured using scantool, and the exhaust gas emission data was measured using four gas analyzer. The test data shows that there is a correlation between the change in engine temperature received from the engine cooling temperature sensor with the injection time of fuel spraying and the exhaust gas emission produced by the gasoline motor.

Keywords: Injection Time, Exhaust Gas Emissions, Scantool, Four Gas Analyzer

THE EFFECTIVENESS OF USING POSTER AND VIDEO MEDIA IN EDUCATION ABOUT DANGERS OF SMOKING ON KNOWLEDGE AND ATTITUDES OF SENIOR HIGH SCHOOL 12 PEKANBARU STUDENTS

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ABSTRACT: Based on World Health Organization (WHO) estimates of smokers in the world of 1.3 billion, in Indonesia teenage smokers (> 15 years) amounted to 36.5%. Therefore need prevention and fighting for smokers among teenagers is reduced. One of them by providing information through counseling to students of senior high school 12 Pekanbaru. The purpose of this research is to know the effectiveness of using poster and video media in education about danger of smoking on knowledge and attitude of senior high school 12 Pekanbaru students. Quantitative research type with quasi experimental design (one group pre test and post test). The population of all students of class X and XI are smokers. A sample of 82 people was taken with a sampling census technique. Analysis using T-test. The result of this research is got difference of mean value of knowledge of student which given counseling using video media that mean rank 14,60 bigger value compared to mean rank media of poster that is 13,98. The mean difference of the students' attitudes attituded to using video media means the mean rank 22, 90 is greater in value than mean rank of media poster 22, 58. This means that the counseling media use the video more effectively in the delivery of hazard education to increase the knowledge and attitude of the students of senior high school 12 Pekanbaru.

Keywords: Poster, Video, Knowledge, Attitude, Smoking

DECISION SUPPORT SYSTEM (DSS) WITH WP AND MFEP METHODS IN SELECTION OF BEST BABY CLOTHES

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Abstract: In providing the best baby clothes, warehouse managers have a problem in determining the best brands of baby clothes that will be marketed to increase their selling power and make profits and make procurement properly so that sales continue to run well. To overcome the existing problems, it is necessary to do research in decision making by using method Weighted Product and Multi Factor Evaluation Process that can produce decision based on the criteria of baby clothing brand to be marketed. the results of the implementation concluded that using the Weighted Product method and Multi Factor Evaluation Process can help the decision making process of choosing the best baby clothing brand to be marketed so as to increase the selling power because using both methods that can produce the same decision so as to provide a better level of confidence in making the best choice of baby clothes.

Keywords: DSS, Weighted Product and Multi Factor Evaluation Process

MODIFICATION OF INPUT PUSHER ASSEMBLY OF LASER MARKING MACHINE

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ABSTRACT: Laser marking process is one of the process steps in Integrated Circuit (IC) assembly manufacturing. This process is to mark the IC unit with the device information, assembly information and product brand. One type of lead frame used for IC assembly is open end lead frame which causing the individual lead on end unit prone to damage due to hard mechanical contact. At laser mark process, the lead frame will be pushed into the laser chamber by using a solid input pusher. The existing design of input pusher will push the lead by making contact with the edge of the lead frame. Production section keep observing the damage lead problem occurred when process the open end lead frame. Damage lead was 54% of the defect occurred at laser mark process. This problem causing low yield and high rework. Team has been established to analyze the problem and found the solution. Through investigation and analysis, team found the root cause of the problem and takes the appropriate corrective action. Design modification of input pusher from the previous design which was solid type to be U-type significantly reduces the damage lead at laser mark process. Initial observation showed that the new design able to reduce 98% of damage lead.

Keywords: Design modification, Laser Machine, Damage Lead

Optimize of Least-Square Inverse Constrain Method of Geoelectrical Resistivity Wenner-Schlumberger For Investigation Rock Structures in Malalak Districts of Agam West Sumatra

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ABSTRACT: Numerous studies have been conducted on an inversion method, focus on constraining factor, singular value, speed of convergence. However, the result of inversion is not unique and bivalent. In this research, we optimize of Least-Square constrain by using damping factor. This method used for interpretation of the volumes and rock structure in Malalak District of Agam West Sumatra. This is undertaken because Malalak districts of Agam West Sumatra that passed by highway Padang and Bukittingi is a frequent area of landslide. Furthermore, the frequency of the landslide depends on the type of rock and the angle of the slope. The depth of the slide surface can be predicted by using the least squares inversion constrain method of Geoelectric Resistivity. Landslides resulted in disruption of transportation between the city of Padang and another district in Sumatra. Based on the above, to determine the rock's structure, the depth and tilt angle of the slide surface in Malalak districts Agam West Sumatra has to take place. Data obtained through Geoelectrical exploration using with automatic resistivity meter equipment. Constrains were obtained using the Marquat inversion method. The result of the research is first, the damping factor for structures which have wide range resistivity is 0.02 and the smallest damping factor is 0.015. Second, the rock structure in Malalak of Agam consists of clay, sandstone, andesite, and limestone and dolomite.. Implementation this research can be used to develop mitigation of landslide deserter.

Keywords: Investigation, Slide surface, Geoelectrical Resistivity, Least-Square Inverse, Constraint

THE INFLUENCE OF PROJECT BASED LEARNING TOWARD ELECTRICAL MACHINE AND ENERGY CONVERSION STUDENT ACHIEVEMENT OF VOCATIONAL HIGH SCHOOL 1 PADANG

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ABSTRACT: This research started by less active students in following the learning process. Quasi experiments using the design of randomized two groups design, posttest only. The population in this research is 64 students. Class X TP-C for experimental class of 32 students is influenced by project based learning and class X TP-A for control class of 32 students influenced by conventional method. This result of this study showed that the model learning of project based learning can be influenced towards outcomes learning on Electrical Machine and Energy Conversion subject with the average value of experimental class is 82 higher than the average control class is 73. Based on the research can be concluded that the learning using the project based learning can improve student outcomes in the learning process compared with learning conventional method.

Keywords: Project Based Learning, Learning Outcomes, Electrical Machine and Energy Conversion

THE EFFECT OF SOFTWARE MASTERCAME TOWARD MECHANICAL ENGINEERING STUDENTS PERFORMANCE IN MAKING PRODUCT WITH CNC MILLING MACHINE IN VOCATIONAL HIGH SCHOOL 1 PADANG

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ABSTRACT: This study started from the less of student skills in operating a CNC milling machine. This study was quasi-experimental design using Randomized Two-groups design, posttest Only. The total sample is 32 students. The experimental group consist of 16 students are provided media software Mastercam were given the treatment and 16 students of control group were given the conventional methods. The results of this study showed that t-test analysis of experimental group test scores and grade control obtained $t = 20.311$ while t_{table} at significant level of 0.05 with $df = 16 + 16 - 2 = 30$ is $t_{table} (30) = 2.042$. with $t_{count} > t_{table}$ ($20.311 > 2.042$). Based on the research can be concluded that study by using software Mastercam in making work unit by CNC Milling can help students getting more accuracy, efficiency, quality of the work than study by using conventional method.

Keywords: *Media, Study Performance, CNC.*

THE VALIDITY OF TRAINER ON MATERIALS SCIENCE AND DEVICES SUBJECT AT DEPARTMENT OF ELECTRICAL ENGINEERING

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ABSTRACT: Devices characteristics of electrical and electronics is an important thing that must be mastered by students majoring in electrical engineering. This can be obtained through practice of materials science and devices. But the problem that arises is the absence of trainer model to facilitate the practice, so that students need more time to practice. While the time available for this course is only 1 credit (100 minutes). This study aims to develop the device trainer model to assist students in practice. The research was adopted Borg and Gall model that have 10 development steps. Validity of the trainer model was measured by instrument of validity that had been validated before. The average calculation result from the validity analysis of the trainer model is 94% with very valid category. So it can be concluded that trainer model on materials science and devices was valid to be used as a learning media.

Keywords: *Material sciences and devices, trainer, electrical, engineering*

ASSESSMENT OF PRODUCT PROTOTYPE EXISTENCE AS A MEDIA OF LEARNING TO ACCELERATE THE TRANSFER OF TECHNOLOGY AND DIVERSIFICATION IN RURAL INDUSTRIES

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ABSTRACT: Small scale industrial enterprise development "gulo saka", among others, can be made through product diversification program, because during this production still focused on one type of product, namely brown sugar (in terms of regional language called gulo saka). Baggase of sugarcane as the rest of the production process has not yet been optimally utilized but can be processed into new products form one type of fuel briquettes (Baggase Briqueting Fuel/BBF). This is due to the lack of knowledge and ownership of technology among the craftsmen. This paper is part of the results of research that introduces a type of solid fuel Charcoal Briquettes and Biobriquettes made from sugarcane husks, which are prototypes/prototype (physical model) that has been tested in a laboratory-scale characteristics. The results can serve as milestones fit the grooves of thought development of new products in order of operations management, where subsequently introduced on craftsmen as a medium of instruction, as well as the cache implementation & concept education Jhon dewey in the framework of technology transfer for the pioneering efforts of product diversification in the process of production of small industries in rural areas.

Keywords: Prototypes, technology transfer, diversification, baggase briquette

INTERACTIVE MULTIMEDIA PROGRAM WITH PROBLEM-BASED LEARNING METHOD TO IMPROVE LEARNING OUTCOMES IN BIOLOGY SUBJECT

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ABSTRACT: School learning system is still generally using of verbal language to convey the learning materials, which could lead to the low outcomes of student learning activities. This is caused by the lack of comprehension and the decreased activities during the teaching process. One of the solutions to this problem is to use multimedia-based learning media, such as Adobe Animate, which is supposed to increase the outcomes of student learning activities. The approach method used in this study is qualitative, by the type of true experimental design with the model of the pretest-posttest control group. The result of this study showed that average final posttest skill score of experimental and control class are respectively 65,24 and 44,91. The activities level of the students in the experimental class were increased by 19%. The conclusion of this study is the utilization of Adobe Animate as learning media with the problem-based learning model can significantly increase the learning outcomes and students' activities.

Keywords: Adobe Animate, Learning Outcomes, Students' Activities

A Micro Hydro Power Generator as an Alternative Solution for Energy Problem Solving in Indonesian remote area

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ABSTRACT: This research aims to design a micro hydro power generator as an alternative electric energy for Indonesian remote area. The research is located in Nagari Sungai Abu-Solok, West Sumatera. The cross flow turbine type has been used as power generation by considering the water flow characteristics and local area condition. The turbine geometry is customized according to the electrical power needs and potential of the water resources. This experimental study is conducted in three parts: the field investigation concerning water flow characteristics, the need analysis of Panasahan community on electricity and technical design and development of generator. Results showed that the design of cross flow turbine power generator can produce 12kW of electrical power which is able to meets 80% of local electricity demands.

Keywords: Cross flow turbine, micro hydro, power plant

FUNCTIONAL MEMBERSHIP ANALYSIS OF FUZZY INFERENCE SYSTEM SUGENO IN ANEMIA CLASSIFICATION

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ABSTRACT: Determination of anemia classification based on morphology will make it easier to diagnose the disease of a patient further because each classification also has many possible types of illness. The concept of fuzzy logic is very flexible and has a tolerance to data that is not appropriate and based on natural language to determine a result. There is still often a mistake in determining the classification of anemia resulting in a miscarriage in the patient. Therefore we need a system as a tool in determining whether a patient entered on which classification of anemia with the concept of fuzzy logic. The input of fuzzy set in this research is data of laboratory result of routine blood examination from 40 patient samples conducted in one laboratory. The method used is Sugeno's fuzzy inference system in the classification of anemia.

Keywords: fuzzy logic, fuzzy inference system, sugeno

CURRICULUM ANALYSIS OF PREREQUISITE COURSE AT INDUSTRIAL FIELD PRACTICE (IFP) (Case Study: Competency Compliance)

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ABSTRACT:This study describes the suitability of the competencies that students have through the lectures of the IFP pre-requisites: Project Management, Quantity Surveying and Occupational Safety and Health, with the expected competence of contractors and construction consultants at the time of the IFP. Data collection methods used in this study is to spread the questionnaire to the supervisor where students do the IFP. Then performed data processing to see the Achievement Degrees (AD) of contractor respondents and consultants on the subject curriculum of the prerequisites of IFP. After doing data processing, got AD into category enough. This means that the curriculum in the pre-requisite course of IFP is sufficient to obtain student competence where as the capital to implement the IFP. But to improve the quality of the course curriculum to the good category, it needs some improvement according to the input of the stakeholders.

Keyword: Industrial Field Practice, Curriculum, Contractor, Consultant

NEED ANALYSIS APPLICATION ON THE FEASIBILITY STUDY OF THE HYDROELECTRIC POWER SELECTION (CASE IN SOLOK, PESISIR SELATAN AND SIJUNJUNG REGENCY)

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ABSTRACT: This study aims to determine the criteria of data and information needed related to the selection of the ideal location of the potential of hydroelectric power from several rivers namely; Batang Lembang Solok, Batang Bayang Pesel, Batang Sukam and Batang Kuantan in Sijunjung Regency, Designing technical works such as Mechanical, Electrical and Civil Works of a Minihydro Power Plant at the selected potential point. While the benefits of this research is to obtain complete information and valid data in the selection of locations and design of hydroelectric power plants for several investors and local governments concerned. Stages of this research is to arrange systematic framework of thinking using needs analysis. The systematics of the framework contains the work sequence that guides the preparation of the feasibility of the Hydro Power plant in 3 planning locations in Sijunjung, Solok and Pesel regency. Followed by field survey, identification of data collection of water debit and height fall (head). Design and installation studies, Turbine and Generator types as well as civil works covering water retrieval doors, ducts, tranquilizers, garbage screens, generator houses to drainage channels. The results of this study selected location data input is in Solok district as follows; discharge design is 5,431 m³ / s, high difference available is 29 m. The length of the measuring channel is approximately 1150 m until it reaches the tranquilizer and power that can be raised at 1.1 MW, or 1250 kVA and type of turbine type Francis.

Keywords: Need Analysis, Hydroelectric Power, Feasibility Studies, Mini HydroPower

RELATION DRAG FORCE REDUCTION ON CIRCULAR CYLINDER USING CIRCULAR DISTURBANCE BODY WITH TURBULENCE INTENSITY

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ABSTRACT: This experiment will be conducted experimentally on a wind tunnel that has a narrow section with square cross section 125 mm x 125 mm and 26.4% and 36.4% blockage ratio. The specimens used are circular cylinder with diameter 25mm ($d/D = 0.16$) and 37.5mm ($d/D = 0.107$) and circular cylinder rod with diameter 4 mm. The cylinder disturbance body (CBD) are placed on the upper and lower sides with the position of $\alpha = 20^\circ, 30^\circ, 40^\circ, 50^\circ, 60^\circ$ and distance ($\delta = 0.4$ mm) against the main circular cylinder. Reynolds number based on hydraulic diameter 11.6×10^4 and 15.6×10^4 . The results shown that the use of disturbance body was able to reduce the pressure drop value on the narrow channel with square section. For $D = 25$ mm ($d/D = 0.16$) the reduction of the pressure drop value occurs in the disturbance body position $\alpha = 20^\circ, \alpha = 30^\circ$, while for $D = 37.5$ mm ($d/D = 0.107$) occurs in the stalking rod position $\alpha = 20^\circ, \alpha = 40^\circ, \alpha = 30^\circ$. The increase of turbulence intensity value can reduce the value of drag pressure coefficient (C_{dp}) for circular cylinder for $D = 25$ mm ($d/D = 0.16$) for Reynolds number 11.6×10^4 and 15.6×10^4 happened disturbance body position $\alpha = 30^\circ$ and $\alpha = 20^\circ$. In the circular cylinder $D = 37.5$ mm ($d/D = 0.107$) the reduction of drag pressure coefficient (C_{dp}) at Reynolds number 11.6×10^4 and 15.6×10^4 occurs at the disturbance body position $\alpha = 30^\circ, \alpha = 40^\circ$ and $\alpha = 20^\circ$.

Keywords: turbulence Intensity, disturbance body, circular cylinder



IMPLEMENTATION OF CONTEXTUAL TEACHING AND LEARNING ON ANALYZING ELECTRICAL CIRCUITS SUBJECT

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ABSTRACT: This research is established based on one of the factors that creates the low percentage of student's learning completeness in the subject of Analyzing Electric Circuit. The intended factor is the learning model. This research is conducted in SMK N 1 Pariaman by applying one of the learning models that is the Contextual Teaching and Learning model to observe its effect in student's learning outcomes. This model contains some components that can emphasize students to be more active and participate. The purpose of this research is to determine the improvement of student's learning outcomes in the subject of Analyzing Electric Circuits by implementing Contextual Teaching and Learning model. The type of this research is Quasi Experiment with pretest-posttest one group design and the instruments used to see the results of the applied model are pre-test and post-test. Those instruments must be tested for validity, reliability, differentiation, and difficulty before being used. The results obtained from this research are included into the medium category to improve the student's learning outcomes after implementing the Contextual Teaching and Learning model.

Keywords: *contextual teaching and learning, learning outcomes*

EVALUATION OF LEARNING PROCESS USING CIPP MODEL

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ABSTRACT: This study aims to evaluate the quality of learning process of automotive technical base skills subject by using the *Context, Input, Process and Product* (CIPP) model. Context is derivated from purpose of learning on basic automotive engineering skills, Input is observed by the planning of learning process, process is represented by the teachers performance, product is analyzed by the student competency achievement and learning outcomes of learners. The sample of this research are 58 students and 3 teachers. Informant of this research is 5 person consisting of 3 teacher, vice curriculum and headmaster. This research is done by combination method (mixed methods). The results, the context components (82.20% and 83.60%), the input component (83.35%), the components process (76.74%), Furthermore, the components product (77.6%).

Keywords: *Evaluation, Learning process, context, input, process and product*



EFFECT OF GASOLINE ADDITIVE MATERIALS ON ENGINE PERFORMANCE

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ABSTRACT:The octane number is one of references is measurement of fuel quality in gasoline engines. The high octane number of fuel reduce engine knocking possibility that can improve the engine performance. One of the solutions to increase the octane number in gasoline fuels is to add additive materials. The additive materials that have been considered in the present study are ethanol, methanol and naphthalene. The type of gasoline fuel used in this study is premium. This study are to determine the effect of the additive materials on premium fuel to increase the octane number and power generation of motorcycles engines. This experimental study is conducted by mixing the additive materials to premium fuel with percentage ranging from 5% to 20%. The results indicate that the premium fuel mixture with 20% methanol increases the octane number from 88 to 117.1 and premium fuel with 20% ethanol increases octane number up to 99.6. The most optimal premium fuel mixture is to 5% methanol that can increase the power generation up to 9.86%.

Keywords: Octane Number, Additive Materials, Gasoline Engine, Performance

THE ROLE OF INFORMATION TECHNOLOGY IN THE IMPROVEMENT OF TEACHER'S COMPETENCIES AND TEACHING LEARNING PROCESS EFFECTIVENESS IN ESA SEJAHTERA SCHOOL PEKANBARU

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ABSTRACT: *The need of technologies in human life grows stronger and faster. Basically almost every business and non business sector in this world has integrated with information technology especially in the education sector. The purpose of this study is to analyze the effect of information technology toward teacher's competence and teaching learning process effectiveness. Population of this research are 53 teachers in Esa Sejahtera School Pekanbaru and the sampling technique used is total sampling with 53 teachers as respondents. Data analysis technique use path analysis on the basis of regression coefficient where the research variabel consist of Information Technology (X1), Teacher's competence (Y1) and teaching Learning Process Effectiveness (Y2). The result of this research found that Information technology directly has significance influence toward teacher's competence and also teacher's competence directly has significance influence toward teaching learning process effectiveness. Besides that, the result for indirectly influence show information technology has significance influence toward teaching learning process effectiveness through teacher's competence. Suggestion of this research is management of Esa Sejahtera School Pekanbaru should enhance the information technology applied in Esa Sejahtera School Pekanbaru in order to improve teacher's competencies and teaching learning process.*

Keywords : Information Technology, Teacher's Competence, Teaching Learning Process, Education



SIMPLE WATER PURIFIER USING MULTILEVEL SYSTEM

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Abstract: The study aim to describe the water filtration with multilevel system. The method in this water filtering system is a continuous flow from first box to the next one. Each box has a different filter instrument. Water is flowed from wells using a water pump machine. This type of well water is brackish water. Brackish water is distributed in the original box containing bricks and gravel, flowed to the second city containing the sand and palm fiber, and then flowed to the third box containing the filter made of charcoal and foam. Based on physical analysis of the water coming out of this filter is colorless and odorless, and based on the results of laboratory testing the pH, acid and DOC levels, concluded feasible for use as water for daily non-consumption purposes. Clean water can be used by the community around the sub-district office for daily purposes.

Key word: water purifier, appropriate technology, brackish water

IMPROVING TEACHERS' PROFESIONALISM APPROPRIATE TO NEW CURRIRULUM 2017 FOR VOCATIONAL SCHOOLS BY CAPACITY BUILDING AND WORKSHOP ABOUT PREPARING LOCAL GOVERNMENT FINANCIAL STATEMENT; AN EXPERIMENTAL STUDY ON ACCOUNTING TEACHERS' FROM VOCATIONAL SCHOOLS IN WEST SUMATERA PROVINCE

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ABSTRACT: In the beginning of 2017 has been published SK Dirjen Dikdasmen No.130/D/KEP/KR/2017 about the new curriculum structure for vocational schools. In accounting major, one of the changes is new subject "accounting practice of the institution and local government agencies", which have never taught before, so that accounting teachers' should prepare themselves for this. This study aimed to use capacity building and workshop to improve teachers' understanding in preparing local government financial statement. Research methods used is an experiment, which classified as pre-experimental (nondesign) by the method of the one group pretest – posttest design. The results indicated that there are differences in teachers' understanding in preparing local government financial statement before and after got capacity building and workshop. It can be concluded that this capacity building and workshop can improve the teachers' understanding in preparing local government financial statement, so that the teachers' be ready to teach the new subject "accounting practice of the institution and local government agencies".

Keywords: *accounting, capacity building, new curriculum, vocational teachers, workshop*

PSYCHOLOGICAL FACTORS INFLUENCING THE DECISION MAKING OF PURCHASING PRODUCTS VIA ONLINE

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ABSTRACT: This research was aimed to determine: (1) the description of psychological factors in the decision making of purchasing products via online; (2) the psychological factors influencing the decision making of purchasing products via online. This kind of research was a quantitative research by using a correlation approach. The population of this research was all female students of S1 UNY year 2016. The sampling was using proportional random sampling technique. The collecting data was using questionnaires. The validity of this research instrument using content validity of research instruments conducted by judgment expert, and using construct validity conducted by Pearson Correlation analysis. The reliability testing was using the internal consistency reliability with formula Cronbach Alpha. The analysis of data was using descriptive analysis and regression analysis techniques. The results showed that, First, the psychological factors were included in high category above the average of group 57.6%. Second, psychological factors influenced simultaneously the decision of purchasing products via online with t_{hit} value (7.216) > t_{tab} (2.241) and significance probability value $0.00 < 0.05$.

Keywords: Psychological factors, purchasing decisions via online

DEVELOPMENT OF MODEL OF PROPELLER-CROSS FLOW WATER TURBINE FOR PICO HYDRO POWER GENERATOR TITLE

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ABSTRACT: According to literature survey, the most suitable water turbines for power generator at low debit and water head is cross flow turbine. The objective of this research is to develop a cross flow turbine combined to a propeller as a Pico hydro power generator. The water in cross flow turbine exhausts system still keep kinetic energy that can be reused as propeller propulsion. Kaplan-type propellers mounted on the bottom of the turbine. The intermediate medium connecting the two turbine models is the conductive blades, which are installed between cross flow and Kaplan turbines. These blades serve to guide the water out of the cross flow turbine to the Kaplan turbine. The parameters to be analyzed in the study are the water head, flow rate and water velocity. The results showed that the energy absorption level of cross flow exhaust water depending on debit water velocity.

Keywords: Pico hydro, cross flow, propeller

An Experimental Study On The Effect Of Centrifugal Clutch Cooling Groove On Motorcycle Performance

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ABSTRACT: This experimental research aims to analyze the effect of clutch disc groove on the engine power and torque of motorcycles. In this study there are three different specimens will be presented: the centrifugal clutch with straight groove, sloping groove and V groove and will be compared to the standard one without any groove. The results showed that the engine power and motor torque is increased significantly in the grooved clutch specimen than the reference clutch. Moreover, the most effective clutch shape is V-groove that can improve the the motorcycle torque up to 32.3% for high angular speed 5000 rpm. On the other test, V-shape can also increase



the engine power up to 28.5%. Otherwise, for low angular speed condition, 3000 rpm, the centrifugal clutch with straight groove increase of the torque about 41,9% and sloping groove can improve in engine power that up 45%.

Keywords: Groove of clutch, Centrifugal Clutch, Power, Torque.

EFFECT OF MIND MAPPING LEARNING METHODS ON LEARNING OUTCOMES

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ABSTRACT. This study aims to analyze the effectiveness of Mind Mapping learning method compared with Problem Based Learning. This research is experimental with quasi-design method through posttest control analysis. The number of samples used in the study were 55 students with two different classes. The first class is the experimental class while the other class is the control class. Survey data would be analyzed using homogeneity test, normality test and hypothesis test. The results showed that mind mapping method is more effective than problem based learning method with significance level 0,05. The average value of student learning outcomes rose from 76.7 to 83.2 to become method in the application of learning

Keywords: Mind Mapping, Quasi Experimental, increase learning outcomes

NEEDS ANALYSIS ON INCREASING COMPETENCY TEST RESULTS STUDENTS IN S1 PROGRAM OF PUBLIC HEALTH SCIENCES STIKES HANG TUAH PEKANBARU

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ABSTRACT: The competence test of public health student has been applied three times since 2015, but the result obtained by STIKes Hang Tuah Pekanbaru students is less satisfactory, that is passing score below 68%. This study aims to analyze the causes of problems and recommendations of the needs of the study program in order to improve the competency test results. This study aims to analyze the causes of problems and recommendations of the needs of the study program in order to improve the competency test results. This research uses explorative qualitative research type with method of need assessment of data review, focus group management, in-depth interview and using USG matrix in determining recommendation. Informants in this study were 15 students, 10 lecturers and 4 study program managers including the head of the study program. The research shows that the cause of the low score of student competency test is the lack of student exposure to the exam questions, the method of learning to memorize, the low ability of lecturer in making the national scale to exam questions, and the lack of tryout facility and the practice of labor / field practice. The recommendations of the problems are the implementation of tryout for the students before the implementation of competency test, training on competency test (item review for lecturers), curriculum workshop and improving MoU with government and private institution in field practice.

Keywords: Competency Test, Public Health



THE DESIGN OF LECTURER PERFORMANCE EVALUATION MODEL BASED ON ANALYTIC NETWORK PROCESS (ANP)

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Abstract: One effort to improve the quality of higher education is a service to students, to improve the quality of lecturers. In an effort to develop the quality and career of a lecturer, then the lecturer's performance is important to be evaluated to get the right information. Most lecturer performance evaluations are generally limited only from the assessment of the students on the learning process in the classroom. In this research, an evaluation model using Multi Criteria Decision Making (MCDM) is designed to evaluate the lecturer's performance of factors affecting lecturer performance problems. Factors that affect the performance of lecturers will be seen from the variables of motivation, self-esteem, competence and job satisfaction. To reflect the correlation of dependence between factors on lecturer performance evaluation is proposed by using Analytic Network Process (ANP) method which is one of MCDM technique. ANP method is considered capable to present the level of importance of various parties by considering the various criteria and sub criteria that exist and can be used to build a prediction of human resource performance measurement based on weighting factors affecting the performance of lecturers. In this research expected to produce an effective lecturer performance evaluation model that can support decision making for lecturers quality development.

Keyword: Lecturers-Performance, Motivation, Self-esteem, Competence, Job Satisfaction, ANP, MCDM

EFFECT OF EGRICS INJECTION DURATION ON EMISSION DIESEL ENGINE

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ABSTRACT: Diesel engine has more power, lower fuel prices, and easier engine maintenance. However, diesel engines still have problems with emissions that are very harmful to human health and the environment, especially smoke and NO_x. EGRICS System (Exhaust Gas Recirculation with Injection Control System) is one way to reduce emissions. EGRICS works by circulating some of the exhaust gases into the combustion chamber through the intake manifold to be burned again with the aim of reducing exhaust emissions. The effect of circulating the exhaust to the combustion chamber is then mixed with fresh air entering the intake manifold in order to decrease the maximum temperature and pressure in the flame area thereby reducing the gas emission reaction. The experimental was conducted experimentally by modifying the engine adding EGRICS system. To determine the effect of the EGRICS system on the exhaust gases, injection duration of EGRICS into the cylinder for 15 ms, 20 ms and 25 ms at engine rotation of 800 to 2000 rpm at intervals 200 rpm. The Smoke of exhaust gas is measured using smoke opacity meter. The results show that the proper Cold EGRICS injection duration setting is at 15 ms because it produces the lowest smoke opacity on every engine spin. The use of Cold EGRICS is also more efficient than Hot EGRICS because the smoke opacity increase in Cold EGRICS is smaller than Hot EGRICS which is 18.5% so it can reduce the level of NO_x that is formed from diesel engine exhaust gas.

Key word: Injection duration, Cold EGRICS, Emission, Diesel engine

DEVELOPMENT OF PRODUCT PROMOTION APPLICATIONS MICRO SMALL AND MEDIUM ENTERPRISES (SMEs) BUKITTINGGI CITY

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ABSTRACT: This study aims to develop products such as promotional application works based community m-commerce in the Micro, Small and Medium Enterprises in Bukittinggi that has valid, practical and effective. This research was R & D by using Borg & Gall model. Product trials conducted at Embroidery UMKM. The instruments used were validity and practicalities questionnaire, and effective analysis application by using Yslow software. The technique of data analyzed by using Aiken's V formula to find out the validity and calculate practicality percentage. The finding show that applications promotion of UMKM product based m-commerce which is labeled Lapau Kito, with validity value 0.84 was Valid. While the average result practiced by practitioners was 75.62% in the practically categorized, and the practical average by the perpetrators of UMKM was 79.62% The effectiveness of the application is assessed from user visits and optimization applications aspects that was quite effectively interpreted with Grade C.

Keywords: *Application, UMKM, Promotion, M-Commerce*

RAHMATAN LIL ALAMIN, THE CONCEPT OF MULTICULTURAL EDUCATION

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ABSTRACT: Indonesia is a country consisting of different peoples such as religion, tribe, race, culture, customs, language, etc. make Indonesian society as a plural society. In this diverse life, it is a challenge to unite the Indonesian nation into a force that can uphold the diversity and diversity of its people. This can be done with a multicultural education that is invested in the student through learning at college. This article explores patterns of multicultural education at Universitas Maarif Hasim Latif (UMAHA University) Sidoarjo in East Java. A lecturer is responsible for providing education to their students and assisted by society in seeing the differences that occur in their daily lives that promote the importance of tolerance in diversity making Indonesians accept that they live in diversity. Finally, this paper figure out the multicultural education processes establish since the preparation of curriculum, learning and evaluation processes. These three processes are implemented in the formal and informal learning processes.

Keywords: *Rahmatan Lil 'Alamin, Concept, Multicultural, UMAHA Sidoarjo, Cultivation*

BLASTING DESIGN DEVELOPMENT AREA DECLINE CIBITUNG AND CIKONENG UNDERGROUND MINE PT CIBALIUNG SUMBERDAYA BANTEN

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ABSTRACT

The purpose of this research is to design blasting pattern and improve the blasting parameters. There are two problems that caused unoptimum blasting result parameters for the III class of development rock mass in the underground gold mine PT Cibaliung Sumberdaya. First, there is no blasting design specified for the III class of development rock mass. Second, bad implementation of blast hole drilling activity. The actual blasting activity

result parameters are unoptimal blasting advance (79,34%), high powder factor/PF (1.43 kg/ton), fine fragmentation (P80 = 20 cm) and high overbreak percentage (33%). The blasting design used for this research was calculated by Jimeno, et al, 1995: 217-230. The enhanced parameters are 93.10% blasting advance, 0.81 kg/ton of PF, coarser fragmentation (P80 = 24 cm) and smaller overbreak percentage (8.20%).

Keywords: Blasting design, development, Jimeno, rock constant

CELL ROTATION TO RESOLVE THE WEAKEST CELL DAMAGE IN THE BATTERY PACK IN DISCHARGING PROCESS

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ABSTRACT: This paper discusses the use of batteries in battery packs that will explore the tendency of weakness in some battery cells. In the battery pack there will be a battery cell that becomes the biggest damage target caused by undervoltage in the discharging process. Undervoltage occurs because of the difference in voltage values on each cell in the battery pack. The circuit becomes one of the factors causing a difference in cell voltage value in the battery pack. Therefore the cell rotation method is offered. This method will attempt to repair the difference in voltage values in the battery pack. The repair is focused on battery cells that will be under voltage in every discharging cycle that is conducted to keep the battery condition to be maintained. The displacement of cell with the lowest value to the cell with the highest value successfully eliminated the weakest cell which constantly experience greater stress than other cells in the circuit in the discharging process.

Keyword : Battery, Battery pack, Cells Rotation, Discharging.

ANALYSING INFORMATION SYSTEM OF ACADEMIC SERVICES IN THE UNIVERSITY

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ABSTRACT: The purpose of this study was to analyze the information system of academic services at the university. This type of research is the study of literature whose results serve as starting points for developing the information system of academic services at the university. Based on a review of literature, the data indicate that the lack of access to information, waste of time, huge cost, storage, management, decision-making, and tracking still share manually, the lack of information for stakeholders to make decisions, and the lack of information about the University for prospective students, as well as working with the mismatch of competency. Based on these results, the need to develop information systems academic service quality through customer satisfaction, which university students are the main customers. Thus, further research will be developed for academic-based service information systems Customer Relationship Management (CRM).

Keywords: Information System of Academic

MEDIA DEVELOPMENT OF PRODUCT PROMOTION AND STUDENTS STUDENT SMK NEGERI 8 PADANG CITY WEB-BASED

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ABSTRACT: *This research is based on the number of students of SMK in the Department of Production Design of Kria who are able to produce worthy and wearable products such as cabinets, chairs, souvenirs and other household utensils, but in fact the products that have been produced by students are not utilized properly, Left to accumulate in the school warehouse, some products are displayed in the school gallery and there are some products brought by the students back home because they are only used as school tasks. This research method uses Research and Development (R & D) with Borg and Gall research and development procedure consisting of six stages, research and information collecting, planning, develop of product, field testing and product revision, final product revision and dissemination. For website development using SDLC method with waterfall software mining model. Based on the research and development that has been done, generated a website with the name SMK8Store. The results obtained from this research are product promotion media and student expertise based on e-commerce website that is valid, practical, and effective.*

Keywords: Promotion Media, E-commerce, Kria Production Design, R & D, Waterfall

DEVELOPMENT PROBLEM BASED LEARNING MODEL USING VIRTUAL ENVIRONMENT FOR ENTREPRENEURSHIP COURSES

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Abstract: Entrepreneurship development has begun in the late 20th century in Indonesia, but the results obtained did not match what was expected. Higher Education has not been able to give maximum contribution in creating entrepreneur, due there is no curriculum based to higher education entrepreneurial, lack of human resource capability, lack of center and entrepreneurship companion activities like business incubator. The primary objective of this research was the development of a problem-based learning model using a virtual learning environment (VLE) for undergraduate students majors in entrepreneurship. Furthermore there is no learning model that corresponds to the goal to be achieved that is able to stimulate the entrepreneurial spirit and change the mindset of students to become innovative students, creative and risk-taking. For that reason then we do the development of learning model that is Problem Based Learning (PBL) using virtual environment. The approach of this model is to provide virtual learning support by creating e-commerce environment to transact online and get feedback and reports of the transactions that been made. Students feel as if they are in the real system environment so they can know the constraints faced and determine the way out as an answer to the problems encountered. Surely this will stimulate the release of innovative ideas, creative and courageous in taking risks. This approach creates an entrepreneurial atmosphere by building a center and entrepreneurial entrepreneurial activities / virtual business incubator based on the web and accessible anytime and anywhere. This learning model supports and enhances students learning, achievements and problem-solving skills.

Keywords : Problem based learning, Learning model, Entrepreneur, Incubator business, Mindset



IMPLEMENTATION OF BASIC TECHNOLOGY EDUCATION MODEL OF TEACHING IN WEST SUMATERA JUNIOR SECONDARY SCHOOL

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ABSTRACT: This study identified the needs to Basic Technology Education (BTE), and developed a model of BTE teaching in West Sumatera Junior Secondary School. There are three aspects in BTE, Domain, Pillar, and Area of Technology. Technological domain specify performances (core competencies) and sub performances (basic competencies) need be mastered by Junior Secondary School students Technology and Community, Technological Products Handling, and Design and Manufacturing of Technological Products. Technological pillar covers 3 component: matter, energy, and information, and covers 5 group of technical process that is: energy conversion technology, mechanical engineering technology, instrumentation technology, observation and controlling, material handling and processing, and manufacturing and production processing technology. Concerning area of technology, there are various technologies required by human kind, at least can be classified in 6 area: construction technology, industrial technology, communications and information technology, transportation technology, energi conversion and bio technology (including agriculture and environment technology). In define and design research steps, this developmental research conduct need assessment of curriculum, core and basics competencies, teaching materials, learning process, and assessment method. Data collected from school principles, teachers, and school administrators. In develop and disseminate steps, BTE model trained out in a piloting Junior Secondary School. Study of BTE teaching model gives stronger theoretical basis to develops and to implement the theories of vocational and technological education in Junior Secondary School level. Practically, result of research can become bench marking in policy making, especially in designing and developing a local content curriculum.

Keywords: Basic Technology Education, Domain of Technology, Pillar of Technology, Area of Technology, Model of Teaching

FACTORS EFFECTING ELEMENTARY SCHOOL TEACHER READINESS ON IMPLEMENTING CURRICULUM IN WEST SUMATERA

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ABSTRACT: This research aims to confirming and measuring four factor model effects that predicting correlated to elementary school teachers readiness in implementing the curriculum. These four indicator factors are mind set transformation, the curriculum concepts comprehension, ability to analyzing subjects matter, and teaching design. These four factors designed as indicators variable to elementary school teachers readiness, as a latent variable. The quantitative data treated as interdependency relationship, analysed by multiple correlation, partial correlation, and a confirmatory factor analysis technique. Confirmatory factor analysis results indicated that only 47 of 53 research questions are appropriate for four factor model. First factor, mind set transformation explained 29.44% of teacher readiness, Second factor curriculum concepts comprehension explained 20.32%, Third factor, ability to analyzing subjects matter explained 12.63%, and fourth factor, teaching design explained 8.43% varians of teacher readiness. Totally 70,82% varians of teacher readiness as a latent variable can be explained by the model. Partial correlation analysis finding that a very significance correlation among four factor and elementary school teachers readiness:

factor 1 ($RX_1Y_{,234} = 0,997$: $p < 0,00$), factor 2 ($RX_2Y_{,134} = 0,995$: $p < 0,00$), factor 3 ($RX_3Y_{,124} = 0,972$: $p < 0,00$), dan factor 4 ($RX_4Y_{,123} = 0,983$: $p < 0,00$). This research confirming that four factor model as indicator variables are appropriate and very significantly correlated to elementary school teachers readiness in implementing curriculum. This research confirming that mind set transformation, curriculum concepts comprehension, ability to analyzing subjects matter, and teaching design are significantly suitable and correlates to elementary school teachers readiness as a latent variable. Refers to norm reference the quality of elementary school teachers readiness should be improve. There are needs, consciousness and climate to imply educational innovations, but it seem hard to change the mind sets, to maintain learning and research climate, and lack of curriculum concepts comprehension. Elementary school teachers capacity in information technology, and applying autentic assessment also have to be improved.

Keywords: Mind Set Transformation, Curriculum Concepts Comprehension, Ability to Analyzing Subjects Matter, Teaching Design, Elementary School Teachers Readiness, Four Factors Model

AUTOMOTIVE DEPARTMENT STUDENT PERCEPTION ON LECTURER COMPETENCIES, LEARNING FACILITIES, AND LEARNING MEDIA TO LEARNING ACTIVITIES

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ABSTRACT: This survey research is to explain the influencies of student perception on lecturer competencies, learning facilities, and learning media to learning activities. This research categories as correlational research, and data source are Automotive Department Students Diploma III degree program. Data collected by observation techniques, questionnaire, and documentation. The data analyzed using multiple correlation analysis and partial correlation. Data measured at the interval level using semantic differential technique. The results showed that the level of lectures competencies achievement (X_1) is still in medium level criteria, where the data obtained from 27 items statement amounted to 75.96%. Level of learning facilities achievement (X_2) is still in medium level criteria, where the result of data obtained from 15 items statement equal to 74,52%. The level of learning media achievement (X_3) is still in medium level criteria, where the data obtained from 14 items statement equal to 74.92%. Level of learning activity (Y), is still in medium criteria, where result of data obtained from 46 items questioned, equal to 77,01%. The research founded that the influence of students perceptions on lecturer competencies, learning facilities, and learning media on learning activities categorised as medium level.

Keywords: Learning Activities, Lecturers Competencies, Learning Facility, Learning Media

EFFECTIVENESS OF INTERACTIVE INSTRUCTIONAL MEDIA ON ELECTRICAL CIRCUITS COURSE: THE EFFECTS ON STUDENTS COGNITIVE ABILITIES

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ABSTRACT: This study discussed on the effectiveness of interactive instructional media on the learning process of electrical circuit grade X students in Vocational High School and Technology (SMKN) 5 Padang. Design of the research used is One Group Pretest-Posttest design that is research done on 30 students in one class then compare students cognitive abilities between before with after use of interactive instructional media by using Paired Sample T-Test analysis. Objective test is used as an instrument to measure students' cognitive abilities. The results showed that there were significant differences between students' cognitive abilities before and after the use of interactive instructional media, where the cognitive ability after the use of interactive instructional media had a mean value better than the cognitive ability before the use of interactive instructional media. It can be concluded, that

interactive instructional media is effective to improve the students cognitive abilities in electric circuits subjects.

Keywords: Effectiveness, Interactive Intructional Media, Students Cognitive Abilities, Electrical Circuits Course

FACTORS AFFECTING THE AUTOMOTIVE ENGINEERING STUDENTS' INTEREST ON TEACHING PROFESSION

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ABSTRACT: This study aims to determine the strength of relationship among the student's perceptions, family environment, organizational activities, and learning achievement, to teacher profession interest. This survey research categorized as correlational approach. This research confirm the four factors model, which are students perceptions, family environment, organization's activities, and learning achievement, as indicator variables, and teacher profession interest as a latent variable. Data collected by questionnaire techniques, and analyzed using descriptive, partial correlation statistical technique, and confirmatory factor analysis. There are 425 students of Automotive Engineering Study Programs as the population. Using Slovin and Proportional Random Sampling Techniques, there are 81 students as research samples. The result of the research shows 1) There is no correlation between student perception to teacher profession, 2) There is significant relation of family environment with interest to teacher profession, 3) There is no relation of organizational activity with interest to teacher profession 4) There is no relationship of learning achievement with interest to teacher profession, and 5) There is a relationship of perception, family environment, organizational activity, and learning achievement together with an interest in the teacher profession. If a person's perception is positive about a profession it will affect his interest in the profession, the learning achievement does not guarantee high interest to become a teacher.

Keywords: Teacher Profession Interest, Students Perceptions, Family Environment, Organizational Activities, Learning Achievement

PAIR (PULSED SECONDARY AIR INJECTION) EFFECTS TO EXHAUST GAS EMISSION

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ABSTRACT: PAIR (Pulsed Secondary Air Injection) is one of spare part used in FU-150 motor cycle. Factory main aims is to reduce the level of density of the exhaust gas or air pollution by injecting a gaseous O₂ into the exhaust system. Injected O₂ will be neutralized, or remnant the exhaust gas in the exhaust by burned with O₂. This quasi experimental research testing FU 150 motorcycle performed on 1500, 2500, and 3500 rpm, in six times treatment. The F test indicated that there are difference between CO in exhaust gas emissions using a Pair and Non Pair, even in three type of spark plug, which is standard, platinum, and iridium spark plugs type. The value of F count for exhaust emissions of CO₂ is 13.721 with 0.05 level of significance. Alternative hypothesis is received, and H₀ is rejected. This means that there is a difference between CO₂ and HC in exhaust emissions using a pair, and Non Pair, in three type spark plugs. The value of F to calculate HC exhaust emissions is 4.810 with 0.05 level of significance 0000 < then for the third hypothesis H₀ is rejected. This means that there is a difference between HC exhaust emissions using a pair and not pair, in all three types of spark plugs.

Keywords: Exhaust Gas Emissions Pair, Standard Spark Plug, Platinum Spark Plug, Iridium Spark Plug

MONITORING MARINE TRAFFIC APPLYING AUTOMATIC IDENTIFICATION SYSTEM (AIS) DATA BY INTERACTIVE VISUALIZATION APPROACH

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ABSTRACT: Indonesia as an archipelago country utilizes various types of water transport. Traveling by boat is one of the preferable modes of transportation for many people because of convenient and economist reason compare to trip by plane. Therefore, water transport become more popular. It is important to manage marine traffic data for monitoring and evaluating purposes. The marine traffic data is collected using Automatic Identification System (AIS). The data consist of some attributes such as date and time, boat positions (longitude and latitude), Maritime Mobil Service Identity (MMSI), Speed Over Ground (SOG), Navigation Status, and Course Over Ground (COG). Marine information recorded by the AIS simultaneously. AIS real time data has been sent every 2 until 10 seconds depend on the boat speed. Furthermore AIS raw data are very big and have many dimensions and attributes. It is very hard to explore despite it is important information. This research aims to provide interactive visualization system of AIS to represent big data to support marine traffic control using AIS exploratory data analysis that is easier to investigate.

Keywords: Interactive visualization, AIS, Marine traffic

LESSON STUDY FOR IMPROVING A LEARNING QUALITY

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ABSTRACT: Nowadays, the education system is required to run dynamically. A teacher is expected to participate actively by involving the various groups. Therefore, the teachers are required to be able to find the right method in their learning. The lesson study is one method that can improve the quality of a teaching profession and this method also able to improve the cooperation between the teachers' explanation. This method consists of three stages of planning, implementation, and reflection. This study was conducted in 5 Junior High Schools in Nganjuk. Lesson study gives real opportunity or process of student learning in the class. Lesson study guides teacher to focus their discussion in action planning, and reflection learning practice in the class. Lesson study is one of teacher in-service form that can do for improving teacher professionalism. The research proves that the method of lesson study can improve the learning quality and its objectives will be achieved more easily. This is because in the lesson study method there is a good cooperation and the togetherness between the teachers of that school..

Keywords: Lesson study, learning quality, increasing, improving

INVESTIGATION OF CHEMICAL FEASIBILITY AND DISTRIBUTION OF IRON SAND RESERVE REGIONAL AREA OF AGAM DISTRICT FOR CEMENT RAW MATERIAL IN PT. SEMEN PADANG

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ABSTRACT: The purpose of this research is to know the mineral content of iron sand and its spreading both vertically and horizontally with the purpose of providing information and data for local government of Agam district for the development and arrangement of environment along the coast.

In order to obtain information about the depth of iron sand can be used geoelectric method because one of the physical properties of metal elements including iron is to have low resistivity. In this study used resistivity mapping method that aims to determine the variation of the arrangement of soil layers vertically and horizontally. The configuration used in this method is Schlumberger configuration. To know the chemical content of iron sand is done by taking samples of iron sand systematically and represented at some point. The sample was analyzed chemical composition by XRF method (X-Ray Fluorescence), then correlated with some surface data, so that the depiction of the quality of iron sand of Tiku Regency.

From the interpretation of soil resistivity value on 2 paths it can be concluded that iron sand in Tiku Beach area is in depth 0 - 16 m. Chemical content of iron sand from XRF method analysis shows Fe₂O₃ percentage of 10 - 35%, with TiO₂ content of 1 - 3%. The quality of iron sand can be used as raw material for cement maker.

Keywords: Agam iron sand, Resistivity mapping, Iron sand sample, PT Semen Padang

DESIGN OF ELECTROMAGNETIC REGENERATIVE SHOCK ABSORBER AS A TOOL OF HARVESTING VIBRATION ENERGY ON VEHICLE

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ABSTRACT: This article discusses about vibration energy on the vehicles shock absorber which was converted to electrical energy by using magnet and coil. Principally, vibration energy on the shock absorber will be wasted into friction and heat form. But, we are able to obtain the vibration energy and utilize it into a new energy source for vehicle by adding the mechanism of harvesting energy electromagnetic type. Linear movement on the shock absorber is captured by electromagnetic generator mechanisms which are consist of coil and permanent magnet. The produced output on the electromagnetic generator can be used as new energy source for vehicle. The mechanism of harvesting energy used electromagnetic generator was chosen through literature study that has been done by the researcher. Which was electromagnetic generator has the smallest of loss of energy value of all type of harvesting energy. The testing data which used galvanometer, it was obtained that the resurrection energy was 2.5 mV on 1.5 Hz excitation frequency, 4.24 mV on 2.0 Hz excitation frequency and 5.6 mV on 2.5 Hz excitation frequency.

Keyword: shock absorber, harvesting energy, electromagnetic generator

THE DEVELOPMENT OF VIT (VOCATIONAL INTEREST TEST) MODEL USING DECISION SUPPORT SYSTEM (DSS) TECHNIQUE

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Abstract: The accuracy in choosing interest of vocational major can determine the learning success of a student, while lose a good opportunity if they are mistaken in deciding their vocational interest. The most important thing of vocational education is the recruitment of the student. If the application of the recruitment tool is eminent, it will create a good graduate. The solution offered to overcome this problem is by calibrating vocational interest instruments developed from Holland theory with informational technology and systems with knowledge based to create a model of vocational interest test and innovative vocational interest software supported by decision support system in taking the decision. The objective of the research is to provide an innovative model and software of interest test with knowledge and information technology based. The method of the research is RD method four D. The conclusion is Holland personal theory can help the student in deciding their vocational interest.

Keywords: Vocational Interest Test (VIT), Decision Support System (DSS), Holland, Vocational High School, Selection System

DEVELOPMENT OF ONLINE EXAMINATION SYSTEM USING WONDERSHARE QUIZCREATOR BASED ON WEB

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ABSTRACT: This research aims to develop an online examination system in SMA Negeri 3 Padang. The application for this web-based online examination used Wondershare QuizCreator. The research method used was RnD (research and development) by using IDI development model (define, develop and evaluate). The results of this research were effectively to be used and the examination can use this application with the system randomly.

Keywords: Online examination system, Wondershare QuizCreator, Web

THE DEVELOPMENT OF INTERACTIVE BLENDED PROBLEM BASED LEARNING MODEL FOR PROGRAMMING SUBJECT

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ABSTRACT: This article discusses the results of research on conceptual model and hypothetical model development of Interactive Blended Problem Based Learning (IBPBL) in Programming Language subject for Electrical Engineering students of Universitas Negeri Padang. The model is a blended learning model which mix between face-to-face learning in the classroom and Moodle-based online learning with problem-based learning syntax in the field of Electrical Engineering. The study was conducted in three stages: (1) literature review, (2) conceptual model formulation, and (3) hypothetical model formulation. The IBPBL conceptual model includes: (1) a philosophical component: pragmatism; (2) theoretical components: cognitivism, behaviorism, constructivism, and connectivism; (3) methodological components: problem-based learning; and (4) technical components: problem solving, collaboration, critical thinking, innovative, creative, and systematic. While the hypothetical model is based on the ability of students in solving problems critically, creatively, collaboratively, systematically by utilizing various advantages possessed by face-to-face and online learning in programming language course in Electrical Engineering.

Keywords: Instructional Model Development, Blended Learning, Problem Based, Interactive, Programming

ACCESSIBILITY AND ACCEPTABILITY OF THE BMI MODEL AT INSTITUTE OF TEACHER TRAINING AND PEDAGOGY

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ABSTRACT: This research aims to analyze the accessibility and acceptability of Blended Mobile Instruction (BMI) model in LPTK Universitas Negeri Padang. The BMI model is a blended learning model which mix between face-to-face learning in the classroom and online learning using mobile devices such as mobile phones and tablets. The accessibility of the model is viewed from three aspects: (1) ownership of mobile devices by lecturers and students, (2) availability of facilities owned by universities, and (3) the willingness of lecturers to use and develop this technology in learning. While the acceptability of the model is measured by using an attitude scale instrument consisting of four components: (1) the students' knowledge of the advantages of the model in learning, (2) the benefits gained in the use of the model, (3) the interest of students and lecturers towards the model features, and (4) difficulties experienced by students in learning and lecturers in managing learning using the model. This research was conducted using survey method consisting of 100 respondents. From the survey it was found that accessibility is whether viewed from the tools owned by the students, the facilities owned by the university, and the ability of the lecturer to develop the mobile-based learning is adequate.

Keywords: Accessibility, Acceptability, BMI Model, Institute of Teacher Training and Pedagogy

NEEDS ASSESSMENT ON DEVELOPMENT OF INSTRUCTIONAL MEDIA BASED ANDROID AT VOCATIONAL HIGH SCHOOL

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Abstract: This Study aimed at: 1) analysis description of Core Competencies and Basic Competencies (Kompetensi Inti dan Kompetensi Dasar (KI/KD)), to established concepts and analysis of students; 2) constraint that faced by teacher in the field during teach the materials of Basic of Electricity and Electronics; 3) to knowed about what was the instructional media that need to be developed on Basic of Electricity and Electronics. The model in this study was 4D (four-D) model that was developed by S. Thiagarajan et al. There were four steps in this 4D (four-D) model, were follows: define (define phase), design (design phase), develop (developent phase), dessiminate (dessiminate phase). Needs assessment was done in the define phase. Needs assessment was done by using needs assessment's instrument in the form of quissionaire, through observation and interview. The results of this study were obtained that: 1) instructional media was done on Basic of Electricity and Electronics on Basic Competencies of applying current and electric potential, material concepts of this instructional media was electric current and electric potential, and learners who were subjected in this study were students Grade X of Electrical Power Installation Techniques; 2) material concepts of electric current and electric potential was difficult materials to delivered, certain on abstract materials. Teachers need instructional media to visualization the abstract materials and teacher could teach effectively; 3) instructional media that need to developed on Basic of Electricity and Electronics was instructional media based android, so that students could learn to be independent by using instructional media based android. Students could learn everywhere, both at home and school.

Keywords: Need Assessment, Instructional Media, Basic of Electricity and Electronics, Mobile Learning

RE-CHARACTERIZATION ANALYSIS OF ENGINE COOLANT TEMPERATURE SENSOR

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ABSTRACT: The purpose of this article is to conduct a re-characterization of ECT sensor for a machine with an electronic control system. The re-characterization is done by adding resistors in parallel to ECT. The mechanism of addition of resistors according to the condition of the machine. After conducting the research, re-characterization of ECT was successful. The results showed that the ECT resistance value became lower at cold temperatures.

Keywords: re-characterization sensor, engine coolant temperature sensor, electronic fuel injection system

DESIGN OF SKILL ASSESMENT IN COMPUTER NUMERICAL CONTROL PROGRAMMING SUBJECT

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ABSTRACT: During this time the assessment in the classroom is less able to describe the abilities and skills of the various students because the instruments used are less suitable and varied and the time limitations, so the assessment tends to be done by using instruments that further simplify the demands of student acquisition. Particularly in the assessment of CNC programming skills, teachers use the same form of assessment sheets of different subjects. Therefore, the assessment of CNC programming skills should be developed. The purpose of this research is to develop a skill assessment design on CNC programming subjects that are theoretical and practical. Research method used is Research and Development (R & D) by using Four D model (4D). This model consists of 4 development stages of Define, Design, Develop, and Disseminate. The results show that the design of the validity of course skills with a score of 0.600, this means the overall design of the assessment shows a valid result.

Key words: Design Skill Assessment, CNC Programming Subject

CONDUCTING LABOR MARKET ASSESSMENT IN ENGINEERING CURRICULUM DEVELOPMENT

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ABSTRACT: Engineering education is one of the most significant component for the human resource development. In order to achieve competitiveness with advanced countries, human resource development policies have to be changed. The curriculum have to be made dynamic to take into account in changes of technologies and lab our demand. The curriculum Development based on labor market assessment is the key factor to make the dynamic curriculum. Labor market assessment can be done through four approaches, that are: employer surveys, extrapolation, the econometric and job vacancy. Based on labor market assessment we can identify the technology development at work places and competency profile of engineering manpower and determination of the strengths and weaknesses of the engineering system. Through the design and developing process that is translated into curriculum which stronger links between the worlds of education and work.

Keywords: Labor Market Assessment, Curriculum Development, Occupational Analysis, Engineering Education

ANALYZING OF TECHNICAL CUTTING OF EMPTY PALM BUNCHES

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Abstarct: Generally, this study aimed at conducted technical evaluation of palm fruit cutting machine. Especially, this study aimed at: 1) Conducting structure identification and physical properties of empty palm bunches, 2) Studying of specific cutiing style (GPS) and specific cutting energy (EPS) on spikelet, stalk of empty palm bunches with various corners of the blade, sliding angle and cutting angle, 3) Technical evaluation of palm fruit cutting machine. This study was conduct at Politeknik Unand Laboratoty, agricultural engineering laboratory of Unand and PT. AMI Padang. This study had several stages, were follows: 1) Separating and calculating weight between spikelet, stem and fruit that follow in empty palm bunches and next measuring TKS water content on base, middle and end. 2) Conducting the cutting on spikelet, stalk of empty palm bunches with various corners of the blade, sliding angle and cutting angle. 3) Evaluating on palm fruit cutting machine that using optimum blade angle. The results of this study obtained that: 1) Structure and physical properties of empty fruit bunches was percentage. 2) Cutting style and cutting energy that used corners of the blade, sliding angle and cutting angle. 3) The result of technical evaluation of palm fruit cutting machine (TKS) obtained that the results of this study could be used as guide on development of empty cluster counting machine and increasing business utilization of empty palm bunches.

Keywords: Technical cutting, empty palm bunches, GPS and EPS

PACK CARBURIZATION OF MILD STEEL, USING SHELL AS CARBURIZER TO TEST HARDNESS

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ABSTRACT: Investigation was conducted into the mechanical properties of mild steel subjected to packed carburization treatment using shells as the carburizer. The test specimen is divided into 3 groups: A specimens are untreated specimens , B specimens are used in a pack carburizing process with charcoal of coconut and C specimens are used with charcoal of coconut and shells. The media used in the Carburizing Pack process is a mixture charcoal of coconut with 25% shells and as a catalyst used barium carbonate (BaCO₃). Pack specimens B and C is heated to a temperature of 950 ° C and The burning time is done for 6 hours., soaked in water. Prior carburization process, standard test samples were prepared from hardness test with a diameter of 25 mm and 12 mm thick. After carburization process, the test samples were subjected to the standard test and from the data obtained ultimate hardness. Specimen A has a hardness value of 216.16 BHN. Specimen B has a hardness value of 398,86 BHN, and specimen C has a hardness value of 487,86 BHN. It can be concluded that the effect of the addition of shells can increase the hardness against ST 37 steel in the process of heat treatment of Carburizing Pack.

Keywords: *Low carbon steel, Shell, Hardness, Pack Carburizing.*



ANALYSIS OF LEARNING COMPETENCY ENGINEERING STUDENTS VOCATION D 3 FT UNP

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ABSTRACT

This study aims to calculate the level of achievement: (1) the competence of D3 vocational students in the implementation of machining engineering learning, and (2) the difference in student learning achievement between expectations and reality. The research method is descriptive quantitative. The population of this study is all students, vocational engineering engineer D3, as many as 281 people. The sample was chosen by random sampling of 80 people. Data were collected by questionnaire, and documentation. Data analysis is done descriptively, and comparative. The result of the research shows: (1) the learning that is taking place now in the D3 program of mechanical engineering vocational program of FT UNP is not suitable between student expectation, and (2) there is difference between student expectation with present lecture achievement.

Keywords: Analysis, learning competence, D3 student, vocation, machining technique

USE OF PRODUCTS-BASED MODULE IN THE PROCESS OF LEARNING TO THE PRACTICAL COURSE

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ABSTRACT: The research aims to produce products based modules on subjects interesting gastronomic practice and fit for use in learning, and determine the effectiveness of the modules in improving student learning outcomes. Excess module based products is to give an opportunity to the students do the work practices oriented to the market. The study design using a design development of Thiagarajan in Trianto in using 4D development models consists of four main stages, namely, Define, Design, Develop and Disseminate. The study concluded that product-based learning module developed after several stages have been declared valid, practical and effective and can increase the activity and student learning outcomes at the course gastronomic practice.

Keywords: Products-based module, Practical course

DESIGNING STRATEGY MAPS FOR PRIVATE ENGINEERING COLLEGE

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ABSTRACT: This study aims to design a strategic map for a private engineering college using the balanced scorecard method. There are two objectives: Key Performance Indicator (KPI) identification and KPI weighting. CIPP model is used to complete this study with the input of the study in the form of corporate statement and institutional strategy. Interview method used to determine KPI then continued by filling Analytic Hierarchy Process questionnaire in weighting KPI. There are 22 KPIs selected with distribution: three KPIs in financial



perspective with 3.87% weighted value; five KPIs in the perspective of the customer with 47.86% weighted value; 6 KPIs from the perspective of Internal Business Process with 29.46% weighted value; and 8 KPIs from Learning & Growth perspective with 18.8% weighted value. The results of this strategic map design can be used in communicating all strategies implemented by the institution to all stakeholders and as a validation tool in strategy formulation.

Keywords: Strategic Management, Balanced Scorecard, Strategy Map, Analytic Hierarchy Process, Private Engineering College

LEARNING MODEL REQUIREMENTS IN VOCATIONAL TRAINING OF WELDING INSPECTOR BASED ON QUALITY FUNCTION DEPLOYMENT

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ABSTRACT: This study explored principal factors in learning model based on student's point of view of vocational training of Welding Inspector. A total of 124 students from 5 classes participated in the study. Principal factors are identified by using Quality Function Deployment (QFD) method can be described as follow (1) material training is in accordance with the needs of the field (8.7%), (2) implementation is practical (8.9%), (3) course content is updated (8.7%), (4) Instructor have abilities and experiences (8.7%), (5) information services is available (8.6%) and (6) instructors have good attitudes and behaviors, 5%). As a result, the technical responses required to follow up the priority level with the absolute interest of each are (1) instructors from practitioners (199), (2) materials updated regularly (183), (3) materials accompanied with video illustrations (143), (4) practice tools are available (135) and (5) internet network is available (132). Consequently, it is hoped the study may provide learning model requirements of development of welding inspector training.

Key words: QFD, Vocational Training, Welding Inspector, Learning Model, Technical Response

DEVELOPMENT OF ENTREPRENEURIAL LEARNING MODEL TO INCREASE STUDENTS ENTREPRENEURS' INTEREST AT COLLEGE EDUCATION

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Abstract: This research is based on the fact that entrepreneurship learning model has not been effective to increase student entrepreneurship interest. Referring to these conditions, this study aims to reveal and formulate entrepreneurial learning model that can increase student entrepreneurship interest. Research and development research (R & D) method by modified Borg and Gall design. The population of this research is student of Refraction Optician study program. The Data in this research is qualitative and quantitative data. This new learning model has been tested in a limited way to know the validity, practicality and effectiveness. Based on the result of the research, it is concluded that contextual based on result validity of entrepreneurship learning model, practical and effective development to increase student entrepreneurship interest. This learning model is recommended to be applied and introduced widely to similar study programs within the college.

Keywords: Learning Model, Entrepreneurship, Interest in Entrepreneurship

APPLICATION OF LEARNING BASED PRODUCTS IN ORDER TO GROW INTEREST IN ENTREPRENEURSHIP OF VOCATIONAL STUDENTS

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ABSTRACT: The special purpose of Vocational High School (SMK) is to prepare students to be productive human beings, able to work independently and able to fill vacancies in accordance with the field of expertise. Currently, the number of graduates of SMK is not proportional to the number of employment growth. This condition makes vocational students not only prepared to work in the industry, but also required to foster entrepreneurship interests so that they can create jobs for themselves. One of the efforts to cultivate student interest in entrepreneurship is to apply production-based learning. Product Based Learning model emphasizes that at the end of learning students are required to produce a valuable tool. Based on the results of this study, Product Based Learning is able to produce 16 units of decorative lights that are ready to be marketed and able to grow interested in entrepreneurship of vocational students.

Keywords: Product Based Learning, entrepreneurship interests, vocational students

BRACING CROSS SECTION EFFECT TO DISSIPATION ENERGY BY NUMERICAL ANALYSIS

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ABSTRACT :Indonesia is located at earthquake prone area. In planning of earthquake-resisted structures, ductility, stiffness, and amount of structural dissipation energy are very important factors. Experts in the field of structural engineering try to find a structural system that can minimize structural damage due to earthquake loads. The structure system must be able to dissipate the energy due to earthquake load. Earthquake resistant buildings made of steel can have advantages in terms of strength, weight, and ductility compared to reinforced concrete buildings when properly planned. Known earthquake-resistant structures include two types of portal systems: moment of resisting frame (MRF) and portals with stiffening elements or Braced Frame (BF). The portal system with the stiffening element or the Braced Frame (BF) is divided into two subsystems: Concentrically Braced Frame (CBF) and Eccentrically Braced Frame (EBF). Among the three earthquake resistant structural buildings on top, the structure of Concentrically Braced Frame (CBF) type X has a higher rigidity. Because the diagonal shape will mechanically have a more rigid nature of the quadrilateral. The absorption of the energy of a concentric mined steel frame earthquake is done through melting and post bending of the stiffening element.

This paper presents numeric study output on ductility, stiffness and dissipation energy on Concentrically Braced Frames type X as consequence of different structural bracing cross-sectional installation position. The numeric study output by using MSC/Nastran softwares with conducted five modelling of single-story Concentrically Braced Frames type X (CBF-X) which measures 4m x 6m with the different installation position of cross section of bracing and gusset plate. Based on the results of numerical analysis of cyclic and push-over analysis, we get the load curve (P) vs displacement (δ) which explains the energy dissipation behavior of the five structures and analyzing the behavior of the five structures studied in this numerical study due to the monotonic and cyclic loading so as to obtain a clear picture of the structure of CBF-X is best used. The different bracing cross-sectional installation position affects ductility, stiffness, and amount of dissipation energy on Concentrically Braced Frames type-X. It is closely related with difference of the first yielding location occurring on structures.

The bracing capability to perceive a large inelastic deformation is affected by bracing stability on buckling without the lost of strength and stiffness. Total gusset plates used in Concentrically Braced Frames type-X affects ductility and stiffness values. This numeric study output shows that CBF-X structure is the best for use as earthquake-resisted structures with position of web bracing cross-sectional stay in one field with web column and beam position and make use a gusset plate where structural first yielding occurred in 2t area at a gusset plate.

Keywords: ductility, stiffness, dissipation energy, Concentrically Braced Frames type X, gusset plate



EARTHQUAKE AND TSUNAMI DISASTER MITIGATION TRAINING FOR ELEMENTARY SCHOOL STUDENTS IN THE COASTAL AREA OF PADANG PARIAMAN DISTRICT WITH KYOTO INTERNATIONAL DISASTER PREVENTATION SCHOOL METHOD

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ABSTRACT : Sumatera Barat is located at earthquake prone area. In 2009 the West Sumatera earthquake (7.9 on the Richter scale) caused 1,117 people dead, 2 were missing, 1,214 were seriously injured and 1,688 were slightly injured. The disaster also caused damage to community homes, with details of 114,797 heavily damaged, 67,198 moderately damaged and 67,838 slightly damaged. This earthquake was caused by fault movement passing through coastal area of West Sumatra namely Indo-Australian fault. Based on the disaster vulnerability index, the areas along the coast of West Sumatra (Pesisir Selatan, Padang, Padang Pariaman, Agam and Pasaman Barat), have high levels of disaster vulnerability. Padang Pariaman regency is one of the districts which has a coastal area with a coastline along the 60.5 km stretching up to the cluster of Bukit Barisan. The condition of the Padang Pariaman district is potentially affected by the tsunami, as some of the cities with populations and public facilities are located near the coast. This condition is very apprehensive and makes this city need more shelter and tsunami evacuation path. Until now, the Government of Padang Pariaman district and supported by the provincial government of West Sumatra as well as the private sector (NGO) has made various mitigation and earthquake mitigation efforts such as mitigation training. However, the training has not reached all the people, especially elementary school students who do not have basic knowledge of earthquake and tsunami and have not been able to independently evacuate and mitigate. Until now, the Government of Padang Pariaman district and supported by the provincial government of West Sumatra as well as the private sector (NGO) has made various mitigation and earthquake mitigation efforts such as mitigation training. However, the training has not reached all the people, especially elementary school students who do not have basic knowledge of earthquake and tsunami and have not been able to independently evacuate and mitigate.

This mitigation training is expected to optimize disaster prevention activities to achieve the objectives of Disaster Preparedness School (SSB). Disaster Preparedness School (SSB) is an effort to build school preparedness for disaster in order to awaken the awareness of all elements in education both individually and collectively in school and school environment before, during and after disaster. Targets of training activities on earthquake and tsunami mitigation of the Kyoto International Disaster Prevention School (KIDS) method at elementary schools in coastal areas of Padang Pariaman District by providing basic understanding to elementary school students about earthquake and tsunami, and adequate socialization to improve the ability of elementary school students, especially on the theory of fast and simple mitigation theory to earthquake and tsunami that can be understood and implemented later and disseminate simple earthquake and tsunami mitigation pamphlets to elementary school students and target schools as a reference for future evacuation activities.

Keywords: Earthquake, tsunami, evacuation, mitigation, training, disaster preparedness school, Kyoto International Disaster Prevention School (KIDS) method

THE DEVELOPMENT OF INTERACTIVE MULTIMEDIA-BASED LEARNING MEDIA USING ADOBE FLASH CS3 AND CAMTASIA IN PROBLEM-SOLVING LEARNING IN ELEMENTARY MATHEMATICS OF IN STUDENT PGSD STKIP ADZKIA IN PADANG

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ABSTRACT: This research was motivated by the low class PGSD STKIP Adzkie Padang students in Problem Mathematics Problem Solving (*Problem Solving*). This is due to lack of utilization and innovation of learning resources as well as Interactive Multimedia Based Learning Media Using Adobe Flash CS3 and Camtasia. The method used in this research is the Research and Development (R & D) by using a development model ADDIE which includes five stages: (1) Analysis: needs analysis, (2) design: the design of the product, and (3) development: the development of the product. (4) implementation: implementation of the product (5) Evaluation: the effectiveness of the student. Results obtained from this research and development are as follows (1) The product resulting from this research is a product based on Interactive Multimedia Based Learning Media Using Adobe Flash CS3 and Camtasia in Problem Solving Learning Mathematics SD (2) Development of Interactive Multimedia has passed the stage of media validation experts, validation experts materials, and language validation experts. The validation results of the three experts are said to be valid. (3) Development of Interactive Multimedia Based Learning Media has been through the practical phase of the lecturer's response with the result of the percentage is 83.40%, and the practicality of the student response with the result of the percentage is 87.81% then it is practically categorized. (4) the development of Interactive Multimedia Based Learning Media has been through the effectiveness stage shows the value of 87.46% of students reach the Minimum Criteria of Completeness, it can be categorized effective.

Keywords: *Interactive Multimedia Based Learning on Adobe Flash CS3 and Camtasia, Research and Development, Validity, practicalities and effectiveness*

DEVELOPMENT OF INTERACTIVE MULTIMEDIA CD OF INSTRUCTIONAL MEDIA ON BUILDING CONSTRUCTION

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ABSTRACT: This development research was designed to develop an instructional media in this case interactive multimedia CD on Building Construction. This interactive multimedia CD instructional media was designed to increase motivation of students in so that students can understand learning material in building construction subject, and to increase learning outcomes on building construction subject. This research was using Research and Development (R and D) method of research, and *Four-D (Define, Design, Develop, and Disseminate)*. The data was primary data that had been collected from media expert, teacher, and students. Data analysis technique that used in this research was descriptive analysis data technique by describing validity, practicality and effectivity of interactive multimedia CD instructional media. Based on the research results in this research concluded that this interactive multimedia CD instructional media is valid, practical, and effective and is recommended to be used as instructional media on Building Construction Subject.

Keywords: *Interactive Multimedia CD, Validity, Practicality, Effectiveness*

IMPLEMENTATION OF DISASTER PREPARED SCHOOL (SSB) IN WEST PASAMAN DISTRICT WEST SUMATERA PROVINCE

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ABSTRACT: Be some a region in West Sumatra prone disaster flood and soil landslide. Wrong only are the districts of West Pasaman which is disaster subscription area annually. One district in this district is a vulnerable area, especially landslide disaster. Baik landslides and flooding have the same potential cause casualties. Flood and landslide in West Pasaman regency can not be separated from the human influence that is not good in managing the environment at around their settlement. Awareness of environmental management should continue next with various programs. The program is called SSB (Disaster Alert School). SSB is a new program and still needs to be developed, especially in Pasaman West District. Some of Elementary School (SD) located in disaster-prone areas need sosialisation to achieve the goals discussed earlier. The whole district is a region that has many hills with houses and places of study in the form of elementary school in slope - the slope The hill is very necessary to prepare the next generation of the current-generation pre-disaster and post-disaster occur. This is done to anticipate the number casualties. Results research obtained is 12,8% of 49 respondents not yet understand about preparedness to disaster-related problem prevention to disaster flood and landslide. Awareness respondents to environment in respond problem disaster this including in category enough.

Keywords: Disaster Preparedness School, Floods, Landslides

USING MOBILE TELECOMMUNICATIONS -2000 INTERNATIONAL FOR ANALYZING TECHNOLOGY NETWORK ERA 4G-LTE

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ABSTRACT: Technology Long Term Evolution (LTE) is the latest standard of mobile network technology, as development of GSM (Global System for Mobile Communication) / EDGE (Enhanced Data Rate for GSM Evolution) and UMTS (Universal Mobile Telephone Standard) / HSDPA (High Speed Downlink Packet Access). 4G is a technology development from 3G. 4G system will provide comprehensive IP solution where voice, data and multimedia flows can be up anywhere and anytime, and 4G has a higher average data from the previous generation. Customers may also use their cellular terminals for video conferencing and in time to exchange information via e-mail or multimedia mail.

Keywords: Technology Long Term Evolution, 4G-LTE, IMT-2000



THE VALIDITY OF MOBILE LEARNING MANAGEMENT SYSTEM (M-LMS) AT UNIVERSITY

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ABSTRACT: This study aimed at knew expert validity results of Mobile Learning Management System (M-LMS) on Human and Computer Interaction course at University. M-LMS was developed to make a dynamic communication between lecturer and learner. Learning management system was model and system that ran a working administration that have function as platform e-learning, giving and allocating content, identification, measuring, tracking progress, collecting and applying the data to controlled learning process fully. Procedures of this study used Borg and Gall that be simplified to be five phases, were follows: 1) Doing product analysis that will be developed, 2) Developing prototype, 3) Validation of expert and revision, 4) Small scale field trials and product revisions, 5) Large scale field trials and finishing the product. Expert validation phase on Borg and Gall method was done on third phase that was validation of expert and revision. This study obtained M-LMS software that valid on Human and Computer Interaction course in University.

Keywords: Validity, Mobile Learning Management System, Human and Computer Interaction

DECISION SUPPORT SYSTEM IN SELECTING THE SCHOLARSHIP RECIPIENTS WITH SAW METHOD

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ABSTRACT: Government and local governments accordance with its authority to give tuition assistance or scholarships to students whose parents or guardians are unable to pay for his education. Along with the many students who attended the STMIK Royal Kisaran, we need a system in determining a student was eligible to receive a scholarship. This decision support systems use traditional methods Simple Additive Weighting (SAW). This method was chosen because it is able to select the best alternative from a number of alternatives based on the criteria that have been determined. This research was conducted by finding the weight values for each attribute, and then carried out the screening process will determine the optimal alternative. It can accelerate the acceptance of the scholarship selection process and can reduce errors in determining the recipients.

Keywords: Decision support system, Scholarship, Simple Additive Weighting (SAW), Weights

DESIGN OF LIBRARY INFORMATION SYSTEM USING BARCODE ON SMAN 1 SOLOK CITY

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The rapid development of information technology at this time is very helpful in academic service One of them is the school, in this case especially the school library that can be a source of reference and learning facilities for students and teachers. Activities that run every day in the library that collects, stores, maintains and manages the collection of library materials using the system. Information systems have been Widely used in a place with a variety of technologies. The purpose of this research is to design the existing library information system at SMA N 1 Solok In order to be computerized and Facilitate the library staff member in processing book of data, member data, the book lending and book returns To be quick and accurate by using barcode

Keywords: Schools, Library, Information Systems, Barcode



DECISION SUPPORT SYSTEM PROVIDING FUNDS FOR UNDERPRIVILEGED STUDENTS

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ABSTRACT: Students who come from underprivileged families are a dilemmatic issue, where poverty makes them unable to go to college, on the other hand if they do not have their undergraduate degree it is difficult to get out of the poverty cycle, for it is needed direct assistance that can ease the economic burden for underprivileged students. However, in the provision of financial assistance will experience many difficulties because of the criteria used in determining who is entitled to receive funds and more feasible in accordance with what is expected. This problem can be solved by using a decision table method in decision support systems, because with this method can help speed up and simplify in decision making process.

Keywords: Poverty, Decision table, Decision support system

IMPLEMENTATION OF PROJECT BASED LEARNING MODEL IN COURSE WEB DESIGN

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ABSTRACT: One of the main competencies of STMIK Royal Kisaran graduates is able to design the web properly. Web Design course aims to train students to be able to transform the concept of planning a web into the picture. One of the obstacles encountered in the course is the concept and drawings made by students often do not match the theme of the web. This study aims to develop a project-based learning model so that student design results more in accordance with the theme of the web that will be made. The activities of this research will be done by classroom action research through the following stages: (1) Pre test, (2) er Planning learning, (3) Implementation of learning model project based learning, (4) Monitoring and evaluation, to see (test) modeling, (5) Reflection and revision, (6) Implementation of learning in the next cycle, and (7) Evaluation of learning outcomes. This research was conducted for four months in 2017 by taking a location at STMIK Royal Kisaran. The subjects of this study are students who take Web Design courses. Data analysis used is descriptive qualitative and descriptive statistic. The results of this study are: (1) Implementation of project based learning model proven to improve the process and student learning outcomes in the course of Web Design through the assignment of web image planning in accordance with the theme of the web. The tasks are delivered each time face to face and improved on the next face-to-face based on feedback delivered by the lecturer, (2) Learning based project model learning will be easier implemented if accompanied by web that has been applied in real condition online.

Keywords: Project Based Learning, Web Design, Constructivist Learning Theory, Peer Tutor



IMPACT OF WORK-BASED LEARNING OF CONCRETE STONE WORK PRACTICE ON DIPLOMA-III CIVIL ENGINEERING STUDENTS

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ABSTRACT: The practice of stone and concrete work is one of the existing courses in the third semester of Diploma-III Program of Civil Engineering. One part of the working practice of stone and concrete is the work of ceramic installation. The competent workforce in a ceramic installation is able to produce high finance compared to other concrete stonework. The purpose of this research is to measure students' competence in the ceramics installation with work-based learning. The research method is done by direct observation conducted by the researcher on the student activity level. Learning is done with a work-based learning model, where students directly practice such as conditions in the field work. The results of the study have an impact on the improvement of students' competence in the installation of ceramics with work-based learning. The improvement was also seen from the result of student learning done with pre-test and post-test.

Keywords: Work-based learning, Practice of stone and concrete work, ceramic installation

ANALYSIS OF VOLUME AND STRONG CONCRETE IMPROVEMENT ON NON-SAND CONCRETE MIXED WITH ADDITION BAKING POWDER

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ABSTRACT: In the process of building construction, efficient use of concrete, economical and workability is the most common. For that sought alternative environmentally friendly concrete manufacture that is by reducing the use of sand. This product from known as Non-Sand Concrete. The researcher tried to apply the use of non-sand concrete mixture with the addition of baking powder and a more enlarged cement water factor of 0.5. In this research Baking Powder (Sodium Bicarbonate) mixed with concrete dough with variation 0%, 0,5%, 1%, and 1,5%. Furthermore, a non-sand concrete mixture of baking powder will be tested by compressive strength and volume increase. After the research and testing of the concrete obtained the result is a decrease in compressive strength if the mixture material is enlarged percentage.

Keywords: Concrete, Non-sand concrete, Strong press, Baking powder

FLAT JACK EQUIPMENT DEVELOPMENT MEASUREMENT OF STONE ON STEAM AND WALLS SETTLED UNDER MINE

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ABSTRACT: The purpose of this research is the development of Flat Jack tool that will be used to determine the value of stress on the wall, convergence value to monitor the roof deformation, the geological structure condition or the general straightness in the research area, stand up time for as reference in the mounting of the buffer. The research was conducted in mining laboratory of Mining Engineering Department of FT-UNP and underground mining location in Sawahlunto. In this activity, there are also several factors that will be explored in controlling the stability of the roof and walls of the underground mine, namely the natural stress (Virgin Vertical Stress), the induced stress (Measured Vertical Stress), the depth, the convergence value, the geological structure or the general alignment, and the parameters weighting of rock mass including PLI compressive strength (Point Load Index), Rock Quality Designation (RQD) value, solid spacing, solid condition, ground water condition, and stacked discontinuity orientation. This type of research is quantitative research. In this study how to analyze stress value that is between virgin vertical with measured stress. For convergence data is described as a trend, as well as analyze the weighting (RMR) and geological structure at the Work Location Underground Mine in 2017.

The main tool used in this study is to measure the stress value of a flat jack tool, to measure the value of convergence measured by stick convergence rod. And for the measurement of geological structure using geological compass, meter, and digital caliper. The results of this research are just at the design stage of development of tools: 1). Flat Jack tool that is in this design is the development of Flat Jack tools that already exist and more need to be in use. 2) Flat Jack and convergence rod tools can be used in field measurements. 3) More broadly developed tools can be used for research in assessing the stability of underground mine tunnel wall and provide information to the company to know the stability of the rocks on the roof and underground mine tunnel walls.

Keywords: Flat Jack, Rock Stability, Underground Mine

DEVELOPMENT OF MECHANICAL TECHNOLOGY LEARNING MODULE PROGRAM EXPERTISE OF SMK ENGINEERING

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ABSTRACT: The low learning outcomes in the workshop is estimated by the limitations of existing learning media. Therefore the need to design a learning media workshop in the form of mechanical technology module. The purpose of this research is to develop a valid, practical and effective learning module that is adjusted to the 2013 curriculum. The research type used is Research and Development (R & D) with development procedure using 4-D model (four-D model). Research consists of four stages, namely: define, design, develop, disseminate. This study uses primary data obtained from material experts and media experts. Data analysis technique used is descriptive data analysis techniques. This research resulted in the development of a learning module for the basic program of good mechanical technology expertise. The results show that the module meets the principle of relevance in qualification of instructional media with 86% validity value for material and 92% for media (very valid). Module practicality level based on teacher's response with value 87,81% (very practical) and learners response 89,19% (very practical). Level of effectiveness learn learners learn from pretest and posttest value. Where with the average value of pretest 52.14, the average value of posttest 72.61 or up 20.14, Therefore the effectiveness of the use of the module is effective in an effort to improve learning outcomes of learners. Based on the findings,



this study concludes that this module is valid, practical, and effective to be utilized as a learning media on basic mechanical technology of machining engineering skills program.

Keywords: Learning Media, Module, Validity, Practicality, Effectiveness

VIRTUAL LAB IMPLEMENTATION QOS METAROUTER ON COMPUTER NETWORK LEARNING

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ABSTRACT: This study describes the use of virtual learning lab on computer networks. especially on Qos Simulation materials in Computer Network Learning, the convenience of creating a bandwidth management lab will be very much in tandem with MetaROUTER's ability to run virtual Web Servers. The resulting prototype is expected to be useful in improving the understanding of learning in Computer Network course. This study aims to improve students' ability in simulating bandwidth management configuration. The process of practicum is often limited by the availability of the number of physical routers that are not proportional to the number of students, so the material is not owned and the learning outcomes are not achieved well then with the learning media Virtual MetaROUTER expected to increase interest and competence of students in studying computer networks, so that the expected learning outcomes is maximized.

Keywords: Computer Network, Virtual Lab, MetaROUTER, Learning

IMPROVEMENT OF CONCRETE QUALITY WITH ADDITION OF SUNUA PASIR PADANG PARIAMAN WEST SUMATRA

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ABSTRACT: West Sumatra as a common area shaken earthquake, the construction of buildings both as shelters, shophouses and other social buildings need to be built with earthquake safe concrete construction. Concrete construction is the best choice, because the material pembentuntutuknya relatively large, and the price is relatively cheap in West Sumatra. This study aims to increase the compressive strength of concrete with low cost. The experimental approach was chosen by experiment method that is the addition of Sunua sand material to the concrete mixture ranging from 5%, 10%, 15%, 20%, 25% and 0% for the control concrete. From the result of concrete compressive test after 28 days old with addition of Sunua sand at 5% percent = 44,20 MPa, for 10% = 48,29 MPa, for 15% = 49,62 MPa, for 20% = 44,00, for 25 % = 401,37 MPa, and the control concrete is 417,46 MPa. So the highest concrete strength is obtained at 15% porsentase with power 49.62MPa. .

Keywords: Increased, concrete strength, Sunua sand

THE CONTRIBUTIONS OF DISCIPLINE AND ENVIRONMENTAL KNOWLEDGE ON CLEAN BEHAVIOR OF STUDENTS IN PUBLIC ELEMENTARY SCHOOL KAMPUNG BARU PARIAMAN, WEST SUMATERA

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ABSTRACT. This study aims to obtain a description of the contribution of discipline and environmental knowledge to the clean behavior of students in public elementary school of 19 Kampung Baru, Pariaman. Quantitative approach was used in this research. The sample of this research were the students in grade I-VI at public elementary school, and taken by simple random sampling of 81 students. The data were collected by asked to fill in the questionnaires. Results showed that: (1) There was a contribution of discipline (X_1) to students' clean behavior (Y) equal to 27.70%, (2) There was a contribution of environmental knowledge (X_2) to students' clean behavior (Y) equal to 53.00% And (3) There was a contribution of discipline (X_1) and environmental knowledge (X_2) to the students' clean behavior (Y) of 54.20%. The results suggest that the discipline (X_1) and environmental knowledge (X_2), either individually or jointly contributes to students' clean behavior (Y). This provides some explanation as to why principals and teachers in school should monitor the students' discipline and environmental knowledge. This knowledge can support the clean behavior to the surrounding environment. On the other hand, it is also advisable for students to always improve their own discipline and environmental knowledge.

Keywords: behavior, clean, elementary students

FACTORS AFFECTING STUDENTS IN CHOOSING COMPUTER ENGINEERING DEPARTMENT IN STT PAYAKUMBUH

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ABSTRACT: Many factors influence students in choosing Computer Engineering majors in Sekolah Tinggi Teknologi Payakumbuh (STT Payakumbuh) such as parent factor, peer factor, individual personality factor, university image factor and job prospect. To find out it was taken the sample data using the instrument on computer engineering students in STT Payakumbuh and in the analysis by using multiple regression correlation techniques. Based on the result of t test, it is known that the two independent variables have an effect on the decision of the students to choose Computer Engineering department at STT Payakumbuh because it has sig value <0.05 that is individual personality factor and factor of parents whereas the other four independent variables are stated have no influence to the student decision Computer Engineering at STT Payakumbuh because it has sig value $> 0,05$.

Keywords: Factors, T test, Variables, Sig

ANALYSIS OF THE DECREASE IN THE NUMBER OF STUDENTS MAJORING COMMERCE DEPARTMENT (STUDY CASE: SMK IBNU SINA BATAM)

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ABSTRACT: The number of students in a school becomes a benchmark for a school's success. Seeing the large number of students joining in, shows the level of school credibility that encourages the good reputation of schools at the local level. This research is an ex-post facto research where the respondents are teachers, students and

graduates from SMK Ibnu Sina Batam. This study takes a thorough analysis method using questionnaires and historical data of the school as a research tool. Data analysis technique is done by using descriptive analysis which is qualitative. The main focus of this research is to see the extent of the decline in the number of students who occur and analyze what are the factors that influence it. The results are the decrease in the number of students each year and the existence of students who do not continue his studies at the school. In addition, the admissions quota can never be fulfilled by the school, consequently all students who go to the department are accepted directly without a process selection first. Several factors that influence it, such as the lack of cooperation between the school and outsiders to channel their students, the lack of qualified teachers who teach, and not equipped with technology facilities related to the current trading method. At the end, this study provides recommendations for immediate reform of the teaching system and in terms of curriculum, so that students still have the passion and interest to gain knowledge in the field of commerce department.

Keywords: Descriptive Analysis, The Number of Students, Commerce Department, and Vocational High School

DEVELOPMENT OF INSTRUCTIONAL MODULE OF CNC PROGRAMMING THEORY

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ABSTRACT: Based on observation that be the problems are: limited stock of book, CNC programming theory had not been available and instructional program of CNC programming theory had been focus to lecturer, so that those problems caused instructional program had not been optimal. The purpose from this research to produced instructional module of CNC programming theory were valid, practice and effective, so that could be used in vocation and to know form of instructional module. That model was used in this research was 4D (Define, Design, Develop, Disseminate), with method of this research was Research and Development / R&D). The subject of this research were students of machine engineering, faculty of engineering, Universitas Negeri Padang who took course of CNC programming. The type of data was primary data that was given by expert lecturer and student. The instrument of data was questionnaire. Descriptive data analysis technique to described valid, practice and effective of instructional module of CNC programming theory. That the results were got from this research were follow: (1) Produced instructional module of CNC programming theory, (2) Validity about material of instructional module of CNC programming theory was valid and format aspects, (3) Practicality instructional module of CNC programming theory based on lecturer responses that was expressed practice and based on student responses that was expressed practice, (4) Effectiveness of instructional module of CNC programming theory was expressed effective and could increase student outcome. Based on the results can be concluded that instructional module of CNC programming theory were valid. Practice and effective to used as instructional module on CNC programming course.

Keywords: Module, Programming CNC, Validity, Practicality, Effectiveness

CONTEXTUAL TEACHING AND LEARNING (CTL) MODEL DEVELOPMENT IN APPLIED PHYSICS

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ABSTRACT: Applied Physics is a basic course in engineering science. As an applied science, it is hoped that in the provision of instructional materials it looks its application to the skills required of the graduates. Contextual teaching and learning is a learning concept that can help teachers connect between the material they teach and the students' real-world situations and encourage students to make connections between their knowledge and

application in their lives. CTL model does not have a syntax so for Applied Physics learning will be developed CTL model that has a syntax and has a component as a new model. The instructional development model used is IDI (Instructional Development Institute) which consists of define, develop, and evaluate. From this development result obtained a model based on CTL that has syntax Display, Inquiry, Learning Community, and Authentic Assessment (DILA). The model's theoretical structure has been validated by the experts into the hypothetical model structure that will be tested for its application. After the Forum Group Discussion was conducted with experts and conducted a small test. The instrument validation result of DILA model using Aiken formula is 0.9, it means the instrument is very valid. The DILA Model validation results by the experts obtained a value of 0.93 so that the DILA Model can be used for small trials. The results of DILA Model implementation on a small scale are at 0.98 and the practicality of DILA Model is 0.89. These results show that the DILA Model which is the development of the Contextual Teaching and Learning Model is very appropriate to be used in Applied Physics learning in the Department of Mining Engineering. DILA model is constituted by contextual theory, student centered learning and collaborative. The syntax of the DILA learning model trains students to discovery, collaboration and assessment..

Keywords: *Model DILA , Applied Physics, Aiken Formula, Contextual Teaching and Learning*

THE PROFESSIONALISM OF VOCATIONAL HIGH SCHOOL SUPERVISORS IN THE IMPLEMENTATION OF ACADEMIC SUPERVISION ON THE OFFICE OF EDUCATION PADANG

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FT-UNP, PPs UNY, FT-UNP

ABSTRACT: The study was to: (1) attain the real portrait of supervision, especially with regards to the implementation of academic supervision by the vocational high school supervisors in the City of Padang recently; (2) find information about the level of professionalism displayed by the vocational high school supervisors; (3) find the aspects that influenced the professionalism of vocational high school supervisors; and (4) optimize the functions of vocational high school supervisors based on the elaboration toward the problems that had been attained. The study was designed by means of qualitative approach in the form of case study. The subjects of the study were the vocational high school supervisors in the City of Padang, while the object of the study was the professionalism of the vocational high school supervisors in conducting the supervision especially the academic supervision. The data were gathered by employing the in-depth interview, the participatory observation and the documentation. For the data analysis, the researcher employed the Creswell's inductive analysis model. In order to test the data validity, the researcher the following four tests: credibility test, transferability test, dependability test and confirmability test. The results of the study showed that: (1) the supervision had been implemented without any well-planned preparation, the recruitment of vocational high school supervisors had been conducted without performing the needs of analysis in the first place and the control mechanism toward the implementation of supervision had not been optimum; (2) the professionalism of school supervisors in performing their tasks had not been in accordance with the Standard of Supervisor Quality; (3) the appreciation toward the profession of a supervisor had been low due to the ill-professionalism; and (4) the improvement toward the professionalism of school supervisors for the sake of improving the quality of academic supervision had not been maximum.

Keyword: vocational high school supervisor, supervision, professionalism

A NEW MODEL MOBILE LEARNING MANAGEMENT SYSTEM BASED ON MOODLE IN UNIVERSITY

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ABSTRACT: Learning model is changing the development of information technology. Conventional learning becomes collaborative and self-sustaining by utilizing internet, mobile and wireless technologies. It needs the change of acceleration in the learning process, which leads to be more effective, efficient, and optimal. In this paper, we construct the new model mobile learning management system support service based on moodle application for the future. Under the support of the mobile moodle technology, the system can be accessed that emphasizes the approach aspects of design, function and user interface. The method used the research and development approach (R&D) with ten steps. By this results a new model has been come suitable for using in the applying DIVA syntax display, information search, virtual problem solving, appraisal and support the individualized independent learning.

Keywords: Model, Mobile Learning Management System, Moodle.

DESIGN OF WASTE SEPARATOR MACHINE: USING WATER PRESSURE AND DIFFERENCE WEIGHT TYPE WASTE WATER

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ABSTRACT: In general, people throw garbage in one container, so the waste becomes mixed and difficult to be recycled or reused. This research aims to produce machine of separator waste. The performance of the machine in separating the waste consists of two stages, namely (1) the process of decomposing the mixed waste by using water pressure in the cylinder tube, (2) waste segregation utilizes water hits that occur due to water pressure spouted through the nozzle into the tube and the difference in the mass of the water type with the waste. The result of the test of the machine shows that the water pressure sprayed by the nozzle in the cylinder tube effectively describes the waste. The phenomenon of water ripple and the difference in the density of the water type with the garbage makes the heavy density of the type lighter than the water floats (example: plastic, inorganic) is supplied to a light category of inorganic waste containers. Solid wastes of the same type with water (example: mineral water bottles, inorganic) floated in the center of the cylinder tube channeled to medium inorganic waste containers. Garbage whose weight is heavier than water (example: leftover food, leaves, organic) is buried under a cylindrical tube distributed in an organic waste container. This disaggregated waste can be utilized or recycled for another.

Keywords: Waste, Separator, Water Pressure



GROUP INVESTIGATION (GI) LEARNING MODEL ON THE SUBJECT OF UNDERSTANDING THE BASIC ELECTRONICS

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ABSTRACT: This study aims to apply Cooperative Learning Model based on Group Investigation type in the subject of Understand the Basic Electronics. The applied research method is quasi experiment with pretest – posttest designed in one group. Based on the research results found that the average pretest score before applying the learning model is 63.5 and the mean posttest score after applying the learning model is 83.4. After the calculation of gain score there is an increase in student learning outcomes with a moderate category in the subject of Understand the Basic Electronics

Keywords: Group Investigation, Learning outcomes, Understand basic electronics

A INTELLIGENCE-COMPUTER ASSISTED INSTRUCTION MODEL BASED ON PROJECTS AND BLENDED LEARNING (PJ2BL) ON CRYPTOGRAPHY TECHNIQUES

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ABSTRACT: Artificial Intelligence (AI) and Cryptography are one of the most developed areas of computers today. One application of AI is in the computer field. In this study will be presented about the use of AI in the field of Education. In the world of education today, the theory of learning connectivism is directly related to computer-based learning model such as Blended Learning. This research will discuss the combination of several Learning Models including Blended Learning, Computer Assisted Instruction and Project Based Learning. The object of this study is Cryptography course. It is expected that by adopting some of these learning, models can help students in understanding cryptography better.

Keywords: Computer Assisted Instruction, Project Based Learning, Blended Learning, Connectivism, Cryptography

A VISUAL APPROACH - SINGLE LINKAGE TECHNIQUES FOR CLUSTERING OF PALM SEEDS DATA

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ABSTRACT: Seedlings are products produced from the procurement of plant material that can affect the achievement of production. Through this breeding, the stage is expected to generate useful and quality seeds. The difficulty of choosing a palm oil seeding strategy in helping relevant people to take accurate steps for the next period. Data mining is the process of data analysis to find a pattern from the data set. Data mining can analyse

large data into information in the form of models that have to mean for decision supporters. One of the existing techniques in data mining is the clustering method. Here will be Single Linkage Technic applied to determine first or superior palm seedlings. From the results of the study, it can be concluded that the application of single circumference technique can be used to improve the yield.

Keywords: Palm Seeds, Data Mining, Clustering Method, Single Linkage

SECURITY OF MEDICAL RECORD WITH RIVEST SHAMIR ADLEMAN (RSA) METHOD

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ABSTRACT: Medical Record is an inspection note that situation a patient by clinics at home pain. This supersecret medical Data Record in character and have to be taken care of by its authenticity, because of in it there are in secret boldness, for disease diagnosis, disease type and others which in this case it is, of course, have the character of a person. Hence from that this data may not know by others besides the interested parties to getting [him/ it], because if/when others or someone know and or getting it, is felt concerned about will do something that can harm to patient side and Hospital. So that later hospital side and or individual owning this data will feel getting a disadvantage.

To anticipate from undesirable things like forgery of data, and theft of data hence conducted by security to data with a technique of cryptography. With the existence of security of this information consequently expected by data of clinics existing at home pain would be more awake its authenticity, it is so that society having on file data identity at home pain do not feel to worry and is anxious.

As For In security of data there is many methods which can be used, one of the process which can be used by is Rivest Shamir Adleman. This Method, general differentiate between encoding key and key of intake, so that will felt difficult to process the return if do not have authority to opening it.

Keywords: Medical Record, Criptography, Rivest Shamir Adleman

A MODEL PREVENTIVE MAINTENANCE CONTROL OF MACHINE TURNING IN THE MACHINING WORKSHOP

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ABSTRACT: The use of machines in relatively long conditions result in decreased engine capability. Avoiding the occurrence of such preventive maintenance is necessary as an attempt to prevent early onset of sudden damages. this paper aims to produce preventative maintenance of Turning Machine. This descriptive research using survey method to Machine Tool Machining, which make Model of maintenance with PMC System. Data retrieval begins by creating a Machine layout plan. Record the machine is done by giving a code or symbol on the location of the machine, machine name, machine type, machine number. Data collection by generating the main Component number, writing the name of Component Part, includes maintenance actions: checking, cleaning, lubrication, locking, adjusting, replacing the consumable components, determining the time duration schedule, tools and materials used. The result of the research is a table of PMC system maintenance model used as a guidebook or guidance in doing preventive maintenance of Machine Turning in Workshop of Engineering



Technique of Engineering Faculty of State University of Padang. So officers are not negligent in doing Machine Turning maintenance with the manual of care.

Keywords: Model, Preventive Maintenance Control, Machine Turning, Workshop.

MEASUREMENT SYSTEM MAJORS OF TALENT INTEREST AND CAREER STUDENT USING CERTAINTY FACTOR

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ABSTRACT: Each child has different skills in accordance with the interests and talents and level of intelligence. to create a better future. At the present time many students are confused about the selection of majors to be taken after graduating high school. Many take the majors that are not in accordance with the interests of talent, this is because the encouragement of parents, follow-up friends and majors pavorit at the time. So many students broke up in the middle of the road did not finish the lectures. And not increasing the level of career students and the number of unemployed. This problem can be solved with expert system the use of talent interest measurement system and career path students using certainty factor can help students in determining interest of talent and career ladder. So that students are no longer wrong in taking the majors. This measurement system uses RIASEC as a grouping of interest in talent and career path and makes it as a knowledge base and inference engine used is certainty factor and programming built web-based. The measurement system of interest aptitude and career path can be used by students to measure the interest of talent and career path, so that the target in the selection of majors.

Keywords: Expert System, Certainty Factor, RIASEC

DESIGN OF ANDROID BASED INTERACTIVE BOOK IN INTEGRATED ISLAMIC ELEMENTARY SCHOOL OF LAN TABUR PAGARALAM CITY

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ABSTRACT: The increasing of technology involvement on daily life becomes a solution of information exchange, use of technology has been used by education world. The learning process is a related components between teacher and student. For achieving of learning process, interaction between teacher and parent of student is extremely required to help student achieving purpose of desired learning. The success of learning process can be seen from level of understanding and mastery of matter, and outcome that obtained by student while studied in classroom. This Research is intended for : 1) increasing interaction of parent of student towards learning process in the classroom; 2) knowing learning outcomes of student by using of information technology; 3) knowing respons of parent of student towards learning process. The researchers on designing process, use prototype model and quantitative data. The technique of data gathering by observation. The purpose of this research is producing design of android based interactive book that can be used by teacher and parents of student in communicating each other for increasing achievement of learning process of student in the classroom.

Keywords : Interactive Book, Prototype, Desingning, Android



DECISION SUPPORT SYSTEM FOR RECOMENDATION CERTIFICATION TEACHER ON VOCATIONAL HIGH SCHOOL

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ABSTRACT: Teachers are the most important factor in education. The ability of a teacher in teaching determines the success of students in understanding and applying science. To improve the quality of education the government gives an appreciation of teacher certification allowance for teachers who are considered competent and contributes greatly in the field of education and teaching. However, facts that occur in the field, most teachers who have been certified incompetent if assessed its performance in the learning process at school. Especially in vocational high schools teachers are expected to focus not only on the content of the theory, but should apply more practice in the learning process. So that students who graduate from vocational high school ready to plunge into the world of work, have competitiveness and competent in their field. One way to solve the problem is to implement a decision support system. This method is not limited to the assessment of the criteria and the results of the calculation for the teacher's recommendation to be granted a certification allowance. The development of decision support system is expected to make teachers experts in developing the competence of their students. So that a student has the competencies needed by the world of work. And the teacher certification allowance given can give birth to a competent and professional teacher in their field.

Keywords: Teacher, Certification, Vocational High School, Decision Support System

GAME BASED LEARNING TO IMPROVMENT TEACHERS KNOWLEDGE FOR TEACHING STRATEGY IN THE CLASS

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ABSTRACT: This study aims to improve learning strategies for educators in private schools in order to develop smart education in the school. Improved learning strategy is done with the help of an educational game that will be built based on Domain Student Centered Learning (SCL), so it is student-centered. System modeling using UML (Unified Modeling Language). This game are built on the windows operating system platform. This game that have been tried by 30 educators at the school. After that, we will examine the improvement of learning strategy to every Educator who has tried the game. Data collection using questionnaires distributed to each Educator. The result of the research shows that there is an increase of learning strategy perspective which is felt by SCL-based educators through game as much as 77%.

Keywords: Student Centered Learning, Game, Education, Learning Strategies

EFFECT OF PROJECT BASED LEARNING MODEL IN IMPROVING STUDENT LEARNING RESULT

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ABSTRACT: One of the learning models that can overcome the problems in the process of learning management information system is to use the model Project Based Learning. This research aims to improve the learning results of students on lecture management information systems. This research is focused on the influence Model of Project-Based Learning against the teaching of management information system in the course of administration,

Commerce State Polytechnic Medan. The purpose of this research is: (1) describe the activities of students in learning course management information systems during the learning process; (2) know the significant influence against the results of the learning of students who are given the Model Project-Based Learning and not given the Model Project-Based Learning. The population in this study was a 4 semester Study Program Of Business Administration, State Polytechnic Medan. From the results obtained in the study that there is a significant difference in the results of studying management information systems that are taught with a model Project-based learning and conventional learning model. It is proven the truth through the calculation of a test statistic retrieved the price $t_{count} = 3.00$ and $t_{table} = 2.0231$. Later seen from the average of the results of their learning results learning management information system which is taught by learning model 17.85 higher than the average of the results of learning management information system which is taught by learning model conventional 16.35.

Keyword: Project-Based Learning, learning, Learning Outcomes, Management Information Systems

PRODUCT DESIGN INTERACTIVE MULTIMEDIA BASED LEARNING FOR THE INTRODUCTION OF COLORS, LETTERS, NUMBERS, SHAPES, PUZZLE AND QUIZ GAMES

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Abstrak - The development of technology at this time has advanced rapidly, especially in the field of android smartphone. Android smartphone can be used as an interactive learning media. Learning is one of the obligations of every people and it can provide new knowledge which is very useful for people. Sometimes learning becomes very boring for children. Children prefer to play, as opposed to learning. The purpose of this research is to design the product in the form of interactive multimedia application that can run on android, as a learning tool for children aged four (4) to six (6) years. The product contains learning which introduces colors, letters, numbers, shapes, puzzles and quiz games. From the results of the research, it can be concluded that this product has been successfully made which consists of three (3) menus on the main menu that is, learning, playing and about. Four (4) menus from the learning menu are, colors, letters, numbers and shapes. Two (2) menus from the play menu ie, puzzles and quizzes.

Keyword – Android, Color, Game, Letter, Number, Puzzle, Quiz, Shape.

A NOVELTY OF QUALITY FERTILIZER DRYER BASED ON SOLAR CELL AND ANN

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ABSTRACT: Study the characteristics of drying under drying temperature conditions between 60-80°C, drying air velocity 0.6-1.4 m / s and 6-10 mesh particle size. This paper describes a design and realization of fertilizer dryers based on ANN Methode. In addition to the amount of production more, the cost of operation can also be minimized as much as possible and require less power, so the manufacturing process even higher profits. Automation is one of the realizations of technological development and is the only inevitable alternative to acquiring a simple, practical, and efficient work system to achieve results with a high degree of accuracy. The time aspect should also be considered, because with the shorter the time required for the production process, it will get better results and faster when compared with production processes that take longer. A measurement of the reduction of solid mass of the fertilizer in the tray as a function of time for various conditions of drying air

temperature, wind velocity, and particle size. The drying characteristic is expressed in moisture content as a function of time and rate of drying as a function of free moisture. The experimental results show best of the drying rate is strongly influenced by the rise in drying air temperature and drying air velocity. The solar cell is one of the methods in the dryer power supply through the thermostat.

Keywords: Fertilizer Dryer, Automation, Solar cell

SIMULATION OF MERCURY TRANSPORT FROM GOLD MINING ACTIVITIES IN PELAWAN RIVER, SAROLANGUN

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ABSTRACT: The use of mercury as a material for bonding and separating gold with sand in gold mining has the potential to contaminate ground water and river water. In this study, the distribution of mercury parameters from gold mining occurred in Pelawan river, Sarolangun regency, Jambi Province. To determine contaminants flow, In this study mathematical modeling mercury was carried out using 1-dimensional analytic model based on advection-dispersion equation in surface water. The concentration of mercury in water is measured 3 times for calibration and model validation. From the measurements at some point, it is known that the Pelawan river is contaminated with mercury, the mercury value obtained is 0.007 mg / l, this value is far past the quality standard based on Government Regulation No.82 of 2001 on the management of water quality and water pollution control. Mercury simulation showed that the longer time (t), a constant input of pollutants that create greater pollution load. As a result, the concentration of pollutants in the larger t will decline at a greater distance. The results of mercury simulation with $k = 0,22/\text{day}$ showed that the mercury model is quite close to the mercury concentration observations.

Keywords: Advection, mercury, dispersion, Pelawan River

DEVELOPMENT OF MEDIA TRAINER MOTOR CONTROL FAULT SIMULATION FOR ELECTROMAGNETIC CONTROL SYSTEM COURSE AT SMK NEGERI 1 PADANG

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ABSTRACT: Improving the quality of learning should be done continuously, especially for learning that its nature explains the concepts and principles, symptoms and phenomena of an event or work process. One effort that can be done is to equip learning with the media that can show symptoms or phenomena. This learning process only uses software applications from the computer so that at the time of learning, students have difficulty seeing the direct form of interference that occurred in the simulation of electromagnetic installation. The purpose of this research is to produce a media trainer fault simulation motor control that is valid, practical and effective on electromagnetic control system subjects (ECS).

This type of research is research and development. In the research used 4D development model. The subjects of the study were the students of class XI TITL SMK Negeri 1 Padang, as well as the respondents of trainer practice test. In addition, the teacher of ECS course as well as the respondent for the trainer's practicality test. The research instrument is a validation sheet for validity test, questionnaire of practice, and effectiveness test using objective test. Instruments used to determine the effectiveness of learning has been done statistical tests (validity test, practice test as a requirement of a research instrument).

Based on the research result, the average validity is 94%, the average practicality is 89.25%. Media trainer's effectiveness is 85.7%. Thus, this media trainer meets the requirements of validity, practicality and effectiveness to be used as a learning media in the course of ECS, specifically for use on SMK Teknologi and equal. The implication of this research is improvement of learning quality of ECS subject can be achieved by using trainer as supporting learning process.

Keywords: Instructional media, Trainer fault simulation of motor control, Electromagnetic control system

THE MODELING OF MASSIVE LIMESTONE USING INDICATOR KRIGING METHOD (CASE STUDIES OF MASSIVE LIMESTONE IN PT SINAR ASIA FORTUNA)

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ABSTRACT: In the context of mining, the estimation is an attempt to estimate the value of block or point that expected to approach the true value. An accurate geological modeling will greatly assist in mining minerals that expected production in accordance with the company's production targets. Therefore, the research was conducted at PT Sinar Asia Fortuna to determine the geological model and resources. The geological modeling and resource's estimation of massive limestone was done using Indicator Kriging Method. The geological modeling of massive limestone was carried out by using SGeMS version 2.0 and Datamine Studio 3, while the limestone's resource was estimated by using Datamine Studio 3. This study categorizes the limestone to be 3 types, i.e. massive limestone, vuggy limestone and chalk. The estimation of percentage by using Indicator Kriging Method obtained the distribution of limestone massive proportion of 75%, 23% vuggy limestone and 2% chalk. The resource calculation respectively obtains 130.889.422 tons of massive limestone, 40.139.422 tons of vuggy limestone, and 3.490.384 tons of chalk. Total tonnage for the indicator kriging = 174 519 228 tons

Keywords: Limestone, Indicator Kriging Method, Resource, Geological Modeling

APPLICATION OF WORK-BASED LEARNING SPSGBLASTING TECHNIQUE, MINING AT ENGINEERING PROGRAM

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ABSTRACT: The world of work is changing so rapidly, therefore learning in higher education should be as close and relevant as possible to the world of work. Many factors that affect the ability of students to understand the explosion technique both theory and practice such as student interest and motivation, teaching materials, equipment, practice location and others. To overcome these problems and prepare students to be ready to work in the field of mining need to find a way out, especially related to effective teaching methods.

This research was a research and development, using approach of "ADDIE" Model Theory refers to design and development research from Richey and Klein which combine model development and model validation. The research design of the application of the model was quasi experimental in the form of Nonequivalent Control Group Design. The population was undergraduate students of the Mining Engineering Program of FT UNP who take the Blast Engineering course with a total of 120 people, divided into two classes. Samples taken by total sampling. Learning result data in the form of process value and work result collected with portfolio. All statistical data was processed with SPSS Program version 17.

The results of this study revealed that: (1) implemented a learning model development that enables students as learners, namely the development of Work-Based Learning Model SpSG Blasting Technique, (2) There we a positive contribution of the disigned model to the improvement of students learning in Mining Engineering.

Keywords: Work-Based Learning, Shift per Shift Group, Blasting Technique

DIFFERENCES IN LEARNING OUTCOMES IN THE PRACTICE OF MICROCONTROLLER SYSTEM USING MCS51 MICROCONTROLLER TRAINER KIT

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Abstract

This paper describes the differences in learning outcomes in the practice of Microcontroller System using MCS51 Microcontroller Trainer Kit. Trainer Kit The MCS51 microcontroller is tested to Electronics Engineering students who are studying in practice of Microcontroller System. The research method used is quasi experiment. The experimental class uses the MCS51 Microcontroller Trainer Kit as a medium of controlled learning medium using a self-assembled circuit on the Project Board. The results show that the learning outcomes of the exprient class is better than the control class.

Keyword: MCS51 Microcontroller Trainer Kit, Quasi Eksperimental

A NEW DESIGN OF HANDLESS STIRRED DEVICE

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ABSTRACT: In Chemistry or Biology laboratories, in term of to get a homogenous liquid, a laborist is used to mix the liquid using a vessel and shakes it for a certain time based on the thickness level required. Sometime, this process should be done several times depend on numbers of reaction needed. Consequence, the laborist has to consume more time in the laboratory if they had more than one liquid mixing process. Based on this condition, nowadays, we can find a device that is able to mix the chemical liquid automatically. The device works by combining a magnetization principle and motorization concept. It is separated into two components which is vessel as a top part and dc motor on the bottom. The bottom one functions as a rotating magnetic motor to drive a magnetic stir bar placed inside the vessel. The bar helps the liquid mixed homogenously. In this paper, this device is improved by providing not only one magnetic drive, but two. Moreover, each drive could rotate into two different directions, right or left, depend on inputting command given by the user.

Keywords: Stirred Process, Magnetic Stirred

THE READINESS OF STUDENT TO ENTREPRENEUR THROUGH INCORPORATION OF THE PILOT PROJECT PRACTICE

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Abstract: This paper used experimental method to the design of the one group pretest-posttest design to determine the increase of student readiness to entrepreneurship in the program of dressmaking study in State University of Padang. Treatment in the form of pilot projects for practical course of Clothing Business Management to realize the real Clothing Business Management in the form of boutiques and true convection". Venture capital is given in the form of company stock to 40 students as respondents in the form of loans that must be restored after a business advantage. The results of research showed that the student readiness to entrepreneurship have significantly increase after doing the experiment.

Keywords : Student readiness to entrepreneurship, venture capital, company stock



INFORMATION SYSTEM AND REPORT VALUE PROCESSING BASED MICROSOFT VISUAL BASIC 6.0 ON SENIOR HIGH SCHOOL (CASE STUDY AT SMAN 12 PADANG)

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ABSTRACT: Computers have become a major tool in every human activity. Not only for business applications, but also in everyday activities. This shows how computers have become part of human evolution. This happens because the computer is able to make human work easier and more effective. Computers can perform data calculation process and also data processing. This makes it easy to gauge and process an information system report. One of the most important parts of a school is the student's and student's grades. In a school there are hundreds of students and each has different values. Not infrequently the storage value of students recorded and stored conventionally. So it takes a very long time in the process. Research conducted at SMAN 12 Padang, which is oriented at filling the report card and computerized information presentation. In the sense not only to use, but also able to solve problems that may arise and fill in manual data that has been done. The result of this research is a design of application program that can be applied directly in SMAN 12 Padang. The use of computers that are applied with Visual Basic 6.0 programming language will help in data processing, both in terms of time, accuracy and good results.

Keywords: Information System , Report, Visual Basic.

DESIGN OF SIMULATOR FOR REPLACEMENT OF TOOLS PRACTICE DIGITAL ENGINEERING IN THE VOCATIONAL SCHOOL

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ABSTRACT: Vocational School, is a school that is expected to produce graduates who have the expertise, skills and competence in their field, to be Able to Compete in the world of industry and business world. This can only be Achieved if vocational schools have adequate facilities and infrastructure, from some research results, it is found that most vocational schools do not yet have adequate facilities and infrastructure. Limitations of funds are the cause of the inability of vocational schools to provide practical means. Simulators can be used instead of existing practice equipment, using simulators, vocational schools with limited funds can improve competency Reviews their graduates.

Keywords, Vocational School, Competency, Simulator

IMPLEMENTATION OF MOBILE LEARNING MANAGEMENT SYSTEM (M-LMS) TO IMPROVE THE EFFECTIVENESS OF STUDENT'S LEARNING ENGAGEMENT

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ABSTRACT: This article proposed the effectiveness of Mobile Learning Management System (M-LMS) to improve student's learning engagement particularly in higher education. Mobile Learning is a development of e-learning Learning Management System (LMS) with the concept of e-learning model utilizes internet facilities and mobile devices. Survey indicated that lack of students motivation as well as lack of activities and do not engage closely to learning process to be the main problems of learning system. Build up the M-LMS is one of alternative to improve students learning engagement and student learning achievement. How effective the M-LMS to improve students learning engagement and achievement were tested in this study. The research was conducted by using quasi experiment that involved 51 students (26 students from experiment group and 25 students as a control group) and 20 lecturers who involved in lecturing a subject matter of Human and computer interaction. The result revealed that the M-LMS supported and affected the engagement of students learning as well as improved Learning Outcomes.

Keywords: Mobile Learning Management System, Effectiveness, Student Engagement, Learning Outcomes

DOMESTIC EMPLOYMENT PROCESSING SYSTEM ON WORKING PROTECTION AND TRANSMIGRATION USING GEOGRAPHIC INFORMATION SYSTEM (GIS)

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ABSTRACT: Geographic information systems (GIS) are used in spatial and thematic data processing that can display information such as detailed distance between regions, locations, facilities and many other information. Users utilize the information for various purposes such as research, development, area design and natural resources management. SIG provides a more interactive map information service. Users access geographic information using computers, laptops, smart phones, web-browsers via the internet network. The purpose of this research is to build GIS in the Office of Manpower and Transmigration of Pekanbaru City to provide ease of supervision in the processing of foreign workers data and information (TKA), monitoring of address and work location so as to facilitate the process of monitoring and evaluation, program documentation and report. The development of web-based GIS using waterfalls model and macromedia dream weaver 8.0 software, Xampp, Google Map APIs and MySQL database. The results showed that GIS effectively provides ease of data management and information services of foreign workers optimally on the Department of Manpower and Transmigration Pekanbaru. Users are satisfied (97.50%) with GIS information services available online and accessible regardless of space and time limits.

Keywords: Geographic information system (GIS), Foreign Workers (TKA), Web



DEVELOPMENT OF MALAY FRUIT ORNAMENT

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ABSTRACT: This community service aimed at creating new creations decorative fern Kaluk Malay, but is not to eliminate its original shape. Ornament Kaluk Pakis Malay is usually found on Malay traditional house carvings. In addition to the development of the ornament Kaluk Pakis Modetrends applied handicraft Malay household linen Prodak, especially in wall hangings. Application Prodak Kaluk remote craft wall hangings of background Melayu concept created, outgoing by: 1) determine the themes or ideas ideas; 2) preparation of materials and equipment which contribute to the production of products; 3) make a sketch of decorative drawings; 4) Preparation of Prodak Kriya; and 5) Finish. This activity is carried out through the use of a lecture, question and answer about Pakis Kaluk crafts wall hangings Malay, process demonstrations, as well as direct and consulting practices to manufacture new craft wall hangings Prodak Kaluk Pakis Malay.

Keywords: *Wall decoration, Fern, Malay*

ANALYSIS OF APPROPRIATE PEDESTRIAN CROSSING FASILITIES

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ABSTRACT: The main propose of this article is determine pedestrian facilities at area of Jl. Prof. Dr. Hamka. The determination of facilities by using the PV^2 method take account the ratio between the volume of traffic and the number of pedestrian. The standart for calculating follows Direktorat Jendral Bina Marga dan Direktorat Jendral Perhubungan. The result shows two types of crossover facilities design are: two pelicans and four zebra cross needed.

Key word: *pedestrian facilities, pelican zebra cross*

THE POTENTIAL OF RENEWABLE ENERGY (STUDY CASE IN TOMUAN HOLBUNG VILLAGE, ASAHAN REGENCY OF SUMATERA UTARA PROVINCE)

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ABSTRACT: The Electrical energy is primary energy requirement that drives the economic system of a nation. The current generated electricity still depends on the fossil energy source (Oil and Gas). The continued exploitation of fossil energy sources resulting in the crisis of oil and gas reserves is an issue that continues to be talked around



the world. The crisis of oil and gas reserves has an impact on the electric energy crisis, so that various alternative energy sources are assessed to meet the needs of electric energy. In Indonesia, this crisis began to be perceived from the number of areas that have not received the benefits of electricity, one of which is Tomuan holbung village Bandar Pasir Mandoge-Asahan. Based on the results survey through direct investigation and interviews, empirical data show that from nine sub-villages, only one hamlet has received electricity, while Desa Tomuan holbung has alternative energy sources through the potential of Watershed for power generation. This issue is interesting to examine and examine through the measurement and analysis of potential water sheds. From the research results, the potential of the Tomuan holbung village watershed has a potential of 4.7 MW of electricity.

Keywords: Tomuan Holbung Village, Potential Watershed, Alternative Energy Sources, Energy Conversion

IDENTIFICATION OF TECHNICAL PROGRAM TEST PROGRAMS ELECTRICITY CONSTRUCTION SERVICES BUSINESS*

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ABSTRACT: This study aims to identify the implementation of competency test program of technical personnel of construction services business. This study applies Kirkpatrick model to four levels, namely: 1) the level of participants' satisfaction with the implementation of the program; 2) the level of participants' understanding of the subject matter; 3) changes in work behavior of competency test participants after return to work; 4) the impact of changes in work behavior of competency test participants. Identification of evaluation instruments for each level is obtained based on literature studies relevant to the program. The results of the literature study conclude that the application of Kirkpatrick model model in this study are: 1) Short-term program competency test program, 2) Kirkpatrick model widely used in evaluation study of training program or similar training education and 3) Kirkpatrick model has been tested its effectiveness for use in evaluating program.

Keywords: Identification, Competency test program, Kirkpatrick model

MULTIMEDIA INTERACTIVE IN WEB PROGRAMMING SUBJECTS

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ABSTRACT: With technological advances, a blend of computer and CDs can be used as a medium of effective and efficient learning in interactive learning CD's form. A survey conducted at STMIK Indonesia Padang, it is known that the learning outcomes of students in the subjects of Web Programming are still low. It is estimated that the poor learning outcomes is caused by the limited sources of learning media. The purpose of this paper is how to design a multimedia interactive CD as a learning medium of Web Programming to improve students' learning outcomes. This designing of multimedia interactive CD uses Exploratory Tutorial. Because of this method, students can access all of the theories which have correlation with Web Programming and tutorial how to make a web start from designing until hosting activity. With the interactive learning medium, students can learn anywhere and anytime that is expected to improve the learning outcomes of students.

Keywords: Multimedia Interactive, Web Programming, Interactive Learning, CD Interactive

COMPANY PROFITABILITY ANALYSIS BEFORE AND AFTER CORPORATE REBRANDING (Case study in *Kyriad Bumiminang Hotel* July – December 2015 and July – December 2016 period)

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ABSTRACT: This research to analyze the profitability of *Kyriad Bumiminang Hotel* before and after corporate rebranding period July-December 2015 and July-December 2016 using five profitability ratios. This research is a quantitative descriptive research with comparative method. The data used in this research is secondary data. Technique of data collecting done by using method of documentation. The results of this research indicate that 1). Average Profit Margin (PM) *Hotel Bumiminang* before doing corporate rebranding 17.2% and after doing corporate rebranding 38.7%. There was an increase after a corporate rebranding of 21.5%. 2). Average ratio of Operating Efficiency Ratio(OER) *Hotel Bumiminang* before corporate rebranding 22.20% and after corporate rebranding 40.52%. There was an increase after the corporate rebranding of 18.32%. 3). Average ratio Return On Asset (ROA) *Hotel Bumiminang* before corporate rebranding 2.60% and after corporate rebranding 3.47%. There was an increase after the corporate rebranding of 0.87%. 4). Average Return On Equity ratio (ROE) of *Hotel Bumiminang* before corporate rebranding (18.60%) and after corporate rebranding of 16.72%. There was an increase after the corporate rebranding of 35.32%. 5) Average ratio Gross Operating per Available Room (GOPAR) *Hotel Bumiminang* before corporate rebranding Rp. 100,346.- and after corporate rebranding Rp.253.147.-. There was an increase after the corporate rebranding of Rp.152.800.-.

Keywords: *Profitability Analysis, Corporate Rebranding*

INFLUENCE THE LEARNING STRATEGY AND ENTRY BEHAVIOR TO YIELD LEARNING BUILDING CONSTRUCTION AND DRAWING 1 OF STUDENT

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ABSTRACT: The aim of this research is to find out (1) the influence of learning courses learn strategy against the construction of buildings and drawing 1, (2) the ability to learn early influence results courses t he construction and drawing 1 (3) an interaction between learning strategy and ability to learn early in Influencing the outcome courses college-boy construction of buildings and drawing 1. This research is quasi his experiments with populations totaling 108 people. Instrument used is the test. Before data do first performed validation instruments. Statistics used in this research are the statistics descripti ve and inferential statistics (t test and ANOVA test). The result Showed th at the testing of hypotheses: (1) there are differences courses the construction of buildings and drawing one group of students who unteachable with learning strategy of advance organizer with the student who unteachable with conv entional strategy of learning, i ndicated by t count = t 2,74 table = 1,771 (2) there are differences courses the construction of buildings and drawing 1 having ability early high and low, the early indicated resources by t count = 5.57 t table = 1.895 (3) the Guiler interaction between the preliminary learning strategy in Influencing the outcome, learning indicated resources of 5.35 by count 1 with probabilities 0.001 > 0.05. Based on the research is expected the construction of academic courses and drawing 1 to implement strategies advance in learning organizer.

Keywords: *Learning Strategies, Early Capability, Learning Outcomes*

LEARNING BROADCAST VIDEO SYSTEM WITH H264 VIDEO ENCODING RASPBERRY PI

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ABSTRACT: To produce the quality of learning depended on the facilities owned by the University of Pancabudi (Unpab) Medan. Currently Unpab Medan had implemented a network-based system used to access integrated information systems, learning process using internet network (e-learning). Judging from the condition of existing infrastructure, it was important to improve teaching and learning process using learning media in campus area of Unpab Medan. In improving the learning process by using more effective technology, students could interact directly by using video conference and streaming facilities. In the process of teaching and learning using Broadcast Video system with H264 Video encoding raspberry pi was more emphasized to how to present directly by the teacher to the students so that the video on teaching and learning process conducted by face to face can use video live or stream. The video runs on an internet-connected network with available bandwidth that could be enabled and optimized. The result of the research was a system of teaching and learning process with Broadcast Videoing system of learning with H264 Video encoding raspberry pi was used live or streaming video with some user could run well.

Keywords: *Broadcast Videoing, Server, Client, QoS*

PERSONAL MANAGEMENT IN INFORMATION SYSTEMS APPLICATIONS WITH TOGAF FRAMEWORK

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ABSTRACT : Organizational goal will be achieved affected by the Organizational goal will be achieved affected by the existence of human resources (SDM) and also the role of information technology. Any organization definitely have a source of human resources or public servants whose function was to handle of these organisations well. Employees are a source of the success and of the backbone of an organization in running their activities so that human resources need to managed as well as possible with the help of information in accordance with the system. Stmik royal the range is an institution of higher education in the achievement of his object influenced by human resources one of which is a lecturer. In this research writers discussed human resources management he got from his lecturers who is in stmik royal. The main tasks he got from his lecturers in stmik royal the range is to hold tri darma college which are (1). Carry out teaching, . Carry out research, (3). Carry out devotion to the public. Acts of tri darma of this college will be can be used as one of the requirements to get the functional positions and also a the functional positions and penyeteraan classes. Currently the management of the company to get the functional positions and penyeteraan the done by enough lecturers who concerned with visit directly to the office of kopertis 1 areas north sumatra with the paperwork be requirement. Of course turning over the filings pertaining to acts of tri darma higher education institutions which have been done by a lecturer. It is very not effective because of the paperwork used as a condition was not to be cultivated and in validation STMIK Royal the range. These affect enough lecturers who will either over and over again back to kopertis when the file is feasible to or there a shortage of. It is therefore in this research design writer proposed information system with the framework togef. It gives us a framework the phase that systematically in design systems information.

Keyword : *Framework, TOGAF, STMIK Royal, Lecturer*

EXPERT MODEL SYSTEM ON ENTREPRENEURSHIP PERSONALITY

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ABSTRACT: One of the problems faced by counseling teachers and counseling is their limited knowledge on how to direct students' interests in accordance with their personalities. Vocational high schools really need counseling program for career and counseling to guide the students' career match their personalities in order to reduce the number of unemployment who graduated from vocational high schools. Due to this fact, then it requires an expert in psychology or counselor that can direct the students to the right career suitable with their personality based on the result of the test or psychological assessment which have done by the experts in psychology. The high cost of psychological assessment, limited number of psychological experts and very slow result announcement, makes the students have difficulty in having counseling with the experts if they want to decide their chosen career that they want to have in the future. To solve this problem, it needs a system which has an ability like an expert in psychology. This system is equipped with some references knowledge about personality and interest in chosen career by the students in line with the students' personality. The main purpose of this research is to develop a web-based expert system using basic rules with chaining forward referenced method and PHP language program which meant to help the students in having counseling about their career through online, adaptive, practical, and efficient way. This research is focused on entrepreneurship career interest for students of vocational high school majoring in technological information, using 4D model of research methodology (Define, Design, Develop, and Disseminate). Data analysis used in validating factor is factor analysis with CFA type (Confirmatory Analysis Factor). This research is done on 200 vocational high school students who have studied entrepreneurship. From this research, it is found that there are 5 characters which built entrepreneurship personality namely: Persuader, Creative, Risk taker, Leader and Ambitious which later will become factors in developing CBT-EP program (computer based test for entrepreneurship personality).

Keywords: Personality; Entrepreneurship; Expert System; Structural Equation Modeling; Confirmatory Factor Analysis.

THE PROSPECT OF OFFSHORE IRON SAND IN TIRAM BEACH PADANG PARIAMAN REGENCY WEST SUMATERA

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ABSTRACT:The needs of iron sand for raw materials in the national steel industry in recent years has increased sharply. One areas that contained offshore iron sand Tiram beach Ulakan Tapakis subdistrict Padang Pariaman Regency. Based on previous research [3] the iron sand found around the Tiram beach spread to Tiku Agam Regency. Beside to viewing the distribution or quantity of iron sand, it is necessary to test its quality to know the prospect as raw material in the industry. Samples of iron sand was taken as much as 45 points that spread around the research location. This sample is a combination of drilling, and test pit. Furthermore, the quality testing activities was conducted in the laboratory to determine the iron content. The results can be concluded that Fe content of iron sand is linearly with depth. The spreading of iron sand is about 30 meters from the sea. The average quality of iron (Fe) using Atomic Absorption Spectrophotometry method (AAS) is 2,38892%.

Keywords: Iron sand, Fe Quality, Model, AAS



COLLABORATIVE PROJECT-BASED LEARNING: AN INSTRUCTIONAL DESIGN MODEL IN THERMODYNAMICS ON TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET)

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ABSTRACT: This paper explains a collaborative project –based learning in mechanical engineering diploma program on technical vocational education and training (TVET), in Padang. This test is validated through Focus Group Discussion (FGD) and measured by Aiken coefficient 0,840 and limited test to student learning outcomes. Collaborative project-based learning model in thermodynamics consisted of: curriculum analysis and student characteristics; classifying students and provided problems; solve problems together by students in experts group; group students to presentation about problem solving; evaluate learning process of by lecture; plan the project tasks and determine of the project task objectives; making of the project tasks schedule; monitor of the project tasks execution; assessment of the project results and conduct final evaluation of learning outcomes. The result of this research was obtained a collaborative project-based learning (CPJBL) model as a appropriate instructional design in thermodynamics on technical vocational education and training (TVET) with nine syntax and supporting product that validative, practical and effective.

Keywords: Collaborative Project-Based Learning, Instructional Design Model, Thermodynamics, Technical Vocational Education and Training

IMPROVING THE ESP STUDENTS' VOCABULARY BY USING PICTURES IN CIVIL ENGINEERING STUDY PROGRAM AT FIRST SEMESTER OF EKASAKTI UNIVERSITY PADANG

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Mahasiswa S3, Ilmu Pendidikan, Universitas Negeri Padang

ABSTRAK: This research was conducted on one semester students of civil engineering study program of Universitas Ekasakti, Padang. The purpose of this study is to know the extent of the positive impact of the use of images in improving students' skills in English vocabulary. This research is a Classroom Action Research (PTK) conducted through a research cycle using images in teaching English subjects. In addition to using the test, the data obtained in this study is through observation, interviews, questionnaires. The results of this study indicate that there is an increase in the number of vocabulary students from the use of images in teaching and learning process which can be seen from the average student increased from 53 to 63. It also can increase motivation and interest of students in learning English.

Keywords: Picture, Vocabulary Mastery and Classroom Action Research (PTK)

TRAINING MODEL-BASED KNOWLEDGE MANAGEMENT SYSTEM FOR VOCATIONAL HIGH SCHOOL TEACHERS SKILLS ENGINEERING COMPUTER NETWORK

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ABSTRACT: Teacher professional development is the key to extend the knowledge of novelty in the field of education, helping teachers in implementing the result of the new learning. Innovation, and improve their teaching

(Tantangan Guru SMK Abad 21, 2013:244). Considering the professional competence is a necessary competency by a teacher in supporting the learning process to procedure graduates who are competent and able to develop them selves in the field of engineering computer network as well as for support the deliberations of teachers in subjects in developing the competence of professional teachers then need to develop a model of training engineering computer network based knowledge management system for vocational high school teachers of engineering computer network. This model aims to develop professional competence of vocational high schools teachers engineering computer network. Knowledge management system is a system designed to document, classify and disseminate knowledge. Knowledge management system need to be developed to help teachers develop their professional competencies. Another reason was the existence of the training model of network based on computer technique expertise knowledge management system for vocational high schools teachers engineering computer network, then all things related to engineering computer network will be in document and distributed to all teachers appropriately and quickly.

Keywords: Training Models, Knowledge Management System, Professional Competence Teachers, Engineering Computer Network

INTERACTIVE VIDEO MEDIA WITH THE APPLICATION OF GROUP LEARNING STRATEGY IN THE FACIAL SKIN CARE COURSE

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ABSTRACT:The purpose of this research is to develop an interactive learning media by applying group learning strategy in facial skin care course in Department of Cosmetology of Vocational Secondary School (SMK) Negeri 3 Pematangsiantar. This research uses research and development method, with the product being the interactive video. The subjects of the study were students of Hairdressing Program in SMK Negeri 3 Pematangsiantar. The product has been validated by material experts, learning media experts, and learning design experts. The validation results from the material experts on the interactive video learning media on the facial skin care competence are as follows; (1) the quality of learning materials is good (89%), (2) the quality of learning strategy is considered good (82%), (3) the quality of learning delivery system is considered very good (92.5%).

The validation results of the instructional media experts on the interactive video media on the facial skin care excellent design information quality (89%) (3) good interaction design quality (85%). The preliminary test conducted before using interactive video using group learning strategy shows an average score of 5.25 out of 10. After being given facial skin care materials with interactive video, the final test has an average score of 8.12, an increase of 2.87 points on average. The data shows that the learning media using the developed interactive video are validated to be in good criteria so that it is acceptable and feasible to be used in the learning process.

Keywords: Media Development Interactive video learning and facial skin care

IDENTIFICATION THE IMPORTANCE OF LEARNING TOOLS DEVELOPMENT ON ENERGY-EFFICIENT BUILDING INNOVATIONS USING ROOT CAUSE ANALYSIS

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ABSTRACT: This paper was purposed to identified the importance of learning tools development on energy-efficient building innovation based on global warming phenomenon that we faced nowadays. To fullfil thermal comfortness on the building will needs engineering intervention, knowledge, skill, and innovation that can minimalized the adverse effect of nature to the building and to minimalized the adverse effect of the building to the nature. Until now, lectures on civil and architecture engineering regarding eco-friendly building only based on

existing concept of theory without any improvement on innovation to answer the natural challenge so student knowledge and skill was not improved to innovate an eco-friendly and energy-efficient building.

Based on this reason, problem identification of main reason the importance of learning tools development regarding energy efficient building by innovation was done. Identification will be done by using root cause analysis, by checking every layer of cause to get the main cause why the importance of learning tools development on energy-efficient building should be done.

Identification result found some main cause of the importance needs to develop the learning tools on energy-efficient innovation: 1). Knowledge and skills of the student were not improved regarding the energy-efficient building; 2). The lesson the received by the student regarding the eco-friendly building only based on old theory and concept; 3). Lesson of energy efficient building currently was not motivate the student to innovate and answer the natural challenge; 4). Student as main actor and agent of change in the society was not quite motivated to innovate save the environment from the damage.

Keywords: identification, learning development, student, skilled, innovation, energy-efficient building

NEED ANALYSIS ON INDUSTRY REGARDING QUALIFICATION OF GRADUATES DIPLOMA III CULINARY

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ABSTRACT: This paper aims to find out the graduate Diploma of Three Culinary proficiency profiles desired by graduate users. From the review of curriculum documentation of Diploma Three of Culinary is now separated does not make learners ready to work, so that graduates are not used in the labor market. The research was conducted by using quantitative method. For quantitative methods use a questionnaire as a means of data collection. The population is a hotel in West Sumatra with random sampling. Data analysis technique using descriptive analysis and likert scale. It is then described as a profile picture of Diploma III Culinary Graduates required by market share. The authors categorize the needs of graduates into six: (1) Aspects of Employee Recruitment, (2) Knowledge, (3) Skill, (4) Self Concept, (5) Traits, and (6) Motives. Based on the analysis using Likert scale, it is proven in this paper which categories are needed and how much needs by the job market Diploma III Culinary graduate.

Keywords: Quality of Diploma III Culinary

MATERIAL SELECTION ANALYSIS AND MAGNET SKEWING TO REDUCE COGGING TORQUE IN PERMANENT MAGNET GENERATOR

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ABSTRACT: Cogging Torque is a pounding (torque opposite the direction of rotator generator) when rotating the rotor that causes the rotor is difficult to rotate by hand and can interfere with the rotation of the generator at the start, causing vibrations and disturbing sounds. Cogging is a characteristic attached to a permanent magnet generator (GMP) caused by the geometry of the generator. Cogging torque may affect start ability, generate noise and mechanical vibrations when GMP is installed in wind turbines. Therefore cogging GMP should be made as small as possible (coggingless), one way is to tilt (Skewing) permanent magnet. Simulation using magnet software to know the magnitude of the cogging torque caused by the rotation of the rotor on the generator. The cogging torque simulation results are further validated by the starting torque on the GMP testing method using material changes and magnetic skewing. The best magnetic slope is achieved when the magnetic slope is 7.5 °, because in this position also the highest cogging torque ($9.951905191 \times 10^{-5}$ Nm) is found in model 3 material A skewing magnet (7.5°) with Cr-10 core material and NdFeb magnetic magnet, while the lowest cogging value (1.17512009



x 10^{-5} Nm) is found in model 3 material A magnetic skewing (7.5°) with core material M250-35A and permanent magnet NdFeb.

Keywords: Generator, Cogging, Skewing, Torque

COMPARISON OF DECISION TREE ALGORITHM METHOD (C4.5) AND NAIVE BAYES TO IDENTIFY STUDENT LEARNING RESULTS WITH COOPERATIVE LEARNING MODEL

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ABSTRACT: Learning process in Higher Education can affect student learning outcomes. One that affects student learning outcomes is the metode and learning model used by the lecturers in the delivery of materials in the classroom. Cooperative learning model is one of the learning models that can encourage students' ability to solve various problems encountered during learning and develop their potential optimally. To find out the results of student learning, especially on the ability of a student, it is necessary to process the results of learning by lecturers. By utilizing Data Mining technique we can use the method by comparing two methods namely Decision Tree (C4.5) and Naïve Bayes algorithm method in identifying student learning outcomes in the use of cooperative learning model. In this research we used the comparison of Decision Tree (C4.5) and Naïve Bayes algorithm method on student learning outcomes. The test was conducted on 50 students. Data were tested using RapidMiner on Algorithm C4.5 and using Naïve Bayes at a high degree of accuracy.

Keywords: cooperative learning, data mining, C4.5 algorithm, Naïve Bayes

ONLINE ASSESSMENT TOOLS FOR 2013 CURRICULUM BASE ON INFORMATION TECHNOLOGY

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ABSTRACT: Assessment is an important component of the curriculum. It illustrates an achievement of learning objectives. Curriculum 2013 (K13) uses an authentic assessment system, which emphasizes students' learner's ability to demonstrate real and meaningful knowledge. The problem is that not all teachers master how to set up an assessment instrument, and the adoption of an authentic assessment system takes longer. This causes authentic assessment system not fully used by the teacher. Therefore, it is necessary to develop the 2013 curriculum assessment tool based on information technology so that it can make it easier for teachers to use it and to time their application. The sistem was developed using prototype model. The test results show that the developed system is valid and practicality is used as an authentic assessment tool.

Keywords: Assessment, Authentic, K13, Technology, Information

DEVELOPING SOFT SKILLS LEARNING MODEL FOR MECHANICAL ENGINEERING STUDENTS OF VOCATIONAL HIGH SCHOOL

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ABSTRACT: This research was based on the very low competency of soft skills acquired by graduates of Mechanical Engineering of Vocational High School performed at workplaces. The objectives of the research were to identify specific soft skills that should be mastered by students of Mechanical engineering and to develop instructional models to teach the soft skills. The research consisted of two parts: (1) to identify soft skills needed by students of Mechanical by using engineering survey and questionnaire, (2) to develop instructional models to teach soft skills, followed a modified Borg & Gail design through R&D research design. The instructional models were called six principles of soft skills instructional models, or MP2S6P. The effectiveness of the model of an experiment was conducted through a posttest-only control group design. Based on the research findings, there are 27 soft skills that should be mastered by students of Mechanical Engineering. The application of the developed MP26P model resulted in significant achievement which was better than by using conventional instruction towards the students at Mechanical Engineering Department. The teachers and students have positive perceptions about the MP2S6P model. Based on the results, it can be recommended that MP2S6P should be developed and used in teaching necessary soft skills in Vocational High Schools.

Keywords: *Soft Skills, MP2S6P, Research and Development*

LEARNING MODEL OF FASHION DESIGN PRODUCTION WITH CTL APPROACH

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The purpose of this study is to improve the quality of learning Fashion Design Production. The problem begins with a lack of opportunities for graduates to become civil servants, or teachers so that has been done research to improve learning through the CTL Model approach in the course Fashion Design production, so that students can choose a career as a fashion designer in addition to becoming educators. The methodology used in this study is quantitative. The research was conducted in IKK FPP UNP, UNP student research subject, data collection technique through questionnaire, portfolio assessment and document, from the results of this study there is a positive response to learning with CTL approach. Levels of validity achieved by CTL component points are 4.4 in meaningful relationships, 3.9 for meaningful work, 3.9 for self-study, 4.3 for collaborative skills, 4.3 critical and creative thinking. 4.3 individual ability to grow, 4.3 high performance standards, 4.4 for authentic assessment. Assessment of student responses is confirmed by assessment of student learning outcomes before / pretes and after posttest completion. Based on statistical test of levene value of sig 0,407 > 0,05. This proves the homogeneity of pretest and posttest. Furthermore, based on the test results of normality pretest and posttes value is produced sig pretes of 0.371 > 0.05 and the result of posttest sig is 0.421 > 0.05. It has been proved that the value of pretest and posttest is normally distributed, and the result of t sig 0.000 < 0,05 test shows that there is significant difference between pretest and posttes, the conclusion of this study is that there is an improvement of learning outcomes by using CTL model approach in the course Fashion Design Production.

Keywords: *CTL Model Approach, Fashion Design Production.*

CLUSTER ANALYSIS DISTANCE INTER DISTRICT USING SINGLE LINKAGE METHOD FOR DETERMINATION OF MPLIK CAR OPERATION ZONE IN MEDAN CITY

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ABSTRACT: The rapid growth of many piles of data has created a rich state of data but minimal information. So much data will be difficult to mine information on the data. Data mining is the mining or discovery of new information by looking for certain patterns or rules from a large amount of data that is expected to overcome the condition. By utilizing data obtained from the Office of Communications and Informatics for the operation of MPLIK car that is useful to divide the area that will be visited by MPLIK car through data mining clustering techniques. Category of destination or district area divided by single linkage is to take the closest distance between the districts located in the city of Medan, it will be easier and efficient to visit the area using the agglomerative hierarchy method.

Keywords: Using Euclidean Distance Method, including also using agglomerative hierarchy method

ELECTRONIC COMPONENT TESTER AS A LEARNING MEDIA FOR CLASS X STUDENTS AUDIO VIDEO ENGINEERING SMKN 1 SUMBAR

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ABSTRACT: This research aims to produce instructional media in the form of Electronic Component Tester on Electrical and Electronics basic subjects of X class students majoring in Audio Video Engineering. The method used in this research, especially in designing electronic component tester is Research and Development (R & D) method, which consists of designing, validation, revision, product manufacture, and testing. manufacture of electronic component tester covering hardware and software. the hardware consists of Atmega328 microcontroller as a control center, LCD as component data display output, LED as indicator tool and three terminal as component test terminal to be tested. The next step is to test the percentage of success and the level of eligibility percentage. The percentage of success is done by comparing the test results of components tested using a component tester with physical data components, datasheet, and multitester measuring instruments and LCR Tester. The level of identification of success test of the electronic component tester in conducting a test of passive and active electronics component yield average success percentage of 97,14%. The feasibility percentage level is measured using validation instruments with presentation in terms of physical, technical and instructional design aspects that are tested to the teachers and media expert. The result of the feasibility percentage test based on the overall aspect according to the teacher on average is 89,93% with very feasible category and result of a percentage level feasibility test of overall aspect according to media expert on average equal to 89,93% with category worthy to be used as medium of learning.

Keywords: Electronic component tester, Learning media, Product Based Learning, Electrical and Electronic Basic



SOIL STABILITY USING CEMENT PCC IN LUBUK MINTURUN PADANG, INDONESIA

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ABSTRACT: This study was intended to determine the required semen content to be stable and optimum. Research is an experimental study. From the results At the test well yield the groundwater face is at a depth of 0.57 meters. In Hand Boring The rising of USCS soil type C. From Sieve Analysis known type of graded sandy gristle is not good. From Gs Analysis. Gs 2.61. At Water Content Test was 39,62%. From weighing test the contents of heavy data Content of Wet Wetlands average of 1.59 and data Average Dry Land Content weighted by 1.08. From Atterberg Limit testing obtained Liquid limit value = 45,81%, Plastic limit value = 38,34%, Plasticity index value = 7,47%. From Compression Test Result Obtained γ_d and air content: At 0% addition of PCC cement compaction result of 1.12 with moisture content 35%, At 4% addition of PCC cement compaction result of 1.19 with moisture content 37%, At 7% velocity PCC cement compaction resulted at 1.24 with moisture content of 35%. In 10% of PCC cement semen obtained compaction of 1.28 with 35% air content.

Keywords: Soil Stability, Soil Investigation, Stability Using Cement PCC, Lubuk Minturun Land

LEARNING RESPONSE OF JOURNEY LEARNING COOPERATIV LEARNING AND LEARNING MODULE IN EDUCATION MEDIA LEVEL

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ABSTRACT: Factors of learning methods that are less appropriate in the delivery of materials and the selection of learning media causes less well-received learning objectives by students. So this study looks at the student's response to the method of cooperative learning Jigsaw Type using modules in the course Media Education. This study aims to see the response of students in the application of cooperative learning method of jigsaw type using module in educational media course. The method used in this research is experiment by disseminating the instrument to the students who take the educational media course that apply the cooperative learning Jigsaw Type and using the learning module. Research subjects are students who take courses in education media Semester July-December 2017. Data type is primary data where data obtained from result of research from student. The instrument or measuring instrument used is a questionnaire. Descriptive data analysis techniques to describe the response of students to the method of cooperative learning Jigsaw type using modules in the course Media Education. The results obtained from this experimental research are Generating an Education Media Module. Based on the findings of this study concluded that the response of students to the method of cooperative learning Jigsaw Type using modules in the course Media Education is very positive. With the application of cooperative learning method Jigsaw Type using active student module in learning.

Keywords: Student Response, Learning Method, Jigsaw Type Cooperative, Module, Education Media

CREATE A MICROCONTROLLER TRAINER KIT ON MICROCONTROLLER SYSTEM COURSE

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Abstract: This paper describes about creating a Microcontroller Trainer Kit. This microcontroller trainer will be used in Microcontroller System lecture class at Electronics Engineering Department. Method used is Research and



Development (R & D). The step research consist of four D are *Define, Design, Develop, Dessiminate*. In the define stage get the definition that it takes the manufacture of a microcontroller trainer on lecturing microcontroller system. At the design stage make the architectural design of the trainer to be made. Next, at the develop stage done prototype dan followed by making finished goods. The last stage is dissemination that is the time of product dissemination. The results the research result is in the form of Microcontroller kit trainer ready to be validated in the second year.

Keyword: Microcontroller Trainer Kit, Reseach and Development

MICROCONTROLLER SKILL TRAINING FOR SMKN 2 PAYAKUMBUH AND SMKN 1 SUNGAI RUMBAI

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Abstract: This paper describes microcontroller skill training for SMKN 2 Payakumbuh and SMKN 1 sungai Rumbai. This training aims to train students to be skilled at creating microcontroller circuits and programs. The training method is the direct practice of creating and programing the microcontroller system. The result is the improvement of microcontroller skill of the students who participated in this training.

Keyword: Microcontroller Skill, Direct Practice

RESOURCE SHARING–BLENDED PROJECT BASED LEARNING (RS- BPBL[©]) MODEL DEVELOPMENT IN VOCATIONAL HIGH SCHOOL

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ABSTRACT: Resource Sharing-Blended Project Based Learning (RS-BPBL[©]) Model is a learning model from a dissertation research, passed a pilot project in STMIK Indonesia Padang. This model has IPR, Copyright Number: P/IDEC00201600776/00374. This research aims to develop RS-BPBL[©] model as a comprehensive problem solving of problem limited availability e-learning facilities at Vocational High School Dharma Bakti (SMK DB) Lubuk Alung. The specific target development computer network hardware technology, and computer technology e-learning software on SMK DB. This is to improve understanding and skills teachers and students about resource sharing technology in project based learning in blended learning based on RS-BPBL[©] bring to the world education without limit. This research was conducted with quantitative research design, Research and Development using the ADDIE model. Methods and implementation of research: 1) Analysis of needs teachers and learners; 2) Design and development computer hardware technology based on e-learning network in Resource Sharing (RS); 3) Design and development computer software technology development in website and e-learning based on RS-BPBL[©]; 4) Development and implementation Blended Learning (BL) with Personal Learning Network (PLN) system; 5) Project Based Learning (PBL) operational / training assistance; 6) Dissemination of RS-BPBL[©]; 7) Testing model RS-BPBL[©]. The research output: 1) The new innovation RS-BPBL[©] Model form computer network hardware technology, and computer technology e-learning software; 2) Increasing application science and technology to teachers and students; 3) Increasing competitiveness graduates by providing added value to improving quality teachers, and improving comprehensive, meaningful and sustainable community values with RS-BPBL[©]; 4) Improvement social values teachers and students.

Keywords: Resource Sharing–Blended Project Based Learning, RS-BPBL[©]

OPTIMIZATION OF EXTERNAL LIGHTNING PROTECTION SYSTEM DESIGN IN BUILDING CENTER FOR INFORMATION TECHNOLOGY AND DATA BASE (PTIPD) UIN SUSKA RIAU

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ABSTRACT

External protection system at tall building is critical to protect it from lightning strikes. Building of Pusat Teknologi Informasi dan Pangkalan Data (PTIPD) is one of the tall buildings in UIN Suska Riau, which should have a good security from interference by lightning. This study aims to analyze the needs of Lightning Protection System (SPP) of the building, evaluate the condition of the current building protection system now, and trying to optimize the system of protection that have to do the analysis and design of external protection system of the building. In this study, external protection system design of buildings using conventional methods, there are Mesh Size, Rolling Sphere, and protective angle. The results of analysis needs of lightning protection systems for buildings PTIPD UIN Suska Riau based on the level of protection at the level of IV with forecasts of great danger, the protection system of the building is currently showing at least the area protected, the result of design shows the method of Rolling Sphere which provides overall protection area of the building with optimal.

Key Word : External Protection System, Building of PTIPD, SPP, Conventional Methods

STUDY MODELING MANAGEMENT OF MINING IN DISTRICT SOLOK SUMATERA BARAT

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ABSTRACT: The purpose of this research is to evaluate the review of mining and its physical impact on the environment. mining process Lembah Gumanti has a positive impact on development in the form of increased incomes of mining communities and local revenue. Despite the negative impact of environmental damage. To overcome the problem of negative impact in the form of environmental damage need to be realized a concept of environmental management model of mining in the form of mining concept of the familiar people of the environment by involving active participation of miners ranging from mining planning, peeling of shoots, excavation method, and reclamation as well as reviewing technical criteria of mining area preparation. Tribina concept business and the environment through a comprehensive review by various parties that produces an appropriate management model and the implementation of a holistic strategic policy program by the local government.

Keywords: Environment, Tribina Concept, Management Model

THE DESIGNING OF THE PROTOTYPE OF THE AIR QUALITY MEASURING HELMET

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ABSTRACT: The purpose of this research is to produce prototype of air quality measuring helmet equipped with output (output) sound and know the level of accuracy in highway. The results of research is useful for motorcyclists as a warning of air quality that is around in real time. Target to be achieved is that motorcyclists can always maintain and protect themselves from the dangers of air pollution on the highway, especially in traffic jams using helmets that can measure air quality. The outcomes of this study can be included and published in national journals and as teaching materials. For long-term outcomes is the creation of helmets equipped with air quality measuring instruments with more accurate results and a more attractive appearance. In this research approach used is demonstration application and data collection method used is observation where prototype helmet will be tested directly on highway and test result data will be recorded and collected. After conducting a field test of 50 times and analyzed it can be known the accuracy level of the series of systems mounted on the helmet to detect and calculate air quality.

Keywords: Prototype helmet, Air quality measurements, Air pollution, demonstration applications, Observation, Testing,

THE EFFECT OF STRATEGY OF TRAINING MODELS IN LEARNING ELECTRICAL INSTALLATION

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ABSTRACT: This study aimed to determine the effect of model training strategy on learning outcomes in electrical installation courses in engineering majors of electrical engineering faculty of state universities of padang. The subjects of this study are students of electrical engineering education courses (S1) force 2016. Which consists of 55 people as an experimental class and 52 people as a control class. Assessment instruments using performance appraisal, and the data obtained were analyzed using two-tension test (t-test). From the results of data analysis showed that the class using the model training strategy has a higher average value when compared with students using conventional learning. Based on the calculation of t-test obtained $t_{\text{arithmetic}} > t_{\text{table}}$ is $4.21255 > 2.0042$. Thus, the hypothesis in this study is that there is a significant influence of electrical electrical installation learning results in electrical engineering majors engineering faculty of state universities padang

Keywords: Influence Strategy, Training Model, Learning Outcomes



SOFTWARE DEVELOPMENT OF CONCENTRATION SELECTION WITH INTEREST TEST BASED ON INTELLIGENT SYSTEM

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ABSTRACT : Universities are designed to prepare graduates who are ready to enter the workforce and are able to develop a professional attitude. Educational institutions such as the University need a form of decisions in determining the right concentration for students, so that the learning process can be achieved well in accordance with the interests. The decision is very influential on the process of handling the choice of alternative concentration, choosing an appropriate concentration of interest will also have an impact on the research focus for the final assignment of students. To know the right concentration for students is not easy, because of the limited information possessed by students. This research develops student concentration selection system in Electrical Engineering Department UIN Suska Riau. The system was developed with three criteria, ie, interest tests using psychological tests, prerequisite concentration course grades, and GPA. The system is built using an intelligent system model that is Fuzzy Multiple Attribute Decision Making (FMADM) web-based, which helps the Department in the selection process and helps the process of career guidance on students. With this selection system, the Department can be provide the most suitable concentration decisions with interest in student concentration.

Keyword : Concentration, Interest, Intelligent, Career Guidance, Decision

DESIGNING LEARNING TOOLS BY USING PROBLEM BASED INSTRUCTION (PBI) MODEL ON ENERGY RESOURCE MATERIAL INTEGRATED TO ENERGY SAVING CHARACTER

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ABSTRACT: The purpose of this research is to design science learning Tool by using PBI Model on energy sources material integrated to energy saving character. The research was designed by using Research and Development method. The Learning materials were developed using 4-D model consisting of 4 stages: Define, Design, Develop and Disseminate. However, this research is still at the Design stage. In the Define stage, curriculum analysis is performed, analysis of student characteristics and analysis of science materials. Stage Design designed science learning device based on the Model of Integrated Character Education PBI. The results of the Define stage study were obtaining Competency Standard in this research are "Understanding the various forms of energy and how to use them in everyday life". The results of the research at the Design stage obtained syllabus, lesson plan, module, worksheet, assessment designed following the steps of PBI model integrated energy-saving character

Keywords: Design, Learning Tool, Science, PBI, and Character

FUZZY LOGIC BASED CONTROLLER FOR BUCK CONVERTER

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ABSTRACT: This research aims to make buck converter prototype for PLTS system by using fuzzy logic controller. Buck converter is required in the PLTS system if the required unidirectional voltage is smaller than the output voltage of the solar cell. Buck converter used to convert 24 Volt dc voltage to 12 Volt dc with 60 watt capability. While fuzzy logic controller is used to improve buck converter performance based on pulse generation technique for switching. The application of fuzzy logic method is expected to improve the performance of the system by maintaining the stability of buck converter output voltage of 12 volts and reduce the output ripple value. Atmega8535 microcontroller is used to generate PWM pulses for switching on power circuits.

Keywords: Buck converter, fuzzy logic, Atmega8535

STRATEGY, THE EFFECTIVENESS OF THE IMPLEMENTATION E-LEARNING PROCESS IN SUPPORT LEARNING

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ABSTRACT: The development of information and communication technology (ICT) has an influence on the world of education, especially in the learning process. With the development of ICT usage there are five shifts in the learning process: (1) from training to appearance, (2) from classroom to where and at anytime, (3) from paper to "on line" or channel, (4) physics to networking facilities, (5) from time to time to real time .. Strategic implementation of e-learning is a systematic approach to what is considered most effective and efficient to meet the information needs. The information system strategic planning approach proposed by Ward and Peppard (2002) which underlies this research using several analytical methods, among others, SWOT, external and internal business environment analysis. The result of this research is in the form of application portfolio of strategic planning of e-learning implementation which refers to business plan at educational institution based on data obtained through analytical method used and involving all organizational components.

Keywords: elearning, PEST analysis, SWOT

ART EDUCATION THROUGH FREE EXPRESSION APPRECIATES, DISCIPLINE SCIENCE, AND MULTICULTURAL AS EFFORTS TO IMPROVE STUDENT CREATIVITY

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Abstract: The focus of this research is how the process of implementation of art education through the approach of free expression, discipline and multicultural as an effort to improve student creativity. The study employed qualitative approach with the researcher herself as the research instrument. Data collection techniques included focused interviews, participant observation, and study documentation. Data analysis was done by reducing, clarifying, describing, concluding, and interpreting all the information selectively. The results show the process of implementation of art education is inseparable from the teaching-learning process, which covers: curriculum, objectives, teaching materials, methods of teaching and learning activities, facilities and infrastructure, and evaluation. Free expression approach in learning the art of visual art is done by providing opportunities for students to develop idea, done through observing objects, image and Style (technique of hope). The implementation process of learning the visual art of art through discipline approach is done by giving the subject matter theoretically based on scientific viewpoint. The implementation process of learning the visual art through a multicultural approach is done by introducing, practicing, and doing reformation to the students about the diversity of cultural arts of their homeland.



DEVELOPMENT OF NET ENTREPRENEURSHIP LEARNING MODEL FOR UNIVERSITAS NEGERI PADANG

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ABSTRACT: Entrepreneurship education in Indonesia is currently trying to create a strong innovation culture in accordance with the development of information and technology flow that has changed the entrepreneurship paradigm through internet network. It is necessary to develop Entrepreneurship Learning Model that is able to integrate knowledge in the practice of implementing entrepreneurship through internet network. The design of the Net Entrepreneurship Learning Model consists of the development of the Net Entrepreneurship learning tool, the Components of the Net Entrepreneurship Model and the Characteristics of the Net Entrepreneurship Model. The Net Entrepreneur learning model is developed on the basis that this model is well used to meet the need for entrepreneurial learning pattern in equipping students of entrepreneurship abilities in accordance with the development and competition in the globalization era in line with changes in people's behavior in shopping from offline to online.

Keywords: Entrepreneurship, Internet, Net Entrepreneurship, Learning Model

IMPLEMENTATION OF MODEL-BASED LEARNING ISO/IEC 17025 IN VOCATIONAL HIGH SCHOOL

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ABSTRACT: The problems are growing today at Vocational High School West Java is less readily as graduates enter the world of industry. Therefore, it is required ISO/IEC 17025 standards based learning in Vocational High School. Learning in the lab is a must and is typical in Vocational High School Indonesia. But not all have learning standards and implemented in vocational, as required for learning in Vocational High School in Indonesian Indonesia. Vocational learning in the laboratory according to the standard ISO / IEC 17025 is the governments efforts so that graduates are ready to work in the industry. Through this learning vocational students are accustomed to learning in the laboratory will be the same as working in the industry. Based learning requires the integration of practice and theory together. Therefore, in this paper the researchers reveal this problem. This research was conducted by using descriptive analysis by comparing the two schools on the concentration of subjects electronics. Results of research conducted in Vocational High School Cimahi in Indonesia shows that based learning with the ISO/IEC 17025 standard has been implemented very well when compared to Vocational High School Cirebon in Indonesia. at Vocational High School Cirebon lack of implementation of learning is due to various reasons

Keywords: Laboratory Learning; ISO/IEC 17025; Vocational High School

MEASUREMENT MODEL OF CONTRIBUTED FACTOR AND INDICATOR TOWARDS VOCATIONAL EDUCATION PRODUCTIVITY

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ABSTRACT: This study aimed to: (1) identify the validity and reliability of indicators of factors that contribute to the productivity of vocational education; (2) create measurement model of contributed factors and indicators to the productivity of vocational education. The data were collected by using instruments that have been tested for validity and reliability. The research population is Diploma III graduates of vocational education from the Engineering Faculty of Universitas Negeri Padang and Padang State Polytechnic. Sampling technique used was simple random sampling, in which the respondents were 395 graduates from Diploma III of vocational education from Faculty of Engineering of Padang State University and Padang State Polytechnic. Data were analyzed with LISREL 8.80 in the form of normality test and multicollinearity test and were continued with asymptotic covariance matrix estimation and confirmatory factor analysis. The results of the research showed that there were 23 valid and reliable indicators in reflecting the six variables; they were managerial leadership, with idealized influence, inspirational motivation, intellectual stimulation, individualized consideration; academic atmosphere with physical environmental indicators, learning environment, and academic environment; lecturer competence with pedagogic competency indicator, professional competence of personality competence and social competence; learning system, with learner-focused, worker-focused, attribute-oriented indicators; the process of learning with quality information data indicator, learning quality, curriculum quality, resource quality; and productivity of vocational education, with indicators of graduate quality, management quality, internal efficiency, external efficiency, and income.

Keywords: *Productivity, Managers' Leadership, Academic Atmosphere, Lecturers' Competencies, Teaching Process, Productivity*

MODELING FACTORS AFFECTING THE POLYTECHNIC GRADUATE COMPETENCE

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ABSTRACT: This study aims to obtain the models of the relationship of the determinant factors for the competencies of graduates. The research instruments were validated by experts judgment from Padang State University and Padang State Polytechnic. The data were collected by using a questionnaire which had been measured for its validity and reliability. The population was lecturers and graduates of Padang State Polytechnic and Payakumbuh State Agriculture Polytechnic. A sample of 396 respondents was established using the simple random sampling technique. The data analysis started with normality and multicollinearity test using LISREL 8.80. The data were analyzed using multisample, continued to use the estimated asymptotic covariance matrix through the analysis of confirmatory factor analysis and structural models. There are positive and significant effects on competencies of graduates, namely: (a) managers' leadership has an indirect effect through school culture, academic atmosphere, competencies of lecturers and teaching quality, (b) school culture has an indirect effect through academic atmosphere, competencies of lecturers and teaching quality, (c) academic atmosphere has an indirect effect through competencies of lecturers and teaching quality, (d) lecturers' competencies have an indirect effect through teaching quality, and (e) teaching quality has a direct effect on competencies of graduates.

Keywords: *Polytechnic, Competencies Of Graduates, Managers' Leadership, School Culture, Academic Atmosphere, Lecturers' Competencies, Teaching Quality*

THE INFLUENCE OF USING ANIMATION MEDIA AND LEARNING MOTIVATION TOWARD LEARNING RESULT OF AUTOMOTIVE STUDENTS IN SMK N 2 PAYAKUMBUH

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Abstract: This article was written to describe: (1) The difference result of students learning on TDO Subject between by Using Animation Media and not Using Animation Media, (2) The difference result of students learning on TDO Subject between the students who have high motivation and low motivation, (3) The interaction between learning Using Animation Media and learning motivation toward the Result of TDO Subject. The type of this research is quasi-experimental design with total population are 4 classes by the number of student are 124 students. Selected sample are 2 classes were composed experimental class and control class. The results of hypothesis testing showed that: (1) there are differences in learning result TDO students who use non-media animation with media animation, which shows that the learning result of students who use higher animated media, (2) there are differences learning result of between the students who have high motivation and low motivation, it shows the students who have high motivation are better than the students who have low motivation (3) There is interaction of Using Animation Media and learning motivation toward TDO Subject on The first term in learning periode 2014/2015, with probability 0.014.

Key Word: Animation Media, Learning Motivation, Learning Result

ROLE REINFORCEMENT OF LPTK PTK IN IMPROVING VOCATIONAL TEACHERS' QUALITY IN INDONESIA AT SMK N 5 PADANG

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ABSTRACT: One of the implications of globalization in education is the demand for graduates and the quality of skills in accordance with the demands of the labor market. Vocational education school is a school used as a place to create graduates who have an important role in advancing education in particular. Meanwhile, the Indonesian economy is generally appointed. The progress of a school can be realized by improving the quality of vocational education is good, and also the role of teachers is also important in the learning process and LPTK PTK. Thus, it can produce qualified teachers. This is evidenced after the existence of this 2013 curriculum, teachers are required to be able to use various learning media and various approaches, depending on the material being taught. Thus, strengthening the role of LPTK PTK should be done in improving the quality of vocational education's teachers, especially in Vocational education schools in this West Sumatra. For example in SMK 5 Padang, in particular. The quality of vocational education's teacher is well designed and conducted to meet market demand. Thus, institutional partnerships are needed in the development of vocational education, to be applied as a strategy in curriculum implementation through learning through workplace simulations that will create the suitability of graduate quality and market demand for labor. So that graduates will be familiar with the work they will do in the company.

Key words: role reinforcement of lptk ptk, vocational teachers' quality in Indonesia and SMK 5 Padang



BUILD AND DESIGN OF BUSINESS INTELLIGENCE UNIVERSITY SYSTEM AS DECISION SUPPORT ACADEMIC

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ABSTRACT: The system of business intelligence university begins with the stage of data integration, data analysis, create reports and create web portal and then integrate the report with the web portal. Analysis of the data processed with OLAP, KPI and data mining to extract information from data stored in a data warehouse. The results of the data analysis process in representation in the form of statistical reports and dashboards are then used as decision support academic. This research aims to design structure of business intelligence university system as a decision support academic at University web based with OLAP. This research resulted in the system framework and web portal business intelligence university systems that can be accessed through a browser online. Business Intelligence can be used as a solution to consider the process of decision making in the management of the university and solutions to improve the academic performance of management in achieving academic excellence.

Keywords: Business Intelligence, Data Warehouse, OLAP, KPI, Data Mining

DEVELOPMENT ASSESSMENT MODEL TO HIGH ORDER THINKING SKILL ORIENTATE FOR EVALUATION STUDENT COMPETENCY

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ABSTRACT: High order thinking skill (HOTS) is a skill that should be present in every teaching. Teaching automotive particularly require teacher to be skillful in planning activities that thinking skill among student. Automotive technology to develop, teacher of automotive technology should be to make and to develop test base on HOTS, to anticipate its. This research examines what practitioners in automotive education judge to be the key issues in the current and future use HOTS assessment. This research using of R and D with Four D Models. The result show that HOTS can be make teaching effectiveness and achievement student increase 12%.

Keywords — Teaching, Evaluation, Teacher automotive, Thinking high level, Thinking skill

INFLUENCE OF PRELIMINARY TREATMENT ON MAKING COCONUT FIBER PARTICLE BOARD TO BENDING STRENGTH AND IMPACT

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ABSTRACT: Coconut coir particles are one of the lignocellulosic materials that can be used as an alternative to particle board raw materials. The mechanical properties of the particle board are influenced by the raw material of the forming wood, the type of adhesive, and the formulation used and the process of making the particle board. Efforts to improve the mechanical properties of particle board through pre-heat treatment and cold immersion

before coconut coir material is processed into particle board. Research conducted is the type of experimental research. Research data in the form of result of bending strength test and subsequent impact strength, analyzed to know whether or not the influence of preliminary treatment on making coconut fiber particle board adhesive urea formaldehyde. The mean value of the tensile stress of hot bath specimen (100°C) 0.305 MPa with elastic modulus of 0.279 Gpa, for cold bath specimens (25°C) obtained the average of 0.285 Mpa bending stress with elasticity modulus of 0.296 Gpa, and the immunized specimens were obtained on average 0.265 Mpa bending stress and elastic modulus of 0.250 Gpa. The average value of energy absorption of hot specimen (100°C) 22.996 NM with impact value 0,203x106 N / M, for cold immersion specimens (25°C) obtained average energy absorption value 10,911 NM with impact value 0,099x106 N / M and specimen without immersion, the average energy absorption value of 8.811 NM with the impact rate of 0.082x106 N / M was obtained.

Keywords: Coconut Fiber, Urea Formaldehyde, Preliminary Treatment, Particle Board

DEVELOPMENT OF INDUSTRIAL STATISTICS MODULE USING PROJECT - BASED LEARNING (PjBL) APPROACH

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ABSTRACT: Currently, engineering education is undergoing significant structural changes. The rapidly evolving technological landscape forces educators to constantly reassess the content of engineering curriculum in the context of emerging fields and with a multidisciplinary focus. In this process, it is necessary to devise, implement and evaluate innovative pedagogical approaches for the incorporation of Industrial Statistics subjects into educational programmes without compromising the cultivation of traditional skills. The educational community is showing rapidly rising interest in Project-Based Learning (PBL) approaches. Project-based learning (PjBL) has been found to be effective to increase student learning achievement, acquiring knowledge through active learning, gaining interdisciplinary and multidisciplinary knowledge, taking responsibility for the learning, acquiring communication skill and methods of decision-making, and also enhancing student self-esteem. The objectives of this research are to develop a Industrial Statistics module using project - based learning and to know the student's response on the developed project-based learning module. To develop the module, 4D Model (define, design, develop, disseminate) was implemented. The data was collected using interview and questionnaire. Linkert scale was used to collect data. The designed module was validated by two experts. The results of the experts validity judgement showed that they accepted the module at a very good level (Mean = 3.43, S.D. = 0.50). And The result of Validity and practicality of designed module from 5 variable were analyzed by respondents (students), in average get score 3,34 (83,53%) or practical category. In conclusion, the project - based learning module can be used for Industrial Statistics subject.

Keywords: Project-based learning, 4D Model, Industrial Statistics, Module.

PREDICTED VULNERABILITY ASSESSMENT OF NON ENGINEERED HOUSES BASED ON DAMAGE DATA OF THE 2009 PADANG EARTHQUAKE IN PADANG CITY, INDONESIA

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ABSTRACT: In this study, we estimated future vulnerability of non-engineered houses based on damage data of the 2009 Padang earthquake in Padang, Indonesia. Since Padang earthquake is the largest earthquake event from several few years, it was an M 7.6 that occurred on September 30, 2009 and caused more than 1000 casualties and

damaged 106658 houses from slight damage to severe damage. as this earthquake was not an inter-plate but an intra-plate earthquake, and the magnitude of the 2010 Mentawai earthquake was smaller than expected, the strain has not been fully released. This means that there is still the high possibility of another gigantic earthquake occurring in the near future. Following the event, A 12-site microtremor array investigation to gain a representative determination of the soil condition of subsurface structures in Padang has been conducted. From the dispersion curve from the array observations, the central business district of Padang corresponds to relatively soft soil condition with V_{s30} less than 400 m/s. Because only one accelerometer was existing, the 2009 Padang earthquake was simulated to obtain peak ground acceleration for all sites in Padang city. By considering the damaging data of the 2009 Padang earthquake for engineered houses, Seismic risk vulnerability estimation of non-engineered houses for rock, medium and soft soil condition can be obtained, and also estimate the loss ratio based on the ground response, seismic hazard of Padang and the existing damaged to non-engineered structure houses due to Padang earthquake in 2009 data for 500 return periods of earthquake events.

Key words; soil profile, Padang earthquake, microtremor array, seismic vulnerability

DEVELOPMENT OF WEB-BASED DECISION SUPPORT SYSTEM FOR SCHOLARSHIP RECIPIENTS SELECTION USING ANALYTICAL HIERARCHY PROCESS (AHP) METHOD

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ABSTRACT: The goal of this research was to produce a decision support system to solve a semistructured problem that was determination of scholarship receiver. The system developed a Web-based Decision Support System, using the PHP programming language (PHP Hypertext Preprocessor) and based Code Igniter Framework and MySQL as a Database Management System (DBMS). The method used in this system development is Analytical Hierarchy Process (AHP). This method will make a decision by breaking the problem into its parts, develop criteria into a hierarchy, determines the priority value of each criterion in the form of pair wise comparison matrix, performing synthesis to obtain the overall priorities, and measuring the hierarchy ratio. From **these steps** will get the value of the priority criteria and sub criteria that used to calculate the points students. Students with the highest points will be recommended by the school to get the scholarship.

Keywords: Decision Support System, Analytical Hierarchy Process (AHP), Scholarship, PHP, Code Igniter

THE DEVELOPMENT OF WIND SAVONIUS WIND BLADE SYSTEM AS A ELECTRICAL GENERATOR EQUIPMENT

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ABSTRACT: Savonius windmills that already exist, do not yet maximize the air. Thus the development of Savonius wind turbines to maximize the existing air. This study aims to produce Savonius wind turbine multi-level system for power generation by maximizing the utilization of wind. Development of Savonius windmill by using five blade levels. The method used in this research is experimenting by testing and modifying of blade position parameters to get maximum rotation and torque. The subject of the study was a five-level Savonius turbine blade with a total of 10 blades. The data type is primary data where data obtained in research results from each position of the blade. Instruments or measuring instruments used are standard measuring tools with a calibrated



readability accuracy. Descriptive data analysis techniques to describe the results of the speed of each variable and maximum torque to obtain electrical energy. The results of the experimental research are: (1) Produce a five-level savonius blade wind turbine with 10 blade blades to generate electrical energy; (2) efficient wind speed savoniu at wind speed 2 m / s at 64.91% speed wind 3 m / s from 65,99% and wind speed 4 m / s 4,8,24%. Based on the findings of this study concluded the speed and speed. The higher the average speed of the wind, the efficiency of savonius windmill increases.

Keywords: Savonius Windmill, Multi-Level Blade, Position Of Blade, Rotation, Torque, Power Plant

THE EFFECT OF ISLAMIC WORK ETHICS AND SPRITUAL LEADERSHIP ON EMPLOYEE'S COMMITMEN IN PADANG SHARIA HOTELS

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ABSTRACT: Now West Sumatera declare that ready as a provider of halal tourism then one of support halal tourism is the availability of accommodation facilities that operate with sharia, if a tourist destination declared as a halal tourism then that is expected to be more halal food and hotel based on sharia, the hospitality industry in Padang City also participate in supporting the halal tourism is started the number of sharia hotels brand in the Padang City, to observed practice of sharia hotels management in Padang City this study chose 6 (six) sharia hotels in Padang City, to find out the influence Islamic work ethics and spirituality leadership on employee commitment, the sample in this study are 118 respondents with sampling method used census method and data collected by used questionnaire, in accordance with that objectives, In this research formulated three hypotheses that : the first hypothesis is allegedly Islamic work ethic have a significant effect on employee commitment, second hypothesis is assumed leadership effect on employee commitment and third hypothesis alleged that Islamic work ethic and spiritual leadership have significant effect on employee commitment, this research used multiple linear regression analysis with SPSS program to find out influenced each variable. The result of the research stated that Islamic work ethic has positive and significant impact on employee commitment; spiritual leadership has positive and significant impact on employee commitment beside that the result of research also emphasizes on hotel managers desire to start syariah principle and contribution to the competitiveness of niche market of sharia hotels in Padang City.

Keyword: Islamic ethic work, spiritual leadership, employee commitment, sharia hotel

THE DEVELOPMENT OF OBJECT ORIENTED PROGRAMMING JOBSHEET USING ADDIE MODEL

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ABSTRACT: The purpose of this article is to develop job-sheet learning media for Object Oriented Programming (OOP) subject at Electronic Engineering Department Faculty of Engineering State University of Padang. The development model used is the Analysis Design Development Implementation and Evaluations (ADDIE) model. This article only discusses the first three stages of development: (1) Analysis, (2) Design, and (3) Development. In the analysis phase, there are the definitions of instructional problems, instructional objectives, learning objectives and the identification of learning environment and knowledge of students based on the existing curriculum. At the design phase the objectives, assessment instruments, exercises, content, and analysis related to learning materials, lesson plans, and media selection are determined. Furthermore, at the development stage the creation and incorporation of content that has been designed at the design stage are made. After going through these stages, the initial product generated the job sheet, which is then validated by experts on the content feasibility, presentation, and language aspects.

Keywords: Development of Learning Media, Job sheet, OOP, Addie

EMPLOYEE PRODUCTIVITY IN TWO CROSS CULTURES BASED ENTREPRENEURSHIP

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ABSTRACT: In the completion of building projects we often encounter complex problems, delays in implementation. This is because most contractors in planning the project schedule do not consider the value of Work Motivation and Entrepreneurship attitude toward labor productivity in complexity. Thus causing a mismatch between the duration and the working group of the plan with the duration as well as the actual work group. Weakness in considering the productivity of labor due to productivity problems in the project is very complex and the existence of internal and external factors that influence it. In this case, in one construction project there are two different ethnic and cultural that is Minang culture and Javanese culture, based on observation in the field of several things observed are: a) The existence of motivation level of work and Entrepreneurship Soul to Productivity among workers from Minang and Java Not yet b) Different level of work motivation among Workers from Minang and Java, c) Differences in Life Entrepreneurship level among Workers from Minang and Java, d) Differences in Work Productivity among Workers from Minang and Java, e) The influence of the level of work motivation and Entrepreneurship on Productivity among workers from Minang and Java. The method used is MANOVA (Multivariate of Variant analysis) statistics and is realized in SEM (Structural Equations Modeling).

Keywords: Productivity, Motivation and Entrepreneurship

THE IMPLEMENTATION OF DECISION TREE ALGORITHM C4.5 USING RAPIDMINER IN ANALYZING DROPOUT STUDENTS

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ABSTRACT: Data Mining is the process of extracting data from large databases to find important and useful information. Classification is one of the existing techniques in data mining. The method used was Decision Tree (Tree Decision) and algorithm used was algorithm C4.5. The Decision Tree is a method that turns fact into a decision tree that represents understandable rules. Decision Tree is useful for exploring data, as well as finding hidden relationships between a number of input and target variables. From the Decision Tree built, rules of a case would be obtained. Software used was RapidMiner. The purpose of this study was to classify student data at University of Pembangunan Panca Budi and to know the factors of students who experienced dropout. The attributes used consisted of School Origin, Student's Age, Parents' Occupation, Parents' Revenue, and GPA. To avoid over-branching, then the Revenue, Age, and GPA attributes were grouped. The most influential attribute of the dropout student was the Origin of the School. The calculation result of the obtained accuracy value was 59.58% and the classification error was 40.42%.

Keywords: Algorithm C4.5, Data Mining, Decision Tree, Drop Out, Classification

DEVELOPMENTAL OF MEDIA LEARNING BASED ON TUTORIAL VIDEO AT CHARACTER MAKE UP SUBJECT IN SMKN 6

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ABSTRACT: Education will produce knowledgeable, intellectual and technological human resources, which are assets to enhance competitiveness. Character makeup is one of the basic competence of a beautician. There are still limitation in learning character makeup in vocational high school. Students are still having trouble mastering the

basic concept of makeup and have not been able to apply materials and cosmetics properly and design makeup for character makeup. This research is to develop a learning media of tutorial video on character Makeup subject. This is developmental research using 4-D method (define, design, develop, and disseminate). Validity and practicality is observed in teachers, student and practical professionals. The results showed as follows; (1) The validity of the tutorial video as media is valid (2) The practicalities of video as media is very practical based on the lecturer and students response after trial (3) The effectiveness is effective in improving student learning activity with excellent category and student learning outcomes before and after using tutorial video as media. Based on the findings of this study concluded that the tutorial video as media is valid, practical, and effective to be used as a media of learning in character makeups subject in SMK N 6 Padang.

Keywords: Tutorial Video, Makeup Character, practical, and effectiveness

PATIENT INFORMATION SYSTEM DESIGN ON MATERNITY HOSPITAL RESTU IBU PADANG

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ABSTRACT: In understanding the needs of patients, the good service is needed. The role of information that is needed can be obtained from technological developments. Analysis on the running system is a required action in system management. The on-going result of analysis from the patient service information system is an illustration to be able to create a system information to be proposed by designing the computerized information system, on the registration process of new patients, old patient registration, record of payment invoice, and examination result is no longer needed to be recorded manually, rather by simply entering it on the computer to be stored in the database. When the old patients come for the treatment again, the officer of medical record can simply enter the registration number to the computer and the computer will look for the data automatically. the process of making the report is performed by the computer and the medical record officer can input no_MR that will to be made into the report, the computer automatically displays the patient data in the computer database. The overview of system in general and its relation to components in the system outside the environment is described logically in the form of context diagram. The graphical technique that describes the flow of information and changes as the movement of data from input to output as the structure is described in Data Flow Diagram (DFD) Entity Relationship Diagram (ERD) that has function to organize the data in relation to other data.

Keyword: Database, Information System, Technology

PROTOTYPE OF THE DEVELOPMENT MODEL MINANGKABAU ACCULTURATIVE EMBROIDERY DESIGN IN THE LEARNING OF DECORATIVE DESIGN

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ABSTRACT: The limitations of human resource creativity and design technology on vocational education, so that small and medium enterprises (SME) has difficulty creating innovative embroidery design, low design and diversification, and competing products. This study aims to produce a model of development of Minangkabau traditional embroidery design that is acculturative in the development of research and development method (R & D) research and development method. Result of research: 2 types of prototype result of development of embroidery design acculturative and innovative which have accepted market and have got registration from koperindak and have become product of flagship and patented. Conclusion: If managed well and using the international standard method, the potential small industry develops into an export-oriented modern IKM. Efforts to improve competitiveness by facilitating human resource creativity through coaching "embroidery design acculturative



development model" can improve product quality and diversify, promote cultural value, add value to IKM embroidered economic growth.

Keywords: development model, Minangkabau Acculturative embroidery design, Learning of Decorative design

USE OF GEARBOX VIAR ON FISHING SHIPS

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ABSTRACT: Natural potency, especially fish is one of life source of fisherman community in Kenagarian Siliki Nyalo Subdistrict Koto XI Tarusan. This is included in the area of Mandeh, which is the topography of the bay and headland. Potential untapped optimum, not yet using technology as a boat driving motor. The development goal of producing fishing boats that can move forward and backward. The method applied is the research and development of ship engines and ship propellers, a combination of automotive engineering work, production, and fabrication. Machines used powered 5.5 HP brand Tesla and Viar gearbox. The specialty of this development lies in the integration of Small Engine use with Viar motorcycle gearbox on fishing boats. Test data obtained that comparison ratio of reverse gearbox at 1: 0.75. The development results can be said, each round 1000 rpm on the reverse gearbox input, will produce 750 rpm rotation, a decrease in rotation. The implication is that for the fishing boats in the Nyalo River, the use of these machines and gearboxes is appropriate according to topography, fishermen do not need high speed, the ship can move forward and backward in a narrow area without using a rower.

Keywords: Small engine, gearbox, ship, movement forward and backward

THE EFFECT OF TOTAL RESISTANCE AND SPEED TO FUEL CONSUMPTION OF DUMP TRUCK HD 465-7 IN COAL MINING

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ABSTRACT: Mechanical tools in coal mining activities use diesel as fuel. The use of these fuels has a considerable effect on mining costs. Therefore, fuel must be used as efficiently as possible, so that the cost incurred by the company can be saved. Based on the observation of actual conditions in the field, the level of fuel consumption of transportation equipment is still quite high. To find out what the cause of the high fuel consumption is then conducted research on the ratio of fuel use in mining activities. There are some factors that influence fuel consumption, i.e. grade of the road, distance, speed and RPM. Multivariate analysis was used to compare the factors of fuel consumption. The results can be conclude that the slope (grade of the road) is most affecting factor for the fuel consumption. The slope of the road has the effect of 95% to fuel consumption for increasing 1% slope.

Keywords: Fuel consumption, Multivariate analysis, HD 465-7, Coal mine

SMART CLASSROOM DESIGNS IN THE SMART EDUCATIONAL ENVIRONMENT

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ABSTRACT: The Smart classroom is a typical environment for Smart Education, and this is a high end class of the digital class. This paper addresses the key characteristics of smart learning and the key challenges that must be addressed when designing a smart educational environment to support personalization. Aiming to integrate the



smart learning environment into the learning ecosystem and educational context of the smart classroom, Innovative use and new pedagogical approaches need to be implemented to manage formal and informal learning. This contribution illustrates the key characteristics of smart learning and an smart learning environment and supports the relevance of future user engagement taking during the design process, to improve knowledge about the design and application of new pedagogical approaches in the smart learning environment at the UNP Faculty of Engineering.

Keywords: Smart Classroom, Smart education, Seamless learning, Smart learning environments, Participatory design

DEVELOPING ENTREPRENEURSHIP TRAINING MODULE BY USING "SMART ENTREPRENEUR MODEL"(SEM) AT UNIVERSITAS NEGERI PADANG

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ABSTRACT

The research and development of modules of Entrepreneurship training aim to support the implementation of the Entrepreneurship training by using Smart Entrepreneur Model (SEM) at Universitas Negeri Padang students. This study was a research & development (R & D) by using the Four D development procedure with the stages of Define, Design, Develop and Dissemination. The results showed that, at the Define phase, it was conducted a needs analysis with the result that the development of modules is appropriate as an effort and solutions to the limited ability of students in terms of affective and psychomotor. In the phase of design, it showed that there are 10 studies contained in the modules which were developed according to the needs of the development of the Model SEM. Develop phase showed that all aspects of the assessment meet the standards of validity, the modules had high average practicalities, and the module was considered effective in improving the ability of students in entrepreneurship training. Lastly, at the dissemination phase, was done through the implementation of training modules of Entrepreneur Training by using SEM to Universitas Negeri Padang students.

Keywords: Module Teaching, Training Entrepreneurship, Smart Entrepreneur Models (SEM).

DESIGNING AND MANUFACTURE OF RADIUS PAJI HAIRERS (PAHAT RADIUS POST) ON LATHE MACHINE FOR LABORATORY AND MODULES TEACH

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Abstract: Along b ertambahnya ahuan penget science and discovery, in pe mesinan requires experts to create or improve machining equipment. One of them is the machining lathe (Lathe Machine), p embubutan radius on *alathe machine* with conventional drawbacks, namely: *Contour* generated less accurate, *Size cutter radius* has its limitations, s ach turn of the size of the radius of the turner takes an average of 10 (ten) minutes, when the turning radius of the inside, the grinding chisel is quite complicated, the determination of *the start* and *end point* radius is quite complicated. This study will design and make a chisel clamp radius with *radius tool* design and create a *post* using *Autodesk software Pro-Engineering*, and after the study to draft teaching module, as material for teaching.

The research method that I use the first variant is the location of the study, a variant of the two is made three (3) *alternative design tool radius post* and the selection of the best design, variants of all three is the manufacture and testing tools, and the latter method is the analysis of the test data. Testing method is the ability to produce *surface roughnes* tool radius and the ability to produce a large *radius*. The results of the analysis will be compared with *countour radius* produced by the old system.

After getting the results of the analysis men *radius design tool post* the best ones will be designed and made, and Nex tnya tool for laboratories. This tool is also capable of producing large size radius of up to R100, accuracy (Rmax) tools can be reached less than 100 microns with the time required when *setting* pergant ian radius size is only 5 0 seconds.

keywords : *Lathe machine, tool radius post, Autodesk Inventor*

STUDENT COMPETENCY MODEL OF VOCATIONAL HIGH SCHOOL

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ABSTRACT: This study aims to reveal a model of vocational student competency. Student competence model is important to be studied in order to find the dominant factors that influence the competence of vocational students. The development of science and technology has led to various factors that allegedly dominant influence the competence of vocational students. In this research, a student competency model involving three exogenous variables, namely Basic Literacy, Learning Skill, and Character Quality; while the endogenous variable is the Vocational Student Competency. Respondents of the research were 438 students of 9 state vocational schools scattered within the province of West Sumatra. The data were analyzed using SEM techniques, and the results showed that, except for Financial and Cultural Literacy Indicators in Basic Literacy variable, the three exogenous variables significantly influence Vocational Student Competency. So, it can be concluded that Basic Literacy, Learning Skill, and Character Quality altogether significantly influence Vocational Student Competency.

Keywords: Vocational Student Competency, Basic Literacy, Learning Skill, and Character Quality

THE ANALYZED OF TAR AS WASTE MATERIAL OF BITUMINOUS COAL GASIFICATION BY USING GASCHROMATOGRAPHY

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ABSTRACT: The aims of this research is to determine chemical compounds of TAR in bituminous coal gasification. The method used is experimental research. The coal Tar was collected by gasification process to bituminous coal which obtained from PT. NAL Sawahlunto. Commonly, the Graded of coal as much as 7.554.20 kcal/kg of calories, a flying substance of 39.62%, water content of 5.88% and ash of 4.21%. The gasification process has been carried out by using reactor tube with temperatures ranging from 800 to 1000°C with an air quantity of 6.93 l/s and a duration of testing of 2700 s. The result shows that the coal tar has 241 chemical compounds, such as benzene, heptadecane, eicosane, 2-Methyl-2-(alpha-thienyl)-1,3-dithiolane, 9-Octadecenoic acid (Z)-phenylmethyl ester (CAS) Benzyl oleate, and etc.

Keywords: waste material, reactor tube, experiment research