

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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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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FOREWORD

Welcome for all respected scholars, researchers, post graduate students and especially Keynote Speakers to the 4 ICTVET. The theme of the conference focus on Technical and Vocational Education and Training for sustainable societies and consist of six subthemes. i.e Development of learning model on TVET, Workplace Learning and entrepreneurship, Innovation on applied engineering and information technology, Management and Leadership on TVET, Vocational and Technical Teachers education, and Assessment and Evaluation on TVET.

Sustainable society should be followed by the improvement of various factors that have impacts to the quality of vocational and technical education and training, particularly to overcome the competitiveness of the world business. As we have already known the rapid change of technology as well as the change of demography, having a great effects to the life of peoples in this world, The competitiveness need a collaborativeness to survive the life of millions peoples who lost their jobs. Young peoples as a productive generation have to be creative and innovative to face the competitiveness. So this proceeding contents consist of various findings of research in the field of vocational and technical education as well as applied technology and mainly based on the subthemes of the conference.

Finally, we would like to thank a million for all participants of this conference and all parties who support the success of this conference. Hopefully the seminars and scientific work of this seminar can be a reference material for basic education and elementary school teacher education in Indonesia.

Padang, July 2, 2018

Tim Editor

CONTENT PROSIDING ICTVET 2017 REPOSITORY UNP

1. THE PROSPECT OF OFFSHORE IRON SAND IN TIRAM BEACH PADANG PARIAMAN REGENCY WEST SUMATERA Adree Octova, Ansosry, Yoszi Mingsi Anaperta and Indah Elok Mukhlisah.....	1-7
2. OPTIMIZE OF LEAST-SQUARE INVERSE CONSTRAIN METHOD OF GEOELECTRICAL RESISTIVITY WENNER-SCHLUMBERGER FOR INVESTIGATION ROCK STRUCTURES IN MALALAK DISTRICTS OF AGAM WEST SUMATRA Akman, Amir Harman, Putra Amali.....	8-13
3. CLUSTER ANALYSIS DISTANCE INTER DISTRICT USING SINGLE LINKAGE METHOD FOR DETERMINATION OF MPLIK CAR OPERATION ZONE IN MEDAN CITY Ali Ikhwan, Yasmin Mohd Yacob, Solly Aryza	14-16
4. EFFECT OF MIND MAPPING LEARNING METHODS ON LEARNING OUTCOMES Almasri	17-21
5. DESIGN OF SKILL ASSESMENT IN COMPUTER NUMERICAL CONTROL PROGRAMMING SUBJECT Ambiyar, Febri Prasetya, Yufrizal.....	22-26
6. MODIFICATION OF INPUT PUSHER ASSEMBLY OF LASER MARKING MACHINE Arif Rahman Hakim	27-34
7. COLLABORATIVE PROJECT-BASED LEARNING: AN INSTRUCTIONAL DESIGN MODEL IN THERMODYNAMICS ON TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET) Arwizet K, Nizwardi Jalinus, Krismadinata.....	35-39
8. DEVELOPMENT OF EMPLOYEE INFORMATION SYSTEM-BASED WEB IN MAN 1 PADANG Asrul Huda, Rendy Harisca.....	40-46
9. DECISION SUPPORT SYSTEM (DSS) WITH WP AND MFEP METHODS IN SELECTION OF BEST BABY CLOTHES Asyahri Hadi Nasyuha, Rahmat Sulaiman Naibaho, Saniman.....	47-53
10. IMPROVING LEARNING MOTIVATION THROUGH IMPLEMENTATION PROBLEM SOLVING LEARNING STRATEGY Budi Syahri, Primawati, Syahrial	54-58
11. THE MODELING OF MASSIVE LIMESTONE USING INDICATOR KRIGING METHOD (CASE STUDIES OF MASSIVE LIMESTONE IN PT SINAR ASIA FORTUNA) Dedi Yulhendra, Yoszi Mingsi Anaperta	59-65
12. ELECTRONIC COMPONENT TESTER AS A LEARNING MEDIA FOR CLASS X STUDENTS AUDIO VIDEO ENGINEERING SMKN 1 SUMBAR Delsina Faiza, Thamrin, Ahmaddul Hadi, Yongki Saputra.....	66-74

13. EFFECTIVENESS OF INTERACTIVE INSTRUCTIONAL MEDIA ON ELECTRICAL CIRCUITS COURSE: THE EFFECTS ON STUDENTS COGNITIVE ABILITIES Doni Tri Putra Yanto, Sukardi, Deno Puyada	75-80
14. EVALUATION OF LEARNING PROCESS USING CIPP MODEL Dwi Sudarno Putra, Misra Dandi Utama, Dedi Setiawan, Remon Lapisa, Ambiyar	81-86
15. IMPLEMENTATION OF CONTEXTUAL TEACHING AND LEARNING ON ANALYZING ELECTRICAL CIRCUITS SUBJECT Dwiprima Elvanny Myori, Citra Dewi, Erita Astrid, Ilham Juliwardi	87-91
16. DOMESTIC EMPLOYMENT PROCESSING SYSTEM ON WORKING PROTECTION AND TRANSMIGRATION USING GEOGRAPHIC INFORMATION SYSTEM (GIS) Eddis Syahputra Pane, Kori Cahyono	92-98
17. CONDUCTING LABOR MARKET ASSESSMENT IN ENGINEERING CURRICULUM DEVELOPMENT Edi Septe, Suryadimal, Wenny Marthiana, Nizwardi Jalinus, Ramli.....	99-105
18. DIFFERENCES IN LEARNING OUTCOMES IN THE PRACTICE OF MICROCONTROLLER SYSTEM USING MCS51 MICROCONTROLLER TRAINER KIT Edidas, Dedy Irfan.....	106-108
19. MICROCONTROLLER SKILL TRAINING FOR SMKN 2 PAYAKUMBUH AND SMKN 1 SUNGAI RUMBAI Edidas, Legiman Slamet and Ilmiyati Rahmy Jasril.....	109-113
20. THE EFFECT OF ISLAMIC WORK ETHICS AND SPRITUAL LEADERSHIP ON EMPLOYEE'S COMMITMEN IN PADANG SHARIA HOTELS Eka Mariyanti, Rasidah Nasrah.....	114-120
21. THE DESIGNING OF THE PROTOTYPE OF THE AIR QUALITY MEASURING HELMET Eko Hariyanto, Solly Ariza Lubis, Zulham Sitorus, M. Iqbal.....	121-124
22. REVIEW DEVELOPING OF PROJECT BASED AS INNOVATION INSTRUCTIONAL Eko Indrawan	125-130
23. IMPROVING THE ESP STUDENTS' VOCABULARY BY USING PICTURES IN CIVIL ENGINEERING STUDY PROGRAM AT FIRST SEMESTER OF EKASAKTI UNIVERSITY PADANG Elda Martha Suri.....	131-133
24. INTEGRATED SERVICES SYSTEMS ELECTRONIC DEVELOPMENT FACULTY OF ENGINEERING PADANG STATE UNIVERSITY BASED ON JAVA DESKTOP Elfi Tasrif, Asrul Huda.....	134-137
25. THE EFFECT OF STRATEGY OF TRAINING MODELS IN LEARNING ELECTRICAL INSTALLATION Elfizon, Syamsuarnis, Oriza Candra.....	138-141

26. SOFTWARE DEVELOPMENT OF CONCENTRATION SELECTION WITH INTEREST TEST BASED ON INTELLIGENT SYSTEM Elin Haerani.....	142-149
27. NEEDS ANALYSIS ON INCREASING COMPETENCY TEST RESULTS STUDENTS IN S1 PROGRAM OF PUBLIC HEALTH SCIENCES STIKES HANG TUAH PEKANBARU Emy Leonita, Nopriadi, Ahmad Satria Efendi, and Niswardi Jalinus	150-155
28. THE READINESS OF STUDENT TO ENTREPRENEUR THROUGH INCORPORATION OF THE PILOT PROJECT PRACTICE Ernawati.....	156-161
29. EFFECT OF PROJECT BASED LEARNING MODEL IN IMPROVING STUDENT LEARNING RESULT Erwinsyah Simanungkalit.....	162-166
30. DESIGNING LEARNING TOOLS BY USING PROBLEM BASED INSTRUCTION (PBI) MODEL ON ENERGY RESOURCE MATERIAL INTEGRATED TO ENERGY SAVING CHARACTER Estuhono.....	167-170
31. THE DESIGN OF LECTURER PERFORMANCE EVALUATION MODEL BASED ON ANALYTIC NETWORK PROCESS (ANP) Fenny Purwani, Niswardi Jalinus, Ambiyar.....	171-175
32. DEVELOPMENT OF ONLINE EXAMINATION SYSTEM USING WONDERSHARE QUIZCREATOR BASED ON WEB Fitri Yanti, Rijal Abdullah, Krismadinata	176-180
33. THE VALIDITY OF TRAINING MATERIALS SCIENCE AND DEVICES SUBJECT AT DEPARTMENT OF ELECTRICAL ENGINEERING Fivia Eliza, Dwiprima Elvanny Myor, Hastuti.....	181-185
34. TRAINING MODEL-BASED KNOWLEDGE MANAGEMENT SYSTEM FOR VOCATIONAL HIGH SCHOOL TEACHERS SKILLS ENGINEERING COMPUTER NETWORK Gunawan Ali, Kasman Rukun, Syahril	186-193
35. FUZZY LOGIC BASED CONTROLLER FOR BUCK CONVERTER Habibullah, Irma Husnaini, Asnil.....	194-200
36. A NEW DESIGN OF HANDLESS STIRRED DEVICE Hanne Aulia, Riki Mukhaiyar	201-204
37. ACADEMIC INFORMATION SYSTEM OF STIKES PERINTIS PADANG Harleni, Marisa.....	205-209
38. DESIGN OF ELECTROMAGNETIC REGENERATIVE SHOCK ABSORBER AS A TOOL OF HARVESTING VIBRATION ENERGY ON VEHICLE Hasan Maksum, Aslimeri, Putra Jaya, Wanda Afnison.....	210-213

39. 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 Hastuti Marlina, Reno Renaldi	214-217
40. A MODEL PREVENTIVE MAINTENANCE CONTROL IN THE MACHINE TURNING AT WORKSHOP THE FACULTY OF ENGINEERING OF THE STATE UNIVERSITY IN PADANG Hefri Hamid, Nizwardi Jalinus, Syahril, Ambiyar, Febri Prasetya	218-224
41. INVESTIGATION OF CHEMICAL FEASIBILITY AND DISTRIBUTION OF IRON SAND RESERVE REGIONAL AREA OF AGAM DISTRICT FOR CEMENT RAW MATERIAL IN PT. SEMEN PADANG Heri Prabowo, Sumarya.....	225-227
42. 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 Ika Parma Dewi, Lativa Mursida, Rizkayeni Marta.....	228-235
43. ART EDUCATION THROUGH FREE EXPRESSION APPRECIATES, DISCIPLINE SCIENCE, AND MULTICULTURAL AS EFFORTS TO IMPROVE STUDENT CREATIVITY Indra Irawan	236-242
44. THE INFLUENCE OF USING ANIMATION MEDIA AND LEARNING MOTIVATION TOWARD LEARNING RESULT OF AUTOMOTIVE STUDENTS IN SMK N 2 PAYAKUMBUH Indra Wahyu, Fahmi Rizal, Rijal Abdullah.....	243-248
45. INFORMATION SYSTEM AND REPORT VALUE PROCESSING BASED MICROSOFT VISUAL BASIC 6.0 ON SENIOR HIGH SCHOOL (CASE STUDY AT SMAN 12 PADANG) Indra Wijaya, Isra Mouludi, Fandy Neta, Yaslinda Lizar, Satria Ami Marta	249-256
46. DESIGN OF SIMULATOR FOR REPLACEMENT OF TOOLS PRACTICE DIGITAL ENGINEERING IN THE VOCATIONAL SCHOOL Irwan Yusti, Ganefri, Ridwan	257-259
47. CELL ROTATION TO RESOLVE THE WEAKEST CELL DAMAGE IN THE BATTERY PACK IN DISCHARGING PROCESS Irwanto Zarma Putra, Citra Dewi	260-263
48. IMPROVEMENT OF CONCRETE QUALITY WITH ADDITION OF SUNUA PASIR PADANG PARIAMAN WEST SUMATRA Iskandar G. Rani, Widya Salmita.....	264-268
49. SIMPLE WATER PURIFIER USING MULTILEVEL SYSTEM Jasman, Nelvi Erizon, Syahrul, Junil Adri, Bulkia Rahim	269-272

50. DESIGN OF LIBRARY INFORMATION SYSTEM USING BARCODE ON SMAN 1 SOLOK CITY Jeprimansyah	273-280
51. THE DESIGN OF THE SIGNAL MEASUREMENT DEVICE OF BODY'S BIOELECTRICAL IMPEDANCE By USING THREE ELECTRODES Juli Sardi, Hastuti, Ali Basrah Pulungan	281-286
52. PATIENT INFORMATION SYSTEM DESIGN ON MATERNITY HOSPITAL RESTU IBU PADANG Jusmita Weriza	287-293
53. IDENTIFICATION THE IMPORTANCE OF LEARNING TOOLS DEVELOPMENT ON ENERGY-EFFICIENT BUILDING INNOVATIONS USING ROOT CAUSE ANALYSIS Kemala Jeumpa	294-297
54. DECISION SUPPORT SYSTEM FOR RECOMENDATION CERTIFICATION TEACHER ON VOCATIONAL HIGH SCHOOL Khairul, Rahmad Budi Utomo.....	298-302
55. IMPACT OF THE TWI LEARNING MODEL IN LEARNING STONE AND CONCRETE CONSTRUCTIONS ON VOCATIONAL EDUCATION Kinanti Wijaya, Daniel IrvansiusTampubolon.....	303-307
56. THE EFFECT OF SOFTWARE MASTERCAME TOWARD MECHANICAL ENGINEERING STUDENTS PERFORMANCE IN MAKING PRODUCT WITH CNC MILLING MACHINE IN VOCATIONAL HIGH SCHOOL 1 PADANG Kms. Muhammad. Avrieldi, Suparno, Nofri Helmi.....	308-310
57. LEARNING BROADCAST VIDEO SYSTEM WITH H264 VIDEO ENCODING RASPBERRY PI Leni Marlina, Aswandi.....	311-315
58. OPTIMIZATION OF EXTERNAL LIGHTNING PROTECTION SYSTEM DESIGN IN BUILDING CENTER FOR INFORMATION TECHNOLOGY AND DATA BASE (PTIPD) UIN SUSKA RIAU Liliana, Afriani, Anwardi	316-322
59. A NEW MODEL MOBILE LEARNING MANAGEMENT SYSTEM BASED ON MOODLE IN UNIVERSITY Lita Sari Muchlis, Kasman Rukun, Krismadinata, Yahfizham	323-327
60. DEVELOPMENT OF MECHANICAL TECHNOLOGY LEARNING MODULE PROGRAM EXPERTISE OF SMK ENGINEERING M. Giatman, Waskito, Maruli Sihombing	328-332
61. SECURITY OF MEDICAL RECORD WITH RIVEST SHAMIR ADLEMAN (RSA) METHOD M.Syaifuddin, Ahmad Fitri Boy, Ali Ikhwan.....	333-336
62. RAHMATAN LIL ALAMIN, THE CONCEPT OF MULTICULTURAL EDUCATION Muh. Barid Nizarudin Wajdi, Achmad Fathoni Rodli	337-340

63. LESSON STUDY FOR IMPROVING A LEARNING QUALITY Muh. Barid Nizarudin Wajdi, Andi Mursidi	341-345
64. THE ROLE OF INFORMATION TECHNOLOGY IN THE IMPROVEMENT OF TEACHER’S COMPETENCIES AND TEACHING LEARNING PROCESS EFFECTIVENESS IN ESA SEJAHTERA SCHOOL PEKANBARU Muhammad Luthfi Hamzah, Hamzah, Astri Ayu Purwati	346-350
65. IMPLEMENTATION OF PROJECT BASED LEARNING MODEL IN COURSE WEB DESIGN Muhammad Sabir Ramadhan, Neni Mulyani, Muhammad Amin.....	351-357
66. MEASUREMENT MODEL OF CONTRIBUTED FACTOR AND INDICATOR TOWARDS VOCATIONAL EDUCATION PRODUCTIVITY Mulianti, Ambiyar, Generousdi and Rodesri Mulyadi	358-364
67. ORNAMENTS ON THE TRADITIONAL ACEHNESE HOUSE IN CENTRAL ACEH, ACEH PROVINCE N Novita, M Mukhirah, R Dewi, Fitriana, F Noer, F Fadillah, E Erni.....	365-368
68. DESIGNING STRATEGY MAPS FOR PRIVATE ENGINEERING COLLEGE Nanang Alamsyah, Larisang, Muhammad Ansyar Bora	369-376
69. DESIGN OF INTERACTIVE MEDIA INTERACTIVE EYE LESSONS FOR CLASS III SD N 04 BARINGIN PADANG CULTURAL CULTURAL FLOOR BASED ON MULTIMEDIA Nelda Azhar, Putra Jaya, Asrul Huda, Etika Fahmidyah	377-383
70. DEVELOPMENT OF MALAY FRUIT ORNAMENT Netty Juliana.....	384-387
71. THE CONTRIBUTIONS OF DISCIPLINE AND ENVIRONMENTAL KNOWLEDGE ON CLEAN BEHAVIOR OF STUDENTS IN PUBLIC ELEMENTARY SCHOOL KAMPUNG BARU PARIAMAN, WEST SUMATERA Nurhasan Syah, Sanny Edinov	388-393
72. ANALYSIS OF VOLUME AND STRONG CONCRETE IMPROVEMENT ON NON- SAND CONCRETE MIXED WITH ADDITION BAKING POWDER Nurmaidah	394-398
73. BRACING CROSS SECTION EFFECT TO DISSIPATION ENERGY BY NUMERICAL ANALYSIS Prima Zola, Rahmat, Fitra Rifwan	399-405
74. DEVELOPMENT OF MODEL OF PROPELLER-CROSS FLOW WATER TURBINE FOR PICO HYDRO POWER GENERATOR TITLE Purwantono, Refdinal, Hendri, Syahrul.....	406-408
75. THE POTENTIAL OF RENEWABLE ENERGY (STUDY CASE IN TOMUAN HOLBUNG VILLAGE, ASAHAN REGENCY OF SUMATERA UTARA PROVINCE) Rahmaniar, Agus Junaidi.....	409-413

76. VIRTUAL LAB IMPLEMENTATION QOS METAROUTER ON COMPUTER NETWORK LEARNING Raimon Efendi.....	414-418
77. BLASTING DESIGN DEVELOPMENT AREA DECLINE CIBITUNG AND CIKONENG UNDERGROUND MINE PT CIBALIUNG SUMBERDAYA BANTEN Raimon Kopa, Afdhal Husnuzan, Bambang Heriya.....	419-423
78. ANALYSIS OF LEARNING COMPETENCY ENGINEERING STUDENTS VOCATION D 3 FT UNP Ramli, Febri Prasetya	424-429
79. FACTORS AFFECTING THE AUTOMOTIVE ENGINEERING STUDENTS' INTEREST ON TEACHING PROFESSION Rasinov Chandra, Anggi Aprianto, Mawardi, Reza Rahmadani.....	430-435
80. AN EXPERIMENTAL STUDY ON THE EFFECT OF CENTRIFUGAL CLUTCH COOLING GROOVE ON MOTORCYCLE PERFORMANCE Remon Lapisa, Hendika Syahputra, Irma Yulia Basri, Rifdarmon, Hendra Dani Saputra	436-440
81. EXPERT MODEL SYSTEM ON ENTREPRENEURSHIP PERSONALITY Resmi Darni, Z. Mawardi Effendi and Selamat Triono.....	441-446
82. THE ANALYZED OF TAR AS WASTE MATERIAL OF BITUMINOUS COAL GASIFICATION BY USING GASCHROMATOGRAPHY Rijal Abdullah and Hengki Ade Satria	447-450
83. EMPLOYEE PRODUCTIVITY IN TWO CROSS CULTURES BASED ENTREPRENEURSHIP Riki Adriadi, Ganefri and Fahmi Rizal	451-455
84. DEVELOPMENT OF INTERACTIVE MULTIMEDIA CD OF INSTRUCTIONAL MEDIA ON BUILDING CONSTRUCTION Rizky Indra Utama, Nurhasan Syah, Rijal Abdullah.....	456-458
85. MULTIMEDIA INTERACTIVE IN WEB PROGRAMMING SUBJECTS Rusli Saputra, Sophan Sophian, Delia Putri.....	459-464
86. PREDICTED VULNERABILITY ASSESSMENT OF NON ENGINEERED HOUSES BASED ON DAMAGE DATA OF THE 2009 PADANG EARTHQUAKE IN PADANG CITY, INDONESIA Rusnardi Rahmat Putra, Junji Kiyono and Aiko Furukawa	465-472
87. TWO SPECIES OF TERMITE DAMAGING TO BUILDING AND HOUSES AT BANDA ACEH (SUMATRA, INDONESIA) S Syauckani, M Bahi, M Muslim, M Shabri Abd Majid, D Sutekad, Y Yasmin, N Novita	473-476
88. PERSONAL MANAGEMENT IN INFORMATION SYSTEMS APPLICATIONS WITH TOGAF FRAMEWORK Safrian Aswati, Saleh Malawat, Suhendra, Iskandar, Yessica Siagian, Arridha Zikra Syah	477-482

89. ANALYZING OF TECHNICAL CUTTING OF EMPTY PALM BUNCHES Safril, Dedi Wardianto.....	483-492
90. DESIGNING AND MANUFACTURE OF RADIUS PAJI HAIRERS (PAHAT RADIUS POST) ON LATHE MACHINE FOR LABORATORY AND MODULES TEACH Saiful Anwar, Rindi Genesa Hatika, B.Herawan Hayadi.....	493-498
91. MATERIAL SELECTION ANALYSIS AND MAGNET SKEWING TO REDUCE COGGING TORQUE IN PERMANENT MAGNET GENERATOR Sepannur Bandri, M. Aldi Tio.....	499-506
92. COMPARISON OF DECISION TREE ALGORITHM METHOD (C4.5) AND NAIVE BAYES TO IDENTIFY STUDENT LEARNING RESULTS WITH COOPERATIVE LEARNING MODEL Sri Restu Ningsih.....	507-511
93. ONLINE ASSESSMENT TOOLS FOR 2013 CURRICULUM BASE ON INFORMATION TECHNOLOGY Suartin, Hambali, Oriza Chandra	512-517
94. GAME BASED LEARNING TO IMPROVMENT TEACHERS KNOWLEDGE FOR TEACHING STRATEGY IN THE CLASS Suherman.....	518-523
95. LEARNING RESPONSE OF JOURNEY LEARNING COOPERATIV LEARNING AND LEARNING MODULE IN EDUCATION MEDIA LEVEL Suparno, Bulkia Rahim, Zonny Amanda Putra, Junil Adri, Jasman	524-528
96. NEED ANALYSIS APPLICATION ON THE FEASIBILITY STUDY OF THE HYDROELECTRIC POWER SELECTION (CASE IN SOLOK, PESISIR SELATAN AND SIJUNJUNG REGENCY) Suryadimal, Edi Septe, Wenny Martiana, Fahmi Rizal, Nizwardi Jalinus.....	529-534
97. DEVELOPING SOFT SKILLS LEARNING MODELFOR MECHANICAL ENGINEERING STUDENTS OF VOCATIONAL HIGH SCHOOL Suryo Hartanto	535-538
98. IMPACT OF WORK-BASED LEARNING OF CONCRETE STONE WORK PRACTICE ON DIPLOMA-III CIVIL ENGINEERING STUDENTS Syafiatun Siregar	539-543
99. DEVELOMPENT OF WEB-BASED DECISION SUPPORT SYSTEM FOR SCHOLARSHIP RECIPIENTS SELECTION USING ANALYTICAL HIERARCHY PROCESS (AHP) METHOD Titi Sriwahyuni, Dedi Irfan, Ika Pharma Dewi and Hanny Maharani.....	544-552
100. EFFECT OF ENGINE TEMPERATURE CHANGES ON INJECTION TIME OF FUEL AND GAS EMISSION OF GASOLINE ENGINE Toto Sugiarto, Dwi Sudarno Putra, Wawan Purwanto	553-557

101. 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 Totoh Andoyono, Fitra Rifwan, Revian Bodi, Prima Zola, Annisa Prita.....	558-560
102. FUNCTIONAL MEMBERSHIP ANALYSIS OF FUZZY INFERENCE SYSTEM SUGENO IN ANEMIA CLASSIFICATION Tri Monarita Johan	561-563
103. DEVELOPMENTAL OF MEDIA LEARNING BASED ON TUTORIAL VIDEO AT CHARACTER MAKE UP SUBJECT IN SMKN 6 TyasAsih Surya Mentari, MurniAstuti, and Linda Rosalina	564-570
104. PSYCHOLOGICAL FACTORS INFLUENCING THE DECISION MAKING OF PURCHASING PRODUCTS VIA ONLINE Ulfa Annida Damanik, Sri Wening	571-577
105. 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 Vita Fitria Sari, Mayar Afriyenti, Mia Angelina Setiawan	578-585
106. THE DEVELOPMENT OF VIT (VOCATIONAL INTEREST TEST) MODEL USING DECISION SUPPORT SYSTEM (DSS) TECHNIQUE Vitriani.....	586-590
107. ANALYSING INFORMATION SYSTEM OF ACADEMIC SERVICES IN THE UNIVERSITY Wahyu Prima, Ganefri, Krismadinata	591-595
108. RESOURCE SHARING–BLENDED PROJECT BASED LEARNING (RS-BPBL©) MODEL DEVELOPMENT IN VOCATIONAL HIGH SCHOOL Wahyudi	596-602
109. DEVELOPMENT ASSESSMENT MODEL TO HIGH ORDER THINKING SKILL ORIENTATE FOR EVALUATION STUDENT COMPETENCY Wakhinuddin S, Bahrul Amin, Waskito.....	603-605
110. USE OF GEARBOX VIAR ON FISHING SHIPS Wakhinuddin S, Donny Fernandez, Andrizal, M Nasir, Rifdarmon	606-609
111. THE APPLICATION OF SIMPLE STRAIN GAUGE DYNAMOMETER IN LEARNING STYLE CUTTING LATHE Wenny Marthiana, Suryadimal, Edi Septe, Duskiardi, Andika.....	610-613
112. DESIGN OF ANDROID BASED INTERACTIVE BOOK IN INTEGRATED ISLAMIC ELEMENTATY SCHOOL OF LAN TABUR PAGARALAM CITY Yadi, Efan, Sigit Candra Setya.....	614-617

113. SMART CLASSROOM DESIGNS IN THE SMART EDUCATIONAL ENVIRONMENT Yasdinul Huda, B Herawan Hayadi	618-626
114. BUILD AND DESIGN OF BUSINESS INTELLIGENCE UNIVERSITY SYSTEM AS DECISION SUPPORT ACADEMIC Yaslinda Lizar, Asriwan Guci	627-636
115. SOIL STABILITY USING CEMENT PCC IN LUBUK MINTURUN PADANG, INDONESIA Yocky Syaida Adha Putra, Tengku Ahmad Fauzan Syah	637-642
116. INFLUENCE THE LEARNING STRATEGY AND ENTRY BEHAVIOR TO YIELD LEARNING BUILDING CONSTRUCTION AND DRAWING 1 OF STUDENT Yuwalitas Gusmareta, Fahmi Rizal, Nurhasan Syah.....	643-646
117. IMPLEMENTATION OF DISASTER PREPARED SCHOOL (SSB) IN WEST PASAMAN DISTRICT WEST SUMATERA PROVINCE Yuwalitas Gusmareta, NurhasanSyah, Laras Andreas Oktavia, RizkyIndraUtama, MuviYandra.....	647-649
118. USING MOBILE TELECOMMUNICATIONS -2000 INTERNATIONAL FOR ANALYZING TECHNOLOGY NETWORK ERA 4G-LTE ZulhamSitorus, Ganefri, NizwardiJalinus	650-653
119. FACTORS AFFECTING STUDENTS IN CHOOSING COMPUTER ENGINEERING DEPARTMENT IN STT PAYAKUMBUH Zulkifli, Dilson, Rahmad Al Rian	654-659
120. FACTORS EFFECTING ELEMENTARY SCHOOL TEACHER READINESS ON IMPLEMENTING CURRICULUM IN WEST SUMATERA Zuryanty, Hamimah, Mulyani Zein.....	660-665



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 auxliary 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

1. INTRODUCTION

The process of teaching that occurs in the classroom is very decisive results that will be achieved by students in a learning. Many factors influence the learning process. One important factor is the motivation of students to follow the learning process.

This is because the motivation to learn is an internal and external encouragement that is in students who are learning to make changes in behavior. In principle, motivation gives reinforcement, encouragement, direction to the actors who are closely related to the principles in learning that have been encountered by learning sciences experts. With the motivation from within the students make the rise of desire and desire of students to succeed, hope and future ideals, encouragement and needs in learning to change towards the better.

While observing Problems that often arise in class X TKN SMK N 10 Padang is in the students there is no impulse desire in learning, motivation in self is felt less, when the teacher explain the lesson students tend to do activities that are not related to the lesson, disturbing friends, speaking in class. So the willingness to learn does not exist. Observations seen in the learning process of teachers are still using conventional teaching methods in teaching, lecture methods used are considered less effective in the learning process of auxiliary engine. This method causes the motivation in students is very less. This will be the cause of low student learning

outcomes so that it takes a method or learning strategy that can generate student learning motivation of class X TKN SMK N 10 Padang especially on the subject of ship propulsion engine. Increased student motivation can be started from the activities undertaken by students while learning so that students will experience activities that cause students are happy in learning. from the activities of the students we can apply a learning strategy that can encourage student motivation, one of them is using problem solving learning strategy. The problem solving learning strategy is supposed to be able to develop and improve the students 'motivation, activity and understanding in learning, to run the students' reason and to think in learning to a lesson concept. Problem solving is one way that can create a student-centered learning process. Students can develop reason, skills, creativity in solving problems experienced by students. In the implementation of problem solving learning strategies students must think, identify problems, gather facts and theories that support and develop a deep understanding of the problems faced by students [4] problem solving is a learning process that emphasizes more active, more inductively oriented engagement than deductive and discovery by the students themselves.

In the learning process students are required to analyze a condition or problem faced in the field of engineering, ship machining activities are very demanding a solution to the constraints or problems faced ship propulsion engine. It requires students to think scientifically so that the problem is solved. [2]

"Learning activities need to prioritize problem solving because by dealing with problems learners will be encouraged to use the mind creatively and work intensively to solve the problems faced in life".

In this study the researcher will use the problem solving learning strategy which is enclosed by solso which has the following steps [3]:

1. Identification of Problems
2. Representation / Presentation of Problems
3. Planning Solutions
4. Implementing Planning
5. Assess Planning
6. Assess the results of the solution

The characteristics of the problem-solving strategy are as follows: learning begins with a problem, the problems given must relate to the real world of the students, organize learning around the problem, not around the discipline of science, give great responsibility in forming and running directly their own learning process, using small groups and demanding students to demonstrate what they have learned in terms of products and performance. By using problem solving learning strategy (Problem Solving) is expected to increase student motivation.

Motivation is perceived as a boost that can help the learning process. The word motivation comes from the word "motiv" which can be interpreted as the strength contained within the individual, which causes the individual to act and do. Motives can not be observed directly, but can be interpreted in his behavior, in the form of stimulation, encouragement or generating the emergence of a certain behavior. Motive is the driving force from within and within the subject to perform certain activities in order to achieve the goal. Even the motive can be interpreted as an internal condition (preparedness).

Motivation is all the power that drives a person to do something. With a self-motive someone will be compelled to act on something. The power that drives a person to do so because of a strong desire that affects him. [6] "motivation is as a driving force that transforms energy within a person into a form of real activity to achieve a particular goal". [1] Some indicators of learning motivation are as follows:

- 1) The desire and desire succeed in students in learning so that students try in learning in order to obtain good learning outcomes.
- 2) There is encouragement and need in learning as the spirit of the parents and make learning a need for the students themselves.
- 3) There is hope and aspiration of the future of the students. With these ideals can motivate students to learn well.
- 4) The existence of awards in learning when students are successful which is a plus for students so that students' motivation in learning to stay

awake.

- 5) The existence of interesting activities in learning. With interesting activities, this is an encouragement for students to enter in these learning activities.
- 6) The existence of a conducive learning environment, allowing a student to learn well and not interfere with the motivation to learn that has been owned by students. The environment can also to foster student motivation so that with a good atmosphere will grow student motivation in learning.

It can be concluded that motivation is an impulse to the students to get their desires and desires to succeed in reaching their hopes and aspirations for the future.

2. METHOD

The type of research to be conducted is classroom action research (PTK) or Classroom Action Research, each cycle consisting of planning, action, observation and reflection. Classroom action research is intended to improve or improve the quality of learning. This research will investigate about learning activities by using problem solving learning strategy.

Location of learning process in this research that is at SMK N 10 Padang. The classroom action research time is carried out in even semester 2013-2014. Research subjects in this class action research is the students of class X TKN which amounted to 23 people who are all male.

The research instrument is used to measure the value of variables to be studied. The instrument used in this study is a questionnaire to motivate learning auxiliary driving machine.

Instrument testing is conducted to find out and select valid and reliable items. With this trial will be obtained the instrument of validity (validity) and reliability (reliability) so it is feasible to be a measuring tool in data collection. The results of the study 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 there is an increase in learning motivation between cycle 1 to cycle 2 and the application of problem solving learning strategies managed to improve motivation to learn students from cycle 1 to cycle 2. Data is processed using SPSS 17 program.

3. RESEARCH RESULTS AND DISCUSSION

Based on the results of research, student motivation in cycle 1 can be defined:

Table 1. Description of Data Motivation Cycle 1

N	Valid	23
	Missing	0
Mean		118.61
Median		118.00
Mode		112 ^a
Std. Deviation		10.470
Variance		109.613
Range		44
Minimum		94
Maximum		138
Sum		2728

Based on the description of motivation data cycle 1 obtained the result that the student's motivation in cycle 1 has an average of 118.61. Median of 118, Mode sebsar 112, Standard deviation of 10.470. Variance of 109.61 with a range of 44 mainimum values of 94 and maximum value of 138, the number of data cycle 1 of 2728. While for the description of data cycle 2 is:

Table 2. Description of Data Motivation Cycle 2

N	Valid	23
	Missing	0
Mean		134.70
Median		136.00
Mode		139
Std. Deviation		12.477
Variance		155.676
Range		51
Minimum		108
Maximum		159
Sum		3098

Based on the description of the data motivation cycle 2 obtained the result that the student's motivation on cycle 2 has an average of 134.70. Median of 136, Mode of 139, Standard deviation of 12.477. The variance of 155.67 with a range of 51 mainimum values of 108 and maximum value of 159, the sum of data cycle 2 of 3098.

The description of the histogram of learning motivation variable then first find the number of interval class by using the following formula:

$$\begin{aligned} \text{Many Classes (K)} &= 1+3,3 \text{ Log } N \\ &= 1+3,3 \text{ log } 23 \\ &= 5.49 \\ &= 6 \text{ kelas} \end{aligned}$$

$$\begin{aligned} \text{Interval} &= \frac{\text{the highest value} - \text{the lowest value}}{\text{Many Classes}} \\ &= \frac{138-94}{5,49} = 8,01 = 8 \end{aligned}$$

With the help of SPSS 17 the frequency of each interval class is then tabulated to Table 3 below:

Table 3. Frequency Distribution of Cycle Learning Motivation 1

Motivation Value Learning	Frequency	Presentation (%)
94-101	2	8,69
102-109	1	4,34
110-117	7	30,43
118-125	8	34,78
126-133	2	8,69
134-141	3	13,07
Total	23	100

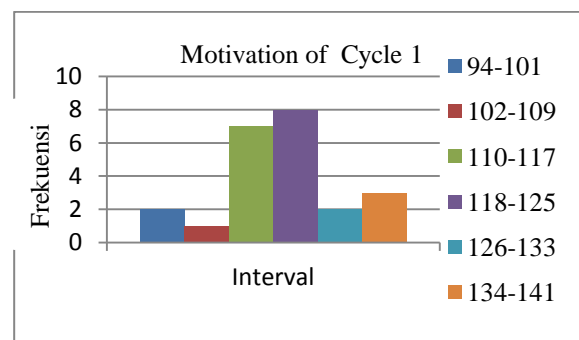


Figure 1. Histogram Frequency Distribution Cycle Motivation 1

Based on the frequency distribution of learning cycle motivation 1 students in cycle 1 can be made by dividing categories to five groups, ie groups are very good, good, moderate, not good, not good.

Very Good Category: $(Mi + 1,5 Sdi)$
Good Category: $(Mi + 0,5 Sdi) \text{ s / d } (Mi + 1,5 Sdi)$
Medium Category: $(Mi - 0,5 Sdi) \text{ s / d } (Mi + 0,5 Sdi)$
Less Good Category: $(Mi - 1,5 Sdi) \text{ s / d } (Mi - 0,5 Sdi)$

Not good category: $\leq (Mi - 1,5 Sdi)$

To calculate ideal Mean and ideal deviation standard using formula:

$$\begin{aligned} Mi &= 1/2 (\text{Ideal lowest value} + \text{Highest Ideal Value}) \\ &= 1/2 (33+165) \\ &= 99 \end{aligned}$$

$$\begin{aligned} Sdi &= 1/6 (\text{The highest ideal value} - \text{the lowest Ideal Value}) \\ &= 1/6 (165-33) \\ &= 22 \end{aligned}$$

The classification of the data can be seen in Table 4 below:

Table 4. Classification of Data Motivation Cycle 1

Category	Span	Total of Respondents	Percentage (%)
Very good	≥ 132	3	13,04
Good	110 – 132	17	73,92
Medium	88-110	3	13,04
Poor	66-88	0	0
Not good	≤ 66	0	0
Total		23	100

Based on the calculation, the grouping of motivation variables obtained as much as 3 respondents with very good category, 17 respondents with good category, 3 respondents with medium category. From these data indicate that student motivation is in good category.

The description of the histogram of learning motivation variable then first find the number of interval class by using the following formula:

$$\begin{aligned} \text{Many Classes (K)} &= 1+3,3 \text{ Log N} \\ &= 1+3,3 \log 23 \\ &= 5.49 \\ &= 6 \text{ kelas} \end{aligned}$$

$$\begin{aligned} \text{Interval} &= \frac{\text{the highest value} - \text{the lowest value}}{\text{Many Classes}} \\ &= \frac{159-108}{5,49} = 9,28 = 9 \end{aligned}$$

With the help of SPSS 17 the frequency of each interval class is then tabulated to Table 5 below:

Table 5. Frequency Distribution of Cycle Learning Motivation 2

Motivation Value Learning	Frequency	Presentation (%)
108-116	1	4,34
117-125	6	26,05
126-134	3	13,07
135-143	8	34,78
144-152	3	13,07
153-161	2	8,69
Total	23	100

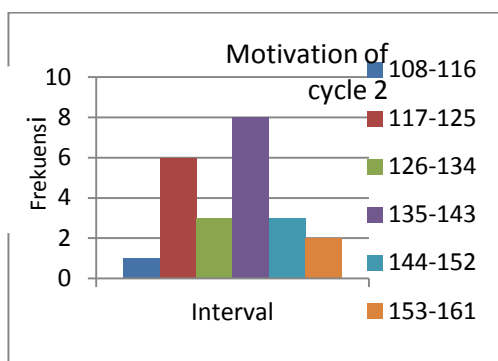


Figure 2. Histogram Frequency Distribution Cycle Motivation 2

Based on the frequency distribution of students' learning motivation 2 cycles in cycle 2 can be made by dividing the category to five groups, very good, good, medium, poor and not good.

Very Good Category: $(Mi + 1.5 Sdi)$
 Good Category: $(Mi + 0,5 Sdi) s / d (Mi + 1,5 Sdi)$
 Medium Category: $(Mi-0,5 Sdi) s / d (Mi + 0,5 Sdi)$
 Less Good Category: $(Mi-1.5 Sdi) s / d (Mi-0,5 Sdi)$

Not good category: $\leq (Mi-1,5 Sdi)$

To calculate ideal Mean and ideal deviation standard using formula:

$$\begin{aligned} Mi &= 1/2 (\text{Ideal lowest value} + \text{Highest Ideal Value}) \\ &= 1/2 (33+165) \\ &= 99 \end{aligned}$$

$$\begin{aligned} Sdi &= 1/6 (\text{The highest ideal value} - \text{the lowest Ideal Value}) \\ &= 1/6 (165-33) \\ &= 22 \end{aligned}$$

The classification of these data can be seen in Table 6 below:

Table 6. Classification of Cycle Motivation Data 2

Category	Span	Total of Respondents	Percentage (%)
Very good	≥ 132	13	56,52
Good	110 – 132	9	39,13
Medium	88-110	1	4,35
Poor	66-88	0	0
Not good	≤ 66	0	0
Total		23	100

Based on the calculation, then the grouping of motivation variables obtained as many as 13 respondents with very good category, 9 respondents with good category, 1 respondent with medium category. From the data shows that student's motivation in cycle 2 is in very good category. To see an increase in student learning motivation from cycle 1 to cycle 2 can also be used t test.

To see an increase in student learning motivation from cycle 1 to cycle 2 can also be used t test. before the t test done the researcher has done the normality and homogeneity test to the data of learning result in can the data of learning result of normal and homogeneous distribution. This t test serves to see the improvement of students' learning motivation from cycle 1 to cycle 2.

Tabel 7. T Test Motivation Learning
(Paired Samples Tes)

		T	Df	Sig. (2-tailed)
Pair 1	Cycle 1 - Cycle 2	-6.861	22	.000

The decision guide in this study if significance <0.05 then H_0 is rejected and vice versa if significance > 0.05 then H_0 is accepted. Based on Table 4.9 obtained significance value 0.00 <0.05 which means H_0 rejected and H_a accepted, that there is a difference in learning motivation cycle 1 with cycle 2 and the implementation of problem solving learning strategies managed to improve student learning motivation from cycle 1 to cycle 2.

The findings of the data in accordance with the author's observation during the learning implementation. This indicates that students who are taught with problem solving learning strategies make students happy and motivated in the learning process. Learning with students who have motivation in learning will be easier in understanding each subject matter given compared with students who are not motivated in learning. As is well known, learning motivation is "the overall driving force within the student that leads to learning, which ensures the continuity of learning" [5]. The statement shows that motivation is very instrumental in the learning process, a student must have a push and move himself to do the learning process.

4. CONCLUSION

Problem solving learning strategy can improve students' learning motivation. This can be seen from the increase in student motivation that occurs from cycle 1 to cycle 2. Problem Solving Learning Strategy can be used to improve student learning class X TKN SMK N 10 Padang on learning Driving Machine.

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