

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

Theme:
**Technical and Vocational Education and Training
for Sustainable Societies**

**Padang, November 9-11, 2017
at Hospitality Center
Universitas Negeri Padang**

ISBN : 978-602-1178-21-8 (1)



PROCEEDINGS

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

Theme: Technical and Vocational Education and Training for Sustainable Societies

General Chair:

- Prof. Ganefri, Ph.D. (Rector Universitas Negeri Padang)

Program Committee Chair:

- Dr. Fahmi Rizal, M.Pd., M.T. (Dean Fakultas Teknik Universitas Negeri Padang)

Steering Committee:

- Prof. Dr. Nizwardi Jalinus, M.Ed. (Universitas Negeri Padang, Indonesia)
- Prof. Dr. Ali Ghuftron Mukti, M.Sc., Ph.D. (Direktorat Jenderal Sumber Daya Ilmu Pengetahuan Teknologi Pendidikan Tinggi Kementerian RISTEKDIKTI)
- Prof. Dr. David Stein, Ph.D. (OHIO State University, USA)
- Prof. Junji Kiyono (Tottori University, Japan)
- Prof. Maizam Alias, Ph.D. (UTHM, Malaysia)
- Prof. John Williamson, Ph.D. (University of Tasmania, Australia)
- Prof. Selamat Triono Ahmad, Ph.D. (Universitas Negeri Medan, Indonesia)
- Dr. Rijal Abdullah, M.T. (Universitas Negeri Padang, Indonesia)
- Drs. Hambali, M.Kes. (Universitas Negeri Padang, Indonesia)
- Drs. Hanesman, MM. (Universitas Negeri Padang, Indonesia)
- Dr. Ir. Arwizet K, ST., MT. (Universitas Negeri Padang, Indonesia)
- Drs. Martias, M.Pd. (Universitas Negeri Padang, Indonesia)
- Drs. Raimon Kopa, MT. (Universitas Negeri Padang, Indonesia)

Scientific Committee:

- Prof. Sai Vanappali (University of Ottawa, Canada)
- Prof. Junji Kiyono (Tottori University, Japan)
- Prof. Maizam Alias, Ph.D. (UTHM, Malaysia)
- Prof. Jailani Mhd. Junos, Ph.D. (UTHM, Malaysia)
- Prof. Dr. Nizwardi Jalinus, M.Ed. (Universitas Negeri Padang, Indonesia)
- Ir. Syahril, ST., MSCE., Ph.D. (Universitas Negeri Padang, Indonesia)
- Prof. Dr. Kasman Rukun, M.Pd. (Universitas Negeri Padang, Indonesia)
- Prof. Dr. Ing. I Made Londen B (Institut Teknologi Sepuluh November Surabaya)

Reviewer:

- Prof. Dr. Nizwardi Jalinus, M.Ed. (Universitas Negeri Padang, Indonesia)
- Dr. Hansi Effendi, ST. M.Kom. (Universitas Negeri Padang, Indonesia)

- Rusnardi Rahmat Putra, ST., MT., Ph.D. (Universitas Negeri Padang, Indonesia)
- Ir. Riki Mukhayar, ST. M.T. Ph.D. (Universitas Negeri Padang, Indonesia)
- Risfendra, S. Pd. MT., Ph.D. (Universitas Negeri Padang, Indonesia)
- Krismadinata, ST. MT. Ph.D. (Universitas Negeri Padang, Indonesia)
- Dr. Asrul Huda, S. Kom. M.Kom.(Universitas Negeri Padang, Indonesia)
- Dr. Remon Lapisa, MT. M.Sc. M.Eng. (Universitas Negeri Padang, Indonesia)
- Wawan Purwanto, S.Pd. M.T., Ph.D. (Universitas Negeri Padang, Indonesia)

Editor:

- Prof. Dr. Nizwardi Jalinus, M. Ed. (Universitas Negeri Padang, Indonesia)
- Prof. Dr.Kongkiti Phusavat (Kasetsart University, Thailand)
- Prof. Maizam Alias, Ph.D. (UTHM, Malaysia)
- Prof. Dr. Ramlee Bin Musthafa (Universiti Pendidikan Sultan Idris Malaysia)
- Prof. Dr. Michael Koh, Ph.D. (Republic Politecnic Singapore)
- Krismadinata, ST., MT., Ph.D. (Universitas Negeri Padang, Indonesia)

Cover Design:

- Dr. Asrul Huda, S.Kom., M.Kom (Universitas Negeri Padang, Indonesia)

Layout:

- Dr. Remon Lapisa, MT., M.Sc. M.Eng (Universitas Negeri Padang, Indonesia)
- Rahmat Azis Nabawi, S.Pd., M.Pd.T.(Universitas Negeri Padang, Indonesia)
- Syaiful Islami, S.Pd., M.Pd.T.(Universitas Negeri Padang, Indonesia)

Cetakan :

- Kesatu, Agustus 2018

Publisher:

UNP PRESS

Jln. Prof. Dr. Hamka Air Tawar Padang
West Sumatra – Indonesia



ISBN 978-602-1178-21-8 (1)



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 REKOMENDATION 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

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

Gunawan Ali¹, Kasman Rukun² and Syahril³

¹Fakultas Ilmu Komputer, University of Dharmas Indonesia, Indonesia

^{2,3}Fakultas Teknik, Universitas Negeri Padang, Padang, Indonesia.

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 themselves 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

1. INTRODUCTION

The development and improvement of professional skills must be based on the real needs or problems faced by the teacher. Law of the Republic of Indonesia no. Law No. 14 the Year 2005 concerning teachers and lecturers article 20 paragraph (b) mandates that in order to carry out professional duties, teachers are obliged to improve and develop academic qualifications and competencies on an ongoing basis in line with the development of science, technology, and art.

Law of the Republic of Indonesia. Law no. 14 of 2005 on teachers and lecturers, in essence, requires teachers to have: (1) minimum academic qualification S1 or DIV, (2) Competence as a learning agent of pedagogical, professional, personality and social competence, and (3) educator certificate. The Act provides an appropriate opportunity for teachers to continually improve their professionalism through training, research, scientific work, and other professional activities both conventionally and online web-based.

Vocational education develops in accordance with the development of the world of work and the demands of society, through two social institutions. First, social institutions in the form of job structure with the organization, the division of roles or tasks, and behaviors related to the selection, acquisition, and stabilization of careers. The second social institution, in the form of education with its double

function, namely as a media of cultural preservation as well as the media of social change.

This policy requires both the school and industry to jointly develop the concept, this is intended to have a match between school and industry. Compliance is intended for the competence gained by students in school is a required competence in the industrial world. Industry must also play an active role in delivering technological advances to the school so that synchronization between the industrial world with the world of education.

This synchronization certainly requires human resources that have professional competence. Various efforts have been made to improve the professional competence of teachers, one way is by the Subject Teacher Consultation. The Subject Teachers' Meeting is a forum or a professional forum of subject teachers located in a province, district, city, sub-district, studio, and school cluster. But in its activities the role of forum Teachers Computer Techniques Teacher Training Network West Sumatra Province is still not optimal in the development of professional competence, but if the attention of the usefulness of this forum is very important to support the improvement and mining of professional competence of teachers Vocational High School Skills Computer Network Engineering.

The ineffectiveness of such forums is strengthened based on the results of field studies conducted with teachers who are members of the Teachers' Computer Techniques Teacher Training

Network of West Sumatra ie some teachers from Vocational High School in Sijunjung district (SMK N 7 Sijunjung) and some Vocational High School teachers in the region Dharmasraya regency (SMK N 1 Pulau Punjung and SMK N 1 Sitiung) stated that in the implementation of professional competence development through this container is still not optimal, sharing facilities such as practical equipment, workshop, and laboratory can only be done among members of the adjacent location, while sharing knowledge and expertise are still relatively rare.

This kind of sharing activity is still limited to regular meeting events in the form of Computer Network Teacher Training Subjects held once in 2 or 3 months, so it can be said sharing resources in Computer Teachers Teacher Training Subject Network has not functioned maximally in improving the professional competence of school teachers Secondary Vocational Computer Networking Expertise Networks, it also recalled: (1) The Computer Teacher Conference Program Computer Network Lessons Generally can not be attended by all teachers from Vocational School Computer Engineering Competency Competency Network, due to time and budget constraints.

Therefore, teachers who do not attend the meeting often do not know the issues discussed at the meeting, (2) The discussion that fills in the event is still minimal in terms of expertise, (3) Database documentation of the results of each meeting is still done manually, ie in the form of CD or stored in harddisk Computer Teachers Subject Computer Networking Lesson. This condition reflects that the management of knowledge in the container of Teachers' Consultation Techniques Computer Network Lessons has not been conceptualized and has not been well managed so as not to give each other positive benefits among members.

Whereas teacher professional development is a key tool to broaden understanding of new issues in the field of education, assist teachers in implementing new learning innovation results, and improve their teaching (Tantangan Guru SMK Abad 21, 2013:244). Professional development of teachers can be done in various forms of activities such as mentoring, modeling, workshops, coursework, entry in structure, observation and training during holidays (Brown, 2002:1, Tantangan Guru SMK Abad 21, 2013:244).

One of the professional development models of teachers is training. Snelbecker (1974: 32) states: "A model is a concretization of a theory which is meant to be analogous to or representative of the processes and variables involved in the theory". In line with the views of Joh JOI (2004: 123) and Snelbecker (1974: 32), the model in this study is essentially a conceptual concretization used to describe the processes and variables contained in the Knowledge Management System-based training theory for

School teachers Secondary Vocational Skills Computer Network Engineering, namely: 1) component of the concept of training based Knowledge Management System, a definition in the form of scientific language that describes the theory of training and Knowledge Management System; 2) the procedure, that is the steps that must be done toward the set goal; and 3) the purpose, in the form of mastery of competence of Computer Network Engineering expertise.

Given the professional competence is a competency that is needed by a teacher in supporting the learning process to produce graduates who are competent and able to develop themselves in the field of Computer Network Engineering as well as to support the Teacher Consultative Subjects in developing the professional competence of teachers it is necessary to develop a model of computer engineering skills Network-based Knowledge Management System for Vocational High School Teachers Computer Networking Techniques.

This model aims to develop the professional competence of vocational teachers Computer Network Engineering Skills. Knowledge Management System is a system designed to document, classify and disseminate knowledge. Knowledge management involves the activities of an institution in managing knowledge as an asset, with strategies for proper distribution of knowledge to the right person and in a fast time so that they can interact, share knowledge and apply it in their daily work to improve performance and maintain institutional sustainability. Knowledge Management System needs to be developed to assist teachers in developing their professional competence.

2. LITERATURE REVIEW

2.1 Competence of Vocational High School Teachers

Spencer and Spencer (1993) stated competence is as follows, a competency is an underlying characteristic of an individual that is casually related to criterion-referenced effective and/or superior performance in a job or situation (Tantangan Guru SMK Abad 21, 2013:32).

Competence by Australia National Training Board (NTB), competencies bring all these elements of task, skill, and knowledge together add a performance standard. Thus a competency is written in the form of a task to be carried out, the skill required to do it and the standard to which the task must be performed. In a bid standardize the construction of competency statements, the NBT has divided the nation into following: 1) unit of competency referring to the general area of the job; 2) elements of competency describing the precise tasks to be carried out and the skill required; 3) Performance criteria defining the standard that

should be met before the trainee can be described as competent (Tantangan Guru SMK Abad 21, 2013:33).

According to Law No. 14 the Year 2005 on Teachers and Lecturers, competence is a set of knowledge, skills, and behaviors that must be owned, experienced and mastered by teachers or lecturers in performing professional duties.

2.2 Training Model

One of the professional development models of teachers is training. Snelbecker (1974:32), a model is a concretization of a theory which is meant to be analogous to or representative of the processes and variables involved in the theory. While Joh J.O.I Ihalaw (2004: 123) states that the model essentially the same as the theory, namely the system of postulates or an integrated sequence of the propositions. It is further explained that different models of the theory are viewed from the level of abstraction. A model is constructed from a set of high abstraction level propositions.

In line with the views of Joh JOI (2004: 123) and Snelbecker (1974: 32), the model in this study is essentially a conceptual concretization used to describe the processes and variables contained in the Knowledge Management System-based training theory for School teachers Secondary Vocational Skills Computer Network Engineering, namely: 1) component of the concept of training based Knowledge Management System, a definition in the form of scientific language that describes the theory of training and Knowledge Management System; 2) the procedure, that is the steps that must be done toward the set goal; and 3) the purpose, in the form of mastery of competence of Computer Network Engineering expertise.

The training steps according to Pont (in Haris Mudjiman, 2011) constitute a continuous cycle of activities consisting of: (1) training needs analysis, (2) training program planning, (3) preparation of training materials, (4) training implementation, and (5) training assessments. Schematically the training cycle can be seen in Figure 1 below.

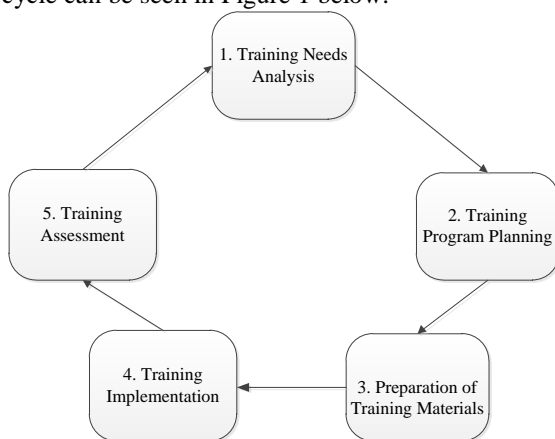


Figure 1 Pont Training Cycle

2.3 Computer Network Engineering Expertise

Technology is progressing very rapidly nowadays. All industries that use the technology base need a lot of skilled, competent and skilled workers in their field. From the above, Vocational High School becomes a major choice to print skilled and ready-to-work experts in the face of technological developments in accordance with the needs of the industrial world. One of the majors in Vocational High School that accommodate the graduates who are ready to work in the face of technological developments is majoring in Computer Engineering and Networking.

In its development, the Department of Computer Network Engineering is currently a popular choice of majors among junior or equivalent graduates who continue their studies to the level of Vocational High School. Department of Computer Network Engineering has increased significantly since the department was first introduced. Department of Computer Engineering Network according to the definition of Wikipedia is a science-based Information Technology and Communications related to the ability of algorithms, and computer programming, computer assembly, computer network assembly, and the operation of software, and the Internet.

In the process of education during the Vocational High School majoring in Computer Network Engineering, students will be taught from the basic level of assembly, computer repair, peripheral repair, computer network, up to computer network security. With all the skills taught in full from the first level to the end, students are expected to compete in accordance with expertise in the technology-based workplace.

Students who have graduated from the Department of Computer and Network Engineering will be equipped with network science and servers that are currently very much needed in companies, students can work as a computer technician, networked technician, Server Administration, SysAdmin, Network Administration, EDP (Electronic Data Processing), and also IT Staff.

2.4 Development of Training Models Computer Networking Expertise Network Based Knowledge Management System

On this occasion the development of training model Computer Networking Expertise Network based Knowledge Management System for Vocational Secondary School Computer Networking Expertise Network was chosen in this research, because the development of training model Computer Networking Expertise Knowledge Management System based network is considered suitable to develop the professional competence of Vocational School teachers Computer Network

Engineering Expertise and as a supporter of Computer Teachers Subject Computer Networking Lessons in empowering the competence and professionalism of teachers Vocational High School Skills Computer Networking Engineering.

Development of Knowledge Management System as a form of Sharing Knowledge and for self-mining of Vocational High School teachers Computer Networking Expertise Networks can provide opportunities for teachers and institutions to share knowledge in order to develop teacher competence and as support of empowerment of competencies through Subject Teacher Consultation.

Training model Computer Networking Expertise Network based Knowledge Management System for teachers Vocational High School Computer Networking Expertise a valid, practical and effective network is organized in the form of training activities and online in order to develop the professional competence of Vocational High School teachers Competence Computer Network Engineering Competencies.

Training model Computer Networking Expertise Network based Knowledge Management System for Vocational High School teachers Computer Networking Skills Networks will be developed using development procedures Five systematic development steps of the ADDIE model or abbreviations Analysis, Design, Development, Implementation and Evaluation. The following are presented ADDIE model images used in the development of skills training model of Computer Science Network based Knowledge Management System.

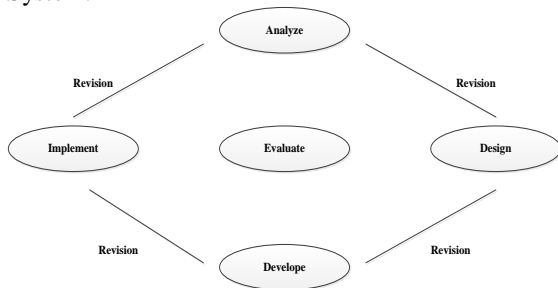


Figure 2 The development stages of the ADDIE model

2.5 Knowledge Management System

The concepts and definitions of Knowledge Management are, among others, proposed by Davidson and Philip Voss (Ismail Nawawi, 2012: 2), Knowledge Management as a system that enables the company to absorb the knowledge, experience and creativity of its staff for the improvement of the company. In the opinion of Batgerson (Ismail Nawawi, 2012: 2), Knowledge Management is a systematic approach to managing intellectual assets and other information so as to provide competitive advantage for the company.

According to Skyrme (Yuyun Estriyanto et al, 2008) put forward the definition: "Knowledge Management is the explicit and systematic management of vital knowledge and its associated processes of creation, organization, diffusion, use and exploitation". According to Jay Liebowitz (1957: 2) "Knowledge management is the process of creating value from an organization's intangible assets". The definition is not the only absolute true definition because there is no universal definition of knowledge management. This definition is the definition of the formulation of Skyrme (Yuyun Estriyanto et al, 2008) which most represents the notion of knowledge management based on experience and expertise. Another definition says Knowledge Management is the process through which organizations generate value from intellectual and knowledge based assets.

Based on the above definitions, it can be concluded Knowledge Management is a process of identifying, capturing, organizing knowledge, documenting it and disseminating knowledge possessed by individuals as intellectual based asset.

3 RESEARCH METHOD

The research methods used in this study are as follows:

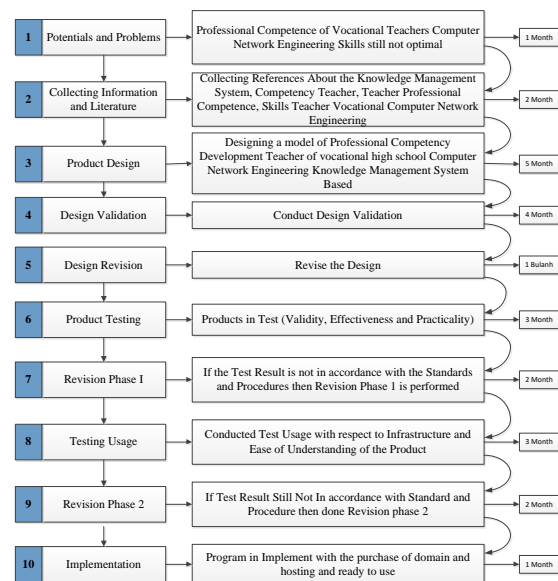


Figure 3 Research Methods

4 DISCUSSION

Training model Computer Networking Expertise Network-based Knowledge Management System for vocational high school teachers Computer Engineering This network was developed from the weaknesses and strengths of the implementation of the Subject Teachers Consultative Program in achieving the expected goals. Implementation of Subject Teachers' Consultative Teachers has not

been able to significantly improve the quality of teaching practice by vocational high school teachers. Training model Computer Networking Expertise Network-based Knowledge Management System for vocational high school teachers Computer Engineering Networks designed to improve the professionalism of vocational high school teachers Computer Networking Techniques Networks, the image of this model can be seen in Figure 4 below:

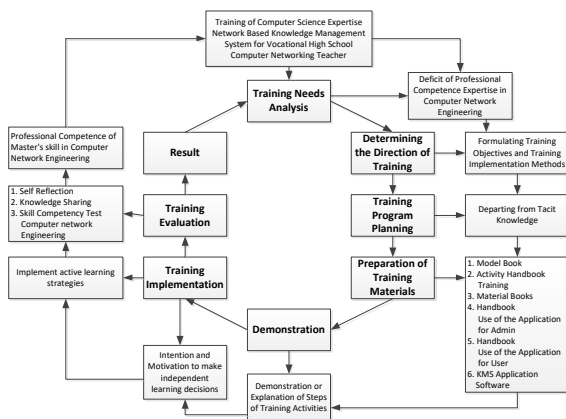


Figure 4 Model of Training Skills Computer Network Techniques Based Knowledge Management System for Vocational High School Teachers Computer Network Engineering

From Figure 4 above can be seen, the skills training model of Computer Engineering Network based on Knowledge Management System consists of 8 syntax, as follows: (1) Needs analysis, (2) Determining the direction of training, (3) Planning of training program, (4) preparation of training materials, (5) Demonstrations, (6) Training Implementation, (7) Training Evaluation, (8) Results. The following is a drawing of the construction of a skills training model of Computer Science Network based Knowledge Management System for Vocational High School Teachers Computer Network Engineering.

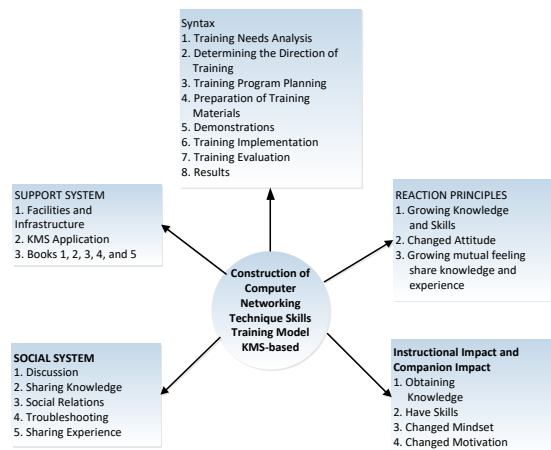


Figure 5 Construction of Skills Training Model Computer-Based Techniques Knowledge Management System for Vocational High School Teachers Computer Network

In this study also produced a product in the form of application Knowledge Management System as one of the supporting media of Computer Network Engineering skills training for vocational high school teachers Computer Network Engineering Expertise, which has a web address at www.kmsgtkj.id. The details of the application can be seen in the picture as follows.

Page Design for Users

The menu structure in the application Knowledge Management System (KMS) is for the user is as follows:

Login View

Here is a picture of the login view of the user. Before entering into the main page system, then the user must login first in accordance with their respective accounts.



Figure 6 Login View

Display Home Page

Here is a picture of the main page view. On the main page there are menu tabs that will be used by the user. In the main page view can also be seen news related to the field of expertise Computer Network Engineering in inputkan by admin this system



Figure 7 Display Home Page

Innovation Input Page Views

Here is an image of the innovation data input page. In this menu tab the user can input data innovation in accordance with the field of expertise Computer Network Engineering.

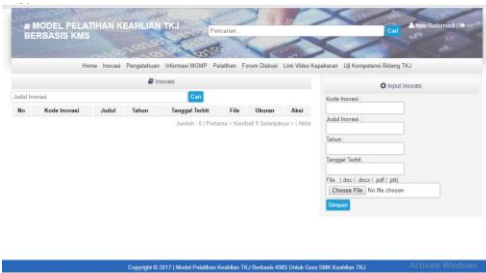


Figure 8 Innovation Input Page Views

Display Input Page Knowledge

The following is the image of the page display input data knowledge. In this menu tab the user can input data knowledge in accordance with the field of expertise Computer Network Engineering.



Figure 9 Display Input Page Knowledge

Page Display Input MGMP Information

The following is an MGMP information input page display image. In this menu tab the user can input information related to MGMP in the field of Computer Network Engineering expertise.

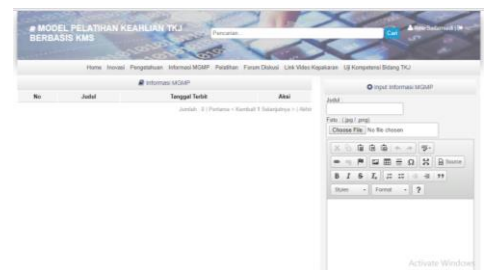


Figure 10 Page Display Input MGMP Information

Display Input Page Training

Here is a picture of the training input page. In this menu tab the user can input training data followed by the user in accordance with the field of Computer Network Engineering expertise.

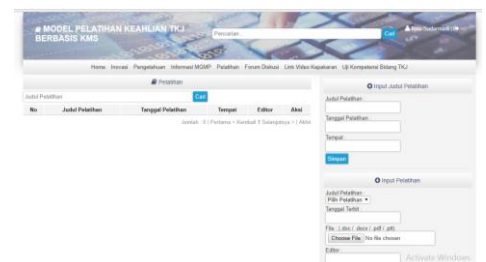


Figure 11 Input Training Page Views

Display of Discussion Forums Page

Here is a picture of the discussion forum page. In this menu tab the user can hold a discussion on the discussion forum page.

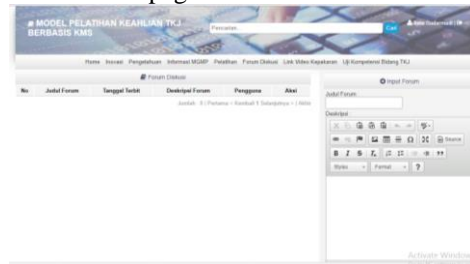


Figure 12 Page Views Discussion Forums

Pageviews Input Link Video Expertise

Users can input video links related to the expertise of Computer Network Engineering.



Figure 13 Pageviews Input Link Video Expertise

Competency Test Page Views Network Engineering Network

This page is used by the user to perform competency test in the field of Computer Network Engineering expertise.



Figure 14 Competency Test Page Scope of Computer Network Engineering

5 CONCLUSION

Dari penelitian ini dapat diambil kesimpulan sebagai berikut:

- 1) This research resulted in a skills training model of Computer Network Engineering based knowledge management system for vocational high school teachers Computer Network Engineering.
- 2) Has been produced a product in the form of Knowledge Management System application, is one of the products that will be used by teachers of vocational high school Computer Network Engineering in training based Knowledge Management System, which has web address at <http://www.kmsgtkj.id>.

- 3) The results of the Focus Group Discussion activities, input from the expert states the system already has a good performance is in accordance with the needs of teachers Vocational High School Skills Computer Network Engineering.

6 REFERENCES

- [1] Agarwal, Parul D et al. 2012. *Knowledge Sharing for Stimulating Learning Environment in Institutions of Higher Technical Education*. African Journal of Business Management Vol. 6(16), pp. 5533-5542. ISSN: 1993-8233. Available online at <http://www.academicjournals.org/AJBM>.
- [2] Anumnu S. *Knowledge Management and Development of Entrepreneurial Skills Among Students in Vocational Technical Institutions in Lagos, Nigeria*. The Electronic Journal of Knowledge Management Volume 12 Issue 2 (pp144-154) available online at www.ejkm.com.
- [3] Brewer, Peggy D & Brewer, Kristen L. 2010. *Knowledge Management, Human Resource Management, and Higher Education: A Theoretical Model*. Journal of Education for Business, 85: 330-335, 2010. ISSN: 0883-2323. USA.
- [4] Buckley, Sheryl & Giannakopoulos, Apostolos. 2011. *Sharing Knowledge – The CoP Way*. University of Johannesburg dalam International Conference on Information Management and Evaluation: 72-VII. Reading: Academic Conferences International Limited.
- [5] Davis, J., Subrahmanian, E., Westerberg, A. 2005. *Knowledge Management: Organizational and Technological Dimensions*. Physica-Verlag a Springer Company.
- [6] Estriyanto, Yuyun and Sucipto Adi L. T. 2008. *Implementasi Knowledge Management pada APTEKINDO, Pembentukan Sharing Culture antar Pendidikan Teknologi dan Kejuruan di Indonesia*. Konvensi Nasional IV APTEKINDO 3-6 Juni 2008.
- [7] Direktorat Pembinaan Pendidik dan Tenaga Kependidikan Pendidikan Menengah. 2013. *Tantangan Guru SMK Abad 21*. Direktorat Jenderal Pendidikan Menengah Kementerian Pendidikan Kebudayaan.
- [8] Ismail Nawawi. 2012. *Manajemen Pengetahuan (Knowledge Management)*. Ghalia Indonesia. Anggota IKAPI. Bogor.
- [9] Rusman. 2012. *Model-Model Pembelajaran. Mengembangkan Profesionalisme Guru*. PT. RajaGrafindo Persada. Jakarta.
- [10] Bambang Setiarso. 2009. *Penerapan Knowledge Management Organisasi*. Graha Ilmu. Yogyakarta.
- [11] Jogianto HM. 2001. *Analisis dan Desain Sistem Informasi*. Penerbit Andi Offset. Yogyakarta.
- [12] Jogyianto, HM. 2001. *Analisa & Perancangan Sistem Informasi untuk Keunggulan Bersaing Perusahaan & Organisasi Modern*. Penerbit Andi Offset. Yogyakarta.
- [13] Jay E, Aronson dan Efrain Turban. 2001. *Decision Support System and Intelligence System, Sixth Edition*, Prentice Hall International, Inc, Newjersey.
- [14] Jogianto HM. 2002. *Pengenalan Komputer: Dasar Ilmu Komputer, Pemrograman, Sistem Informasi dan Inteligensi Buatan*. Andi Offset. Yogyakarta.
- [15] Jogyianto, HM. 2008. *Metodologi Penelitian Sistem Informasi*. Andi. Yogyakarta
- [16] Leman. 2000. *Metodologi Pengembangan Sistem Informasi*. PT. Elexmedia Komputindo, Jakarta.
- [17] Liebowitz, J. 2001. *Knowledge Management: Learning from Knowledge Engineering*. CRC Pres LLC.
- [18] Munir and Rohendi, Dedi. 2012. *Development Model for Knowledge Management System (KMS) to Improve University's Performance (Case Studies in Indonesia Univesity of Education)*. IJCSI International Journal of Computer Science Issues Vol. 9, Issues 1, No. 1 January 2012. ISSN (Online): 1894-0814 available online at www.IJCSI.org.
- [19] Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 19 Tahun 2005 *Tentang Standar Pendidikan Nasional*.
- [20] Putri Soemarto, Suhitarini and Pangaribuan, Harapan Togar. 2009. *Knowledge Management System: Knowledge Sharing Culture di Dinas Sosial Provinsi DKI Jakarta*. Seminar Nasional Aplikasi Teknologi Informasi 2009 (SNATI 2009) ISSN: 1907-5022. Yogyakarta.
- [21] Piriyasurawong, Pallop and Nilsook, Prachyanun. 2010. *Web-based Training on Knowledge Management for Vocational Teachers in Thailand*. Asian Journal of Distance Education ISSN 1347-9008 Asian J D E Vol 8, No. 2 pp 65 – 71.
- [22] Raman, Murali et al. 2005. *Designing Knowledge Management Systems for Teaching and Learning with Wiki Technology*. Journal of Information System Education, Fall 2005; 16, 3; ProQuest Research Library pg. 311.
- [23] Steyn, GM. 2003. *Creating Knowledge Through Management Education: A Case Study of Human Resource Management*. Education: Spring 2003; 123, 3; ProQuest Research Library pg. 514.
- [24] Saud et al. 2011. *Effective Integration of Information and Communication Technologies (ICTs) in Technical and Vocational Education and Training (TVET) Toward Knowledge*



Management in The Changing World of Work.
African Journal of Business Management Vol 5
(16), pp. 6668-6673, 18 August, 2011.
Available Online at
<http://www.academicjournals.org/AJBM> ISSN:
1993-8233.

[25] Umunadi, Ejiwoke Kennedy, Ph.D. *Knowledge Management and Global Information Dissemination.* Education 134.3 (Spring 2014): 395-403.