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# PROCEEDING INTERNATIONAL CONFERENCE

Revitalization of Technical and Vocational  
Education to Face Industrial Revolution 4.0

Surabaya, July 11 - 14, 2018

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Faculty of Engineering  
Universitas Negeri Surabaya  
2018

# PROCEEDINGS

## International Conference

## Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO) 2018

Theme:

**“Revitalization of Technical and Vocational Education to Face  
Industrial Revolution 4.0”**

Surabaya, 11-14 July 2018

### Speakers:

Prof. Dr. Muhadjir Effendy, MAP.  
Minister of Education and Culture, Republic of Indonesia

Michael Freiherr von Ungern – Sternberg  
*Extraordinary and Plenipotentiary Ambassador of the Federal Republic of Germany to  
Indonesia, ASEAN and Timor-Leste (German)*

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*Head of School of Engineering and Mathematical Sciences  
La Trobe University Victoria (Australia)*

Prof. Dr. Muchlas Samani, M.Pd.  
Rector of Universitas Negeri Surabaya period 2010-2014 (Indonesia)



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## Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO) 2018

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## **PREFACE**

All praises be to Allah SWT, so that the 2018 International Conference of ***Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO)*** could be held in Surabaya during 11-14 July 2018. APTEKINDO International Conference is conducted biennially in which this year host is Faculty of Engineering, State University of Surabaya. There were sixteen colleges attending this year Conference, most of which were former Institutes of Teacher's Education (LPTK).

This year theme is "*Revitalization of Technical and Vocational Education to Face Industrial Revolution 4.0*" aimed to respond to the development and acceleration of the industrial revolution 4.0 that has become the most discussed issues in many countries. Industrial revolution connects machines with internet systems. In regard to facing such phenomena, Indonesian government through the Ministry of Industry has launched "Making Indonesia 4.0", of which the program focuses on industries that are driving the development of the industrial revolution 4.0 such as food and beverages, electronics, automotive, textiles and chemicals. To achieve better results of the program actualization, vocational education helps to prepare compatible and competitive workers for the areas of the aforementioned industries. Henceforth, numbers of Conferences, conventions, and meetings among Indonesian practitioners in FPTK / FT-JPTK need to be held to initiate ideas in strengthening the role of LPTK within industrial revolution 4.0 era.

The Conference's proceedings contain 121 research papers and ideas that are relevant to the following nine sub-themes: *Technical and Vocational Teacher Competencies, Technical and Vocational Education Curricula, Technical and Vocational Education Models, Technical and Vocational Education Evaluation, Technical and Vocational Education Policy, Public-private Partnership in Technical and Vocational Education, Technical and Vocational Education Management, Technopreneurship, and Competencies Certification.*

Finally, all the committees send their gratitude to the participating speakers and all parties who support the run of the Conference. They also apologize for any inconvenience and wish a better undertaking event next year.



## **WELCOMING SPEECH RECTOR UNESA**

Conference and Convention

Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (Aptekindo) 2018

Rich Palace Hotel Surabaya, 11-14 Juli 2018

*Assalammu'alaikum Warahmatullahi Wabarakatuh.*

Respectable Head of Universities, members of APTEKINDO  
Distinguished Keynote speakers  
Honorable authors, and fellow participants of APTEKINDO Conference and Convention 2018

*Alhamdulillah*, first of all, let us express our gratitude to Allah SWT because of his grace and blessings, we are able to attend this international Conference and convention of the Indonesia Association of Technology and Vocational Education or ***Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO)*** held in Surabaya, 11-14 July 2018.

This international and national Conference is conducted biennially as a routine agenda held by Association of Technology and Vocational Education or ***Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO)***, which consists of 16 different universities throughout Indonesia. We would like to thank for the opportunity given to Universitas Negeri Surabaya for hosting this year event.

In the raise of industrial revolution, Conferences, gatherings, and sharing of knowledge play an important meaning in supporting the acceleration of innovative science and technology. Therefore, this Conference's theme is ***"Revitalization of Technical and Vocational Education to Face Industrial Revolution 4.0"***. This is an interesting and challenging topic not only for academic researchers but also for stakeholders and industry owners.

Ladies and gentlemen,

Since 2011, the industrial sector has been integrated with the online system known as industrial revolution 4.0. The first industrial revolution was marked by the use of steam engines to replace human and animal power. The second stage of the revolution was marked by the utilization of electrical power and the concept of mass production. Furthermore, the application of automation technology brought the industrial revolution to its third stage. Tremendous revolution happened when information and communication technology was introduced and fully utilized in industrial area, of which the condition brought the world in the fourth stage of the industrial revolution. The utilization of this technology changed not only the production process, but also across the industrial chains that result in a new digital-based business model which can achieve higher efficiency and better quality in industrial products. The consequences of this revolution are the increase of production efficiency as well as changes in the employment prerequisite. There is an increasing demand for new manpower, whilst the machines are replacing the role of workers. This condition leads to the importance of a new and more advanced method of preparing human resources that are ready to compete in the industrial revolution.

Ladies and gentlemen, in regard to prepare Indonesian human resource in facing the era of media convergence, there are at least two aspects that need our attention, namely the quality of human resources in accordance with the requirement of the digital-based industry and the equal distribution of qualified human resources especially in suburban and urban areas. Both aspects could be meant as a challenge and an opportunity for the higher education especially technology and vocational education to innovate and harmonize curriculum that connects with the industry. Thus, this Conferences becomes a perfect momentum for technology and vocational education to join and strengthen steps in preparing graduates that are ready to compete in the industrial revolution 4.0. Therefore, by starting with ***“Bismillahirrahmanirrahim”*** **The Conference and Convention of Association of Technology and Vocational Education or APTEKINDO 2018, is officially started”**

Ladies and gentlemen, we would like to thank the keynote speakers who are willing to attend and share knowledge in today’s Conference:

1. Prof. Dr. Muhadjir Effendy, MAP.Minister of Education and Culture, Republic of Indonesia
2. Michael Freiherr Von Ungern–Sternberg, ***Extraordinary and Plenipotentiary Ambassador of the Federal Republic of Germany to Indonesia, ASEAN and Timor-Leste.***
3. Prof. Dr. Wenny Rahayu, *La Trobe University Victoria (Australia)*
4. Prof. Dr. Muchlas Samani, M.Pd., *Rector Universitas Negeri Surabaya (2010-2014).*

*We also would like to thank the authors and all participants of the convention who have participated and contributed to sharing the knowledge and ideas. Hopefully, what we share and get here today can give benefits and contribute to improve a competitive atmosphere in Indonesia, Aamiin YRA.*

Surabaya, July 2018  
Universitas Negeri Surabaya  
Rektor,

**Prof. Dr. Warsono, M.S.**

THE  
*Character Building*  
UNIVERSITY



**WELCOME SPEECH BY THE DEAN OF FACULTY OF ENGINEERING**  
**at the International Conference and National Convention of**  
***Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO) 2018***  
**Rich Palace Hotel, 12 July 2018**

*Assalamu'alaikum Warahmatullahi Wabarakatuh.*

His Excellency, Rector of Universitas Negeri Surabaya  
Respectable the Head of Universities as the members of APTEKINDO  
Distinguished Keynote Speakers  
Honorable authors and Participants

*Alhamdulillahirobbil alamiin.* Thanks God. First of all, let us express our gratitude to Allah SWT because of his grace and blessings we are able to attend the 9<sup>th</sup> International Conference and convention of ***Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO)*** and the 19<sup>th</sup> workshop of the Technology and Vocational Education for FPTK/FT/FTK-JPTK in Indonesia. It is an honor for us, the Faculty of Engineering, Universitas Negeri Surabaya, to host this year Conference and convention.

On behalf of *Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO)*, we would like to welcome keynote speakers, authors, delegates and participants from technology and vocational education to the city of heroes, Surabaya.

Today, we meet in Surabaya to attend a biennial agenda named APTEKINDO International Conference and Convention and National Workshop of the FPTK/FT/FTK-JPTK. Following the mandate from the 2016 APTEKINDO Convention in Medan, this year's Conference is held in Surabaya hosted by the Faculty of Engineering, Universitas Negeri Surabaya.

Ladies and Gentlemen, the theme of this year Conference is "*Revitalization of Technical and Vocational Education to Face Industrial Revolution 4.0*". The theme is chosen due to the fact that we have to quickly respond and act accordingly to the effects of the industrial revolution on vocational education. Well-programmed and structured efforts should be undertaken to ensure if technology and vocational education can produce globally competitive graduates especially for industrial revolution era.

Numbers of important topics for technology and vocational education are discussed in this Conference. The topics include Technical and Vocational Teacher Competencies, Technical and Vocational Education Curricula, Technical and Vocational Education Models, Technical and Vocational Education Evaluation, Technical and Vocational Education Policy, Public-private Partnership in Technical and Vocational Education, Technical and Vocational Education Management, Technopreneurship, and Competence Certification.

Today's Conference has several outcomes. The accepted articles will be submitted for proceeding publication indexed by Atlantic Press. Meanwhile, the rejected articles by Atlantic Press will be published in the International Proceedings with International Standard Book Number (ISBN). Moreover, the articles written in Bahasa Indonesia will be published in the National Proceedings with ISBN.

Ladies and Gentleman, this meeting must be meaningful as a venue to communicate among researchers, academics, and members of FPTK / FT / FTK-JPTK from different universities as well as from related industries. By this regular Conference and convention, we can make a strong communication network and create innovative breakthrough and substantial blueprint of different aspects such as institutional quality, field study, and curriculum. We hope that this forum plays an important role in developing technology and vocational education to face the industrial revolution 4.0.

Finally, we would like to thank the organizing committee led by Mr.Tri Wrahatnolo, M.Pd., M.T., who gave an extraordinary support. Moreover, we would like to express our appreciation and gratitude to the members of steering committee from various regions in Indonesia, delegates, SC and OC members, sponsors, as well as personal or institutional support that make this event well-organized. I apologize if there are shortcomings from my part.

Good luck with the Conference of Indonesian Association of Technology and Vocational Education, APTEKINDO 2018, and wish the best improvement for technology and vocational education in Indonesia. Thank you.

Wassalammu'alaikum Warahmatullahi Wabarakatuh



**CHAIRMAN'S SPEECH**

**at the International Conference and National Convention of  
Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia (APTEKINDO) 2018**

**Rich Palace Hotel, 11-14 July 2018**

*Assalammu'alaikum Warahmatullahi Wabarakatuh.*

His Excellency, Rector of Universitas Negeri Surabaya,  
Respectable the Head of Universities, members of Aptekindo, Keynote speakers, Authors, and fellow participants of Aptekindo Conference and convention 2018.

*Alhamdulillah*, no words could represent the feelings but the gratitude of the presence of Allah SWT, for His blessings, so that we can attend APTEKINDO Conference with the theme "*Revitalization of Technical and Vocational Education to Face Industrial Revolution 4.0*".

In this pleased occasion, we would like to welcome all keynote speakers, authors, and participants of the Conference to this city of heroes, the city of heroic histories, Surabaya. We would like also to welcome to APTEKINDO 2018 Conference and convention held at the Rich Palace Hotel Surabaya, 11-14 July 2018.

The theme of this year Conference is "*Revitalization of Technical and Vocational Education to Face Industrial Revolution 4.0*". This theme is chosen to respond to the development and acceleration of industrial revolution 4.0 that has been impactful in various countries. This industrial revolution has connected the utilization of machines to an internet system. To face such phenomena, Indonesian government through the Ministry of Industry has launched a program called "Making Indonesia 4.0". Currently, the government is focusing on industries that support the development of the industrial revolution such as food and beverage, electronics industry, automotive, textile and clothing, and chemical industries.

In addition, vocational education plays an important role in preparing competent and competitive human resources. That is, Faculty of Technical and Vocational Education or *Fakultas Pendidikan Teknik dan Kejuruan (FPTK)* in Indonesia aims to compile excellent ideas and vision, which later could be shared through Conferences, conventions or meetings, and also be useful to encounter industrial revolution 4.0.

Today's Conference will present competent keynote speakers in the field of technology and vocational education, who are:

1. Prof. Dr. Muhadjir Effendy, MAP. Minister of Education and Culture, Republic of Indonesia
2. Michael Freiherr Von Ungern-Sternberg, Extraordinary and Plenipotentiary Ambassador of the Federal Republic of Germany to Indonesia, ASEAN and Timor-Leste.
2. Prof. Dr. Wenny Rahayu, La Trobe University Victoria (Australia)
3. Prof. Dr. Muchlas Samani, M.Pd., Rector of Universitas Negeri Surabaya (2010-2014).

In addition, I would like to point out that there are 602 participants from 17 different universities participating in today's Conference involving:

1. Universitas Palangka Raya
2. Universitas Gorontalo
3. Universitas Islam Negeri Ar Raniry Aceh
4. Universitas Negeri Solo
5. Universitas Negeri Manado
6. Universitas Pendidikan Ganesha
7. Universitas Nusa Cendana
8. Universitas Malang
9. Universitas Negeri Jakarta
10. Universitas Negeri Padang
11. Universitas Negeri Yogyakarta
12. Universitas Pendidikan Indonesia
13. Universitas Negeri Makassar
14. Universitas Negeri Semarang
15. Universitas Negeri Medan
16. Universitas Negeri Surabaya
17. Universitas PGRI Adi Buana Surabaya

There are 491 articles submitted to this Conferences covering papers and posters. 76 articles were accepted to Atlantic Press, 156 articles published in international proceedings with ISBN, dan 129 articles published in the national proceedings with ISBN. All articles will be available for an online access through the Atlantis Press official website and through APTEKINDO 2018 website.

Today's Conference is actually held with the helps and good cooperation of various parties. Therefore, we would like to express our gratitude to the Minister of Research, Technology and Higher Education, Rector of Universitas Negeri Surabaya, keynote speakers, participants, sponsors, and other stakeholders for the supports. We also send our highest appreciation to the committees who have worked hard to succeed this Conference.

At last, we hope that all participants get benefits and knowledge that can contribute to reinforce vocational education and technology in facing the industrial revolution 4.0. WELCOME TO APTEKINDO CONFERENCE AND CONVENTION 2018, Thank you.

## TABLE OF CONTENT

Cover	i
Preface	vi
Welcome Speech Rector UNESA	vii
Welcome Speech By The Dean of Faculty of Engineering	ix
Chairman's Speech	xi
Table of Content	xiii
<b>Sub Theme 1: Evaluation of Technology and Vocational Education (ETVE)</b>	
1 THE DEVELOPMENT OF COMPUTER BASED LEARNING MEDIA FOR PLC COURSE USING ADOBE FLASH <i>Syufrijal, Ika Yunsita Pratiwi</i> <i>Universitas Negeri Jakarta</i>	11.1-7
2 DEVELOPMENT E-LEARNING AND E-ASSESSMENT MODEL FOR "TRANSMISSION MAINTENANCE" SUBJECT BASE ON PROBLEM BASED LEARNING AT LIGHT VEHICLE PROGRAME - SMKN 1 WEST SUMATRA <i>Wakhinuddin Simatupang, Ambiyar</i> <i>Universitas Negeri Padang</i>	11.8-13
3 ANALYSIS OF RESISTANCE FACTORS IMPLEMENTATION KKNi ORIENTED CURRICULUM WITH SIX "S" TADI SUTOPOUNIVERSITAS NEGERI MEDANASK AT ELECTRICAL ENGINEERING DEPARTMENT <i>Adi Sutopo, Mustamam, Dadang Mulyana</i> <i>Universitas Negeri Medan</i>	11.14-16
4 HANDWRITING RECOGNITION BASED ON CASCADING ADABOOST CLASSIFIER FOR AN ESSAY CORRECTION <i>Kartika Candra Kirana, Slamet Wibawanto, Azhar Ahmad Smaragdina, Gres Dyah Kusuma Ningrum</i> <i>Universitas Negeri Malang</i>	11.17-20
5 THE STUDY OF STUDENT LEARNING ACHIEVEMENT IN FASHION EDUCATION PROGRAM UNIVERSITAS NEGERI MALANG <i>Nurul Aini</i> <i>Universitas Negeri Malang</i>	11.21-25
6 RELEVANCE OF STUDENT KNOWLEDGE COMPETENCY ACCORDING TO NEEDS OF CONSTRUCTION BUSINESS <i>Herry Sumual, Rolly R. Oroh</i> <i>Universitas Negeri Manado</i>	11.26-30
7 EVALUATION OF IMPLEMENTATION VOCATIONAL SKILLS LEARNING MOTORCYCLE ENGINEERING AT SPECIAL SCHOOL <i>Sriyono, Soemarto</i> <i>Universitas Pendidikan Indonesia</i>	11.31-36
8 THE PROBLEMS SOLVING SKILLS ASSESSMENT ON STUDENTS' EMPLOYABILITY SKILLS OF VOCATIONAL HIGH SCHOOL	11.37-40

*Sri Subekti, Ana*

*Universitas Pendidikan Indonesia*

- 9 THE EFFECT OF IMPLEMENTING KAHOOT INTERACTIVE BASED QUIZ TOWARD STUDENT'S LEARNING OUTCOMES I141-43  
*Gres Dyah Kusuma Ningrum, Kartika Candra Kirana, Ahmad Mursyidun Nidhom, Arisandi*  
*Universitas Negeri Malang, STT STIKMA Internasional Malang*
- 10 ANALYSIS OF NEEDS IN IMPLEMENTATION OF EDUCATION OF VOCATIONS OF HOSPITAL ACCOMODATION I1.44-47  
*Uswatun Hasanah, Nurlaela, Mulyati, Prastiti Laras Nugraheni*  
*Universitas Negeri Jakarta*
- 11 THE IMPLEMENTATION OF KIRKPATRICK EVALUATION MODEL ON THE TRAINING TO IMPROVE THE QUALITY OF PRODUCTS OF THE SALTED EGG INDUSTRY WORKFORCE IN THE SEMARANG REGENCY, INDONESIA I148-52  
*Hadromi*  
*Universitas Negeri Semarang*
- 12 ANALYSIS OF ACADEMIC QUALITY SERVICES AT DEPARTMENT OF AUTOMOTIVE TECHNOLOGY EDUCATION FACULTY OF TECHNOLOGY MAKASSAR STATE UNIVERSITY I1.53-55  
*Rusyadi*  
*Universitas Negeri Makassar*
- 13 ANALYSIS OF CURRICULUM RELEVANCE OF VOCATIONAL WELDING TECHNIQUES COMPETENCE TOWARD INDUSTRIAL PRACTICE OF VOCATIONAL HIGH SCHOOL STUDENTS I1.56-60  
*Amiruddin, Fiskia Rera Baharuddin, Andi Muhammad Irfan, Sunardi*  
*Universitas Negeri Makassar, Universitas Negeri Gorontalo*
- 14 IMPROVING VOCATIONAL SCHOOL STUDENTS' ACHIEVEMENT THROUGH THE USE OF PROJECT BASED LEARNING-E-MODULE I1.61-63  
*Nyoman Sugihartini, Ketut Agustini, Komang Priatna, Pande Erick Suryadi, Kadek Sintya Dewi*  
*Universitas Pendidikan Ganेशha*
- 15 THE INFLUENCE OF STUDENTS' PERFORMANCE ON THE PRODUCTIVE COMPETENCE OF VOCATIONAL SCHOOLS IN PADANG I1.64-68  
*Ramli*  
*Universitas Negeri Padang*
- 16 THE NEEDS ANALYSIS OF HIGHER ORDER THINKING SKILLS ON ENGINEERING TO IMPROVE TECHNICAL INSTRUCTION IN HIGHER EDUCATION I1.69-73  
*Syarif Suhartadi*  
*Universitas Negeri Malang*
- 17 EVALUATION ANALYSIS OF NUMERICAL ABILITY AND LEARNING INTEREST IN LEARNING ACHIEVEMENT OF ELECTRICITY CIRCLE STUDENTS OF SMK PUBLIC SCHOOL 2 KUPANG I1.74.-78  
*I Mada Parsa*  
*Universitas Nusa Cendana*
- 18 JOB SHEET DEVELOPMENT OF ELECTRIC MOTOR SPEED CONTROL USING DRIVE INVERTER IN THE ELECTRIC MOTOR INSTALLATIONSUBJECT I1.79-82  
*Joko, Indra Gunawan*  
*Universitas Negeri Surabaya*
- 19 IMPLEMENTATION OF STUDENTS' LEARNING OUTCOMES THROUGH THE APPLICATION OF I1.83-89

RECITATION METHODS IN ENVIRONMENTAL SANITATION ENGINEERING COURSE

Nurmi Frida D.B. Pakpahan  
Universitas Negeri Surabaya

- 20 ASSESING MATHEMATIC PROBLEM-SOLVING SKILL AT VOCATIONAL STUDENTS 11.90-92  
Sriatun  
Universitas Negeri Surabaya

**Sub Theme 2: Technopreneurship**

- 1 IMPROVEMENT OF ACADEMIC SERVICES WITH SELF SERVICE APPLICATION BASED ON 12.1-3  
SHORT MESSAGE SERVICE USING BREADTH-FIRST SEARCH ALGORITHM  
Fahmy Syahputra, Rosnelli, Eka Daryanto  
Universitas Negeri Medan
- 2 BISCUIT FORMULATION WITH SUBSTITUTION OF BROWN RICE FLOUR 12.4-8  
Slamet Widodo, Saifuddin Sirajuddin  
Universitas Negeri Makassar, Universitas Hasanuddin
- 3 CONTRIBUTION OF APPLICATION OF OCCUPATIONAL SAFETY AND HEALTH TO 12.9-12  
MECHANICAL WORK PRODUCTIVITY  
Nuzul Hidayat, Remon Lapisa, Ahmad Arif, Fajar Maulana  
Universitas Negeri Padang
- 4 TECHNOPRENEURSHIP AND ECOPRENEURSHIP OF JAMBLANG FRUIT (SYZYGIIUM CUMINI) 12.13-18  
BASED ON FACTORY  
Jokebet Saludung  
Universitas Negeri Makassar
- 5 WHAT PROMOTION STRATEGY ARE SUITABLE FOR DESA WISATA KUBU GADANG, PADANG 12.19-21  
PANJANG CITY THROUGH ELECTRONIC MEDIA?  
Feri Ferdian  
Universitas Negeri Padang
- 6 FUZZY FINANCIAL FEASIBILITY ANALYSIS FOR INTEGRATED LONTAR (Borassusflabellifer) 12.22-25  
SUGAR INDUSTRY: CASE STUDY IN ROTE NDAO DISTRICT, EAST NUSA TENGGARA  
PROVINCE, INDONESIA  
Fahrizal, N.G. Yeheskial, Jasman, Kartiwan  
Universitas Nusa Cendana
- 7 INTEGRATED LOCAL EXCELLENCE-BASED ENTREPRENEURSHIP CHARACTER IN MENSWEAR 12.26-30  
MANAGEMENT COURSE OF FASHION DESIGN EDUCATION STUDENTS  
Sri Endah Wahyuningsih  
Universitas Negeri Semarang
- 8 HOW IS THE IMPLEMENTATION OF SAPTA PESONA AT ARTA INDAH BEACH, SUNGAI LIMAU 12.31-34  
DISTRICT, PADANG PARIAMAN REGENCY  
Ira Meirina Chair, Pasaribu  
Universitas Negeri Padang
- 9 DOES THE MENU OF THE CAFE (A BUSINESS INCUBATOR, FPP, UNP) PROFITABLE AND 12.35-37  
POPULAR ENOUGH?  
Pasaribu, Ira Meirina Chair, Feri Ferdian  
Universitas Negeri Padang
- 10 DEVELOPMENT OF CONTEXTUAL BASED ENTREPRENEURSHIP MATERIALS FOR 12.38-45

VOCATIONAL SECONDARY SCHOOL STUDENTS (SMK) NEGERI 8 MEDAN

*Siti Wahidah*

*Universitas Negeri Medan*

- 11 TEACHING FACTORY BASED LEARNING PARADIGM IN VOCATIONAL HIGHER EDUCATION ON THE ERA OF INDUSTRY 4.0 12.46-49  
*Ahmad Dardiri, Imam Alfiyanto, Mardji, Hadi Wasito, Sutrisno*  
*Universitas Negeri Malang*
- 12 THE VALIDITY OF ENTREPRENEURSHIP MODULE-BASED PRODUCTS IN VOCATIONAL EDUCATION 12.50-54  
*Asmar Yulastri, Syaiful Islami, Ganefri*  
*Universitas Negeri Padang*
- 13 IMPROVEMENT OF ACADEMIC SERVICES WITH SELF SERVICE APPLICATION BASED ON SHORT MESSAGE SERVICE USING BREADTH-FIRST SEARCH ALGORITHM 12.55-58  
*Mustika Nuramalia Handayani, Arrafi Diena Amalia, and Sri Handayani*  
*Universitas Pendidikan Indonesia*
- 14 "THE EDUCATIONAL MOBILE GAME AS AN EFFECTIVE MULTIMEDIA TO IMPROVE STUDENTS' ACHIEVEMENT IN ENGLISH LEARNING 12.59-63  
*M Wahyudin Wachid, Subiyanto, Tatyantoro Andrasto*  
*Universitas Negeri Semarang*
- 15 "DEVELOPMENT OF MAKE-UP FANTASY VIDEO OF EDUCATIONAL PROGRAM FOR MAKE-UP EDUCATION" 12.64-67  
*Rohana Aritonang, Dina Ampera*  
*Universitas Negeri Medan*
- 16 THE ROLE OF BLENDED MOBILE LEARNING IN ALGEBRA 12.68-78  
*Lipur Sugiyanta, Moch. Sukardjo*  
*Universitas Negeri Jakarta*

**Sub Theme 3: Technology and Vocational Education Model (TVEModel)**

- 1 APPLICATION OF COOPERATIVE LEARNING MODELS OF TYPE JIGSAW TO IMPROVE STUDENT LEARNING RESULT IN SMK 13.1-3  
*Patang Makkunessa, Nurlinda, Lahming*  
*Universitas Negeri Makassar*
- 2 THE EFFECT OF INDIRECT INSTRUCTION STRATEGY ON STUDENT LEARNING OUTCOMES OF SMK WITH HIGH AND LOW ACHIEVEMENT MOTIVATION 13.4-8  
*Edy Suprpto*  
*Universitas Nusa Cendana*
- 3 CREATING THE ENVIRONMENTAL ATTITUDE BY WORKSHOP ACTIVITIES IN CONSTRUCTION ENGINEERING EDUCATION 13.9-12  
*Nurlita Pertiwi, Panennungi*  
*Universitas Negeri Makassar*
- 4 EFFECTIVENESS OF USING PROBLEM-BASED LEARNING MODEL ON ELECTRONIC LEARNING PROGRAM ELECTRONICS ANALOG AND DIGITAL OF INFORMATICS AND COMPUTER ENGINEERING EDUCATION UNM 13.13-19  
*Mustari Lamada, Satria Gunawan Zain*



	<i>Universitas Negeri Makassar</i>	
5	IMPROVING STUDENTS'™ LEARNING RESULTS USING DISCOVERY LEARNING MODEL OF THE STUDENTS OF FAMILY WELFARE EDUCATION DEPARTMENT, FACULTY OF ENGINEERING, STATE UNIVERSITY OF MAKASSAR <i>Syamdidah</i> <i>Universitas Negeri Makassar</i>	13.20-25
6	MARINE AS SURYA DESALINATION LEARNING LEARNING IN NTT <i>Hari Rarindo</i> <i>Universitas Nusa Cendana</i>	13.26-29
7	STATICAL LECTURES WITH APPROACH TOUCH READING LEARNING CONSTRUCTIVENESS AND CONVENTIONAL <i>Priyono</i> <i>Universitas Nusa Cendana</i>	13.30-34
8	THE CONTRIBUTION OF VOCATIONAL COMPETENCIES LEARNING TO THE CREATIVITY IN APPAREL MAKING OF VOCATIONAL SCHOOL STUDENTS <i>Siti Aisyah, Djoko Kustono, Syamsul Hadi</i> <i>Universitas Negeri Makassar</i>	13.35-39
9	EMPLOYING ANDI LEARNING MODEL IN CULINARY ARTS COURSE: HOW DOES IT CONTRIBUTE TO EMULATION ABILITY AND STUDENTS'™ CREATIVITY? <i>Andi Hudiah, Marji, Eddi Sutadji, Titi Mutiara Kiranawati</i> <i>Universitas Negeri Makassar</i>	13.40-45
10	DEVELOPMENT OF MODELS PRODUCTS-BASED LEARNING THROUGH DESIGN OF LEARNING DEVICES USING OIL PALM EMPTY FRUIT BUNCH (OPEFB) FIBER <i>Bisrul Hapis, Nurdiana, Batumahadi Siregar</i> <i>Universitas Negeri Medan</i>	13.46-50
11	UNDERSTANDING HYDRAULIC LESSON CONCEPT THROUGH THINKING CRITS (critical thingking) STUDENTS BUILDING STUDENTS IN SMKN 5 KUPANG <i>Paul G Tamelan</i> <i>Universitas Nusa Cendana</i>	13.51-54
12	METHOD OF WORKFORCE RECRUITMENT PROGRAMME FOR INDUSTRIAL CLASS STUDENTS <i>Widiyanti, Yoto, Duwi Leksono Edi, Andika Bagus Nur Rahma Putra</i> <i>Universitas Negeri Malang</i>	13.55-58
13	EFFECT OF USE OF TRAINER KIT MICROCONTROLLER MCS51 ON STUDENT LEARNING CREATIVITY <i>Edidas</i> <i>Universitas Negeri Padang</i>	13.59-62
14	DEVELOPMENT OF WORK-BASED LEARNING SPSG MODEL ON BLASTING TECHNIQUE <i>Murad Munir Soos, Selamat Triono Ahmad, Fahmi Riza</i> <i>Universitas Negeri Padang</i>	13.63-67
15	THE DEVELOPMENT OF MOBILE LEARNING BASED ON ANDROID ON GRAPHIC DESIGN SUBJECT IN SMA ADABIAH 2 PADANG <i>Nurhasan Syah, Rijal Abdulah, Yulius Marta</i> <i>Universitas Negeri Padang</i>	13.68-71
16	WINDMILL TECHNO PARK FOR THE INTEGRATED EDUCATIONAL TOURSM MODEL	13.72-76

- (INNOVATION OF FIELD TRIP METHOD VOCATIONAL AND TECHNOLOGY EDUCATION)  
*Hasanuddin, Refdinal, Wawan Purwanto*  
*Universitas Negeri Padang*
- 17 APPLICATION OF PROJECT-BASED LEARNING TO IMPROVE CREATIVITY AND KNOWLEDGE COMPETENCE 13.77-82  
*Waskito, Hasanuddin, Hendri Nurdin, Yogi Dian Alfana*  
*Universitas Negeri Padang*
- 18 EFFECTIVITY OF THE COOPERATIVE-PROJECT BASED LEARNING (CPJBL) IN ENHANCING HOTS OF VOCATIONAL EDUCATION STUDENTS 13.83-86  
*Nizwardi Jalinus, Syahril, Rahmat Azis Nabawi*  
*Universitas Negeri Padang*
- 19 BLENDED LEARNING: AN EXPERIMENTAL STUDY FOR CORROSION AND METALS COATING COURSE 13.87-89  
*Yusep Sukrawan, Soemarto, Mumu Komaro*  
*Universitas Pendidikan Indonesia*
- 20 THE READINESS OF STUDENT TO ENTREPRENEUR THROUGH INCORPORATION OF THE PILOT PROJECT PRACTICE 13.90-94  
*Ernawati Nazar*  
*Universitas Negeri Padang*
- 21 THE INFLUENCE OF COOPERATIVE LEARNING JIGSAW MODEL AND LEARNING MODULE ON LEARNING OUTCOMES IN VOCATIONAL EDUCATION 13.95-100  
*Suparno, Bulkia Rahim, Arwizet K, Zoni Amanda Putra, Jasman*  
*Universitas Negeri Padang*
- 22 THE OPTIMIZATION MULTIPLE SKILLS GENERATED WITH PROJECT-BASED LEARNING MODEL ON ELECTRONICS BASIC CLASS FOR AUTOMOTIVE 13.102-105  
*Muhammad Ihwanudin, Fuad Indra Kusuma*  
*Universitas Negeri Malang*
- 23 THE DEVELOPMENT OF GAME-BASED LEARNING MEDIA AS SUPPORT ON BASIC PROGRAMMING SUBJECTS IN SMK 13.106-109  
*Refdinal, Ambiyar, Sukardi, Novi Febriyanti*  
*Universitas Negeri Padang*
- 24 DEVELOPING LAB ACTIVITY MATERIALS FOR SEMI-AUTOMATIC PIPE WELDING 13.110- 113  
*Solichin, Imam Sudjono, Muhammad Chabibi*  
*Universitas Negeri Malang*
- 25 THE INSTRUCTIONAL AND NURTURANT EFFECT OF EXPERIENTIAL LEARNING ON CONCRETE STONES PRACTICE 13.114-119  
*Syafiatun Siregar, Harun Sitompul*  
*Universitas Negeri Medan*
- 26 IMPACT MEDIA DEVELOPMENT BASED ON INFORMATION TECHNOLOGY LEARNING TO INCREASE CREATIVITY AND INNOVATION IN HIGH SCHOOL STUDENTS VOCATIONAL 13.120-126  
*Constantinus Rudy Prihantoro*  
*Universitas Negeri Jakarta*
- 27 HANDBOOK OF DECORATIVE FASHION DESIGN ASSISTED BY CORELDRAW AND ITS EFFECT ON STUDENTS CREATIVITY 13.127-129  
*Yenni Idrus*

- Universitas Negeri Padang**
- 28 THE ROLE OF SOFT SKILLS IN IMPROVING THE COMPETENCE OF GRADUATES FOR ENTERING THE WORKING WORLD 13.130-133  
*I Made Sudana, Delta Apriyani*  
*Universitas Negeri Semarang*
- 29 DESCRIPTION AND MANAGEMENT OF PROBLEM BASED LEARNING MODELS IN VOCATIONAL EDUCATION TO AGAINST ERA DISRUPTION AND ERA INDUSTRIAL 4.0 13.134-137  
*Sri Sukamta, Totok Sumaryanto Florentinus, Rasdi Ekosiswoyo, S. Martono*  
*Universitas Negeri Semarang*
- 30 INTEGRATING STEM (SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS) EDUCATION ON ADVANCING VOCATIONAL STUDENT'S TRANSVERSAL SKILLS 13.138-143  
*Marsono, Tuwoso*  
*Universitas Negeri Malang*
- 31 EFFECTIVENESS OF LEARNING MODEL BLENDED LEARNING BASED ON CONSTRUCTIVISTIC EQUIPMENT Course CNC MACHINE TECHNIQUES 13.144-148  
*Muslim, Selamat Riadi*  
*Universitas Negeri Malang*
- 32 LEARNING MODEL DEVELOPMENT IN A COOKING CLASS ACTIVITY FOR EARLY AGE CHILDREN IN IMPROVING FINE MOTORIC SKILL 13.149-152  
*Octavianti Paramita*  
*Universitas Negeri Semarang*
- 33 CREATIVE AND PRODUCTIVE LEARNING MODEL OF CAKE DECORATING SUBJECT CULLINARY ART DEPARTMENT OF STATE UNIVERSITY OF MEDAN 13.153-159  
*Fatma Tresno Ingtias*  
*Universitas Negeri Medan*
- 34 THE IMPLEMENTATION OF THE TECHNOLOGY PEDAGOGY CONTENT KNOWLEDGE (TPCK) FRAMEWORK TO CULTIVATE THE VOCATIONAL STUDENTS' CREATIVE THINKING SKILLS 13.160-163  
*Tjahyani Busono, Erna Krisnanto, Nanang Dalil Herman*  
*Universitas Pendidikan Indonesia*
- 35 JOB SHEET DEVELOPMENT OF COSMETICS ASSISTED IN INQUIRY METHOD IN THE STUDY PROGRAM OF MAKE-UP EDUCATION UNIVERSITAS NEGERI MEDAN 13.164-168  
*Lina Pangaribuan*  
*Universitas Negeri Medan*
- 36 PROJECT-BASED LEARNING AS A STUDENT CHARACTER AND CREATIVITY BUILDING 13.169-171  
*Atika, I Made Sudana*  
*Universitas Negeri Semarang*
- 37 IMPLEMENTATION OF MEDIA COMPACT DISK INTERACTIVE SUB COMPETENCE OF HAND CARE AND NAIL MAKE UP (MANICURE) 13.172-180  
*Rizki Yulianingrum Pradani, Mutimmatul Faidah*  
*Universitas Negeri Malang*
- 38 DESIGN IMPROVEMENT OF ENERGY-SAVING AND ECO-FRIENDLY CAR AS TRANSPORTATION FACILITY 13.181-185  
*Zainal Arifin, Herminarto Sofyan, Moch. Solikin, Kir Haryana*  
*Universitas Negeri Yogyakarta*

- 39 THE IMPLEMENTATION OF TEACHING FACTORY PROGRAM FOR EDUCATION OF FAMILY WELFARE (PKK) PROGRAM STUDY 13.186-190  
*Saptariana, Noor Hudallah*  
*Universitas Negeri Semarang*
- 40 IMPLEMENTATION OF THE SCIENTIFIC BLENDED LEARNING ON ELECTRICAL MEASUREMENT STUDY 13.191-196  
*Rosnelli, Kinanti Wijaya*  
*Universitas Negeri Medan*
- 41 VIDEO LEARNING MODEL IN CONSTRUCTION DRAWING COURSE 13.197-202  
*Abdul Haris Setiawan, Ida Nugroho Saputro, A.G. Tamrin*  
*Universitas Sebelas Maret*
- 42 THE INFLUENCE OF THE IMPLEMENTATION CHARACTERISTICS OF LIFE-BASED LEARNING ON THE LEARNING PROCESS TOWARDS ACADEMIC SKILLS 13.203-206  
*Syaad Patmanthara, Heru Wahyu Herwanto, Ni'matul Hidha Wulansari*  
*Universitas Negeri Malang*
- 43 THE MODULES DEVELOPMENT OF MATERIAL TESTING BY USING CONSTRUCTIVIST APPROACH AT MECHANICAL ENGINEERING DEPARTMENT OF UNIMED 13.207-210  
*Erma Yulia*  
*Universitas Negeri Medan*
- 44 DISCOVERY LEARNING MODEL ON LEARNING TECHNOLOGY IN DEPARTMENT OF FASHION EDUCATION UNIVERSITAS NEGERI MEDAN 13.211-217  
*Dina Ampera*  
*Universitas Negeri Medan*
- 45 THE INFLUENCE OF THE PROBLEM BASED LEARNING AND PRIOR KNOWLEDGE TOWARDS THE RESULTS OF STUDY OF MECHANICS MATERIALS 13.218-225  
*Tri Kuncoro, Waras, Made Wena, A, Dardiri*  
*Universitas Negeri Malang*
- 46 JUST IN TIME" TEACHING MODEL AND PROBLEM BASED LEARNING AS ALTERNATIVES TO IMPROVE THE EFFICIENCY AND EFFECTIVENESS OF VOCATIONAL LEARNING 13.226-230  
*Bambang Supriyanto, Suparno, Made Wena*  
*Universitas Negeri Malang*
- 47 EFFECTIVENESS OF MODEL NATIONAL CHARACTER BUILDING THROUGH MANNERS EDUCATION BASED ON REGIONAL CULTURE OF NORTH SUMATERA 13.231-235  
*Efendi Napitupulu, Hamonangan Tambunan, Keysar Panjaitan*  
*Universitas Negeri Medan*
- 48 DESIGN FOR DEVICES OF PROJECT-BASED TRAINING PRODUCING OIL PALM EMPTY FRUIT BUNCH (OPEFB) FIBER 13.236-240  
*Batumahadi Siregar, Sumarno, Nizwardi Jalinus*  
*Universitas Negeri Medan*
- 49 AN ENVIRONMENTAL EDUCATION PROGRAM FOR VOCATIONAL HIGH SCHOOLS IN INDONESIA: A DISCOVERY LEARNING MODEL TO UNDERSTAND ENERGY SAVING STRATEGY 13.241-245  
*Maknun Johar, Surahman Usep, Barliana Mokhamad Syaom*  
*Universitas Pendidikan Indonesia*
- 50 THE EVALUATION OF BLENDED LEARNING PROGRAM BY USING KIRKPATRICK MODEL ON THE MACHINE INTERFERENCE DIAGNOSIS IN STATE UNIVERSITY OF MALANG 13.246-255

*Erwin Komara Mindarta, Eddy Sutadji, Andika Bagus Nur Rahma Putra, Fuad Indra  
Kusuma, M. Ihwanudin, Windra Irdianto  
Universitas Negeri Malang*

- 51 DEVELOPMENT OF ENGINEERING VOCATIONAL LEARNING MODEL FOR STUDENTS IN REMOTE AREAS 13.256-261  
*Sumarto, Wahid Munawar, Ridwan Adam MN  
Universitas Pendidikan Indonesia*
- 52 THE IMPLEMENTATION OF PROBLEM BASED LEARNING METHOD IN LEARNING PRACTICE OF GRINDING MACHINING 13.262-269  
*Thomas Sukardi, Achmad Arifin, Surono Surono, Endri Triwiyono  
Universitas Negeri Yogyakarta*
- 53 Implementation Of Problem Solving Learning Model To Increase Students' Learning Outcomes 13.270-273  
*Budihardjo Achmadi Hasyim, Fery Kurniawan Ady Putra  
Universitas Negeri Surabaya*

**Sub Theme 4: General Papers (GP)**

- 1 THE EFFECT OF BLENDED LEARNING MODEL TO THE STUDENTS COMPETENCY ON THE ENGINEERING PHYSICS 14.1-4  
*Usmeldi  
Universitas Negeri Padang*
- 2 RELATIONSHIP OF EDUCATION 3.0 APPLICATION ON THE ABILITY OF ANDRAGOGY AND PEDAGOGY PROSPECTIVE TEACHER VOCATIONAL SCHOOL 14.5-9  
*Ahmad Mursyidun Nidhom, Setiadi Cahyono Putra, Hary Suswanto, Andika Bagus N.R.P.  
Universitas Negeri Malang*
- 3 BUILT DESIGN IN INTERACTIVE MEDIA APPLICATIONS BASED ANDROID PLATFORM ON DIGITAL SIMULATION SUBJECT 14.10-15  
*Almasri, Asrul Huda, Yasdinul Huda, Rahmi Anita Azmi  
Universitas Negeri Padang*
- 4 SPREADSHEET BASED MODULE FOR STATISTICS COURSE 14.16-20  
*Adhi Kusumastuti  
Universitas Negeri Semarang*
- 5 WORK-BASED PEER ASSISTED LEARNING TOWARDS PNEUMATIC AND HYDRAULIC LEARNING OUTCOMES AT DEPARTMENT OF MECHANICAL ENGINEERING EDUCATION 14.21-27  
*Fiskia Rera Baharuddin  
Universitas Negeri Makassar*
- 6 PERFORMANCE OF VOCATIONAL HIGH SCHOOL AND UNIVERSITY STUDENTS DURING APPRENTICESHIP 14.28-32  
*Hary Suswanto  
Universitas Negeri Malang*
- 7 THE EFFECT OF NEODYMIUM-IRON-BORON MAGNETISM ON FUEL TOWARDS FOUR-STEP MOTORCYCLE EXHAUST EMISSIONS 14.33-38  
*Hasan Maksum  
Universitas Negeri Padang*
- 8 THE PIPE WELDING TRAINER FOR GROOVE JOINT IN ALL WELDING POSITIONS 14.39-41

- Asep Hadian Sasmita**  
*Universitas Pendidikan Indonesia*
- 9 POTENTIAL AND NEED OF PRODUCTS BASED ON CATFISH TO IMPROVE NUTRITION QUALITY OF CHILDREN AND COMMUNITY FOOD SECURITY 14.42-48  
*Yuliana*  
*Universitas Negeri Padang*
- 10 DESIGN OF MOBILE APPLICATION TO IMPROVE THE QUALITY OF VOCATIONAL EDUCATION 14.49-53  
*Khoirudin Asfani*  
*Universitas Negeri Malang*
- 11 THE EFFECT OF A WATER EXTRACT OF BROWN SEAWEED ON THE CHARACTERISTIC OF JELLY CANDY AS A FUNCTIONAL FOOD 14.54-57  
*Anni Faridah*  
*Universitas Negeri Padang*
- 12 THE NEW INDUSTRIAL REVOLUTION IS BEGINNING: ELECTRICAL GENERATOR WITHOUT FUEL IS NOT A LIE (THEORETICAL REVIEW OF NEWTON LAW OF INERTIA PROVES THAT ENERGY CAN BE CONTINUOUSLY RESURRECTED) 14.58-61  
*Bambang Triatma*  
*Universitas Negeri Semarang*
- 13 THE VALIDITY OF ENTREPRENEURSHIP MODULE-BASED PRODUCTS IN VOCATIONAL EDUCATION 14.62-66  
*Asmar Yulastri*  
*Universitas Negeri Padang*
- 14 THE INFLUENCE OF LEARNING MEDIA AND TECHNIQUE DRAWING CAPABILITY TOWARDS THE LEARNING OUTCOMES OF CNC II TU-2A MACHINE TOOL 14.67-73  
*Robert Silaban, Keysar Panjaitan, and Hidir Efendi*  
*Universitas Negeri Medan*
- 15 HUMAN RESOURCES MANAGEMENT MODEL AS A SUPPORT FOR ELENA SYSTEM IN UNIVERSITAS NEGERI SEMARANG 14.74-77  
*Djuniadi*  
*Universitas Negeri Semarang*
- 16 COLOR QUALITY OF MARBLING TECHNIQUE MOTIFS USING GEL OF TAPIOCA FLOUR 14.78-80  
*Siti Nurrohmah, and Rifani Nugraheny*  
*Universitas Negeri Semarang*
- 17 "WATER QUALITY ANALYSIS AND THE POSSIBILITY OF HEAVY METAL CONTAMINATION Hg, Pb AND Cd ON WATER ZONE IN VILLAGE PITUSUNGGU of Pangkep Regency" 14.81-89  
*Subariyanto, Patang, Fajar Wiramas Prabowo*  
*Universitas Negeri Makassar*
- 18 ELECTRICAL EQUIPMENT CONTROL BASED RELAY RASPBERRY 14.90-94  
*Yunus Tjandi, Ruslan, Syarifuddin Kasim*  
*Universitas Negeri Makassar*
- 19 UPGRADING THE CALORIFIC VALUE OF LOW RANK COAL WITH DRYING METHOD WITHOUT OXYGEN 14.95-99  
*Rijal Abdullah, Joni Pradinata*  
*Universitas Negeri Padang*
- 20 A PILE HEAD WORK ON INTEGRAL BRIDGE CONSTRUCTION SECTOR P18- P22 ON THE 14.100-103

- PROJECT (SURABAYA-MOJOKERTO TOLL ROAD DEVELOPMENT) SECTION 1B STA 11 + 100 -  
15 + 400  
*Djoni Irianto*  
*Universitas Negeri Surabaya*
- 21 "EMOTIONAL MATURITY DETERMINANTS OF VOCATIONAL EDUCATION STUDENTS" 14.104-109  
*Nathanael Sitanggang, Putri Lynna A. Luthan*  
*Universitas Negeri Medan*
- 22 THE INFLUENCE OF STUDENTS' UNDERSTANDING IN CONSERVATION CHARACTERISTICS AND SCIENTIFIC ATTITUDE TOWARDS ENVIRONMENTAL CARE IN UNIVERSITAS NEGERI SEMARANG 14.110-115  
*Asih Kuswardinah, Wahyuningsih*  
*Universitas Negeri Semarang*
- 23 THE IMPORTANCE OF LITERACY COMPETENCY DATA AT SMK STUDENTS TO FACING ERA INDUSTRIAL REVOLUTION 4.0 14.116-119  
*Diana Putri Pratiwi Sulistyorini, Mohammad Zainal Sabarudin*  
*Universitas Negeri Surabaya*
- 24 "PERFORMANCE ANALYSIS OF TECHNOLOGY EDUCATIONAL STUDY PROGRAM BASED ON QUALITY OF ACCREDITATION" 14.120-128  
*Agus Dudung, Lipur Sugiyanta*  
*Universitas Negeri Jakarta*
- 25 NOMINAL OF MONEY AND COLOUR READER FOR THE BLIND PEOPLE 14.129-135  
*Jaja Kustija, Furqon Andika*  
*Universitas Pendidikan Indonesia*
- 26 CAPABILITIES OF STUDENT ADAPTATION S1 PTE LPTK AS PRESERVICE OF VOCATIONAL TEACHERS IN JAVA INDONESIA 14.136-142  
*Setiadi Cahyono Putro, Tri Rijanto, I Made Sudana, Iwa Kuntadi, Wisnu Jatmiko, Giri Wiyono*  
*Universitas Negeri Malang*
- 27 DEVELOPMENT OF VOCATIONAL EDUCATION BY LOOKING AT THE FACTORS INFLUENCE SUPPORTING TO REGIONAL POTENTIALS 14.143-146  
*Agus Wiyono*  
*Universitas Negeri Surabaya*
- 28 THE APPLICATION OF SANITATION AND HYGIENE PRACTICE OF PRODUCTION UNITS TO ENHANCE THE ENTREPRENEURSHIP READINESS TO PRODUCE QUALITY FOOD PRODUCTS FOR VOCATIONAL HIGH SCHOOL STUDENTS OF CULINARY PROGRAM 14.14-152  
*Diana Evawati*  
*Universitas PGRI Adi Buana*
- 29 PERCEPTION TOWARDS TRANSFERABLE SKILLS IN INDONESIAN UNIVERSITIES 14.153-156  
*Agus Setiawan, Iwa Kuntadi, Masriam Bukit*  
*Universitas Pendidikan Indonesia*
- 30 THE PERFORMANCE OF MULTI-CYLINDER GASOLINE ENGINE FUELLED WITH THE MIXTURE OF BIOETHANOL FROM SOLANUM LYCOPERSICUM AND PREMIUM 14.157-161  
*Muhaji*  
*Universitas Negeri Surabaya*

**Sub Theme 5: Technology and Vocational Education Management (TVEM)**

- |   |   |          |
|---|---|----------|
| 1 | STUDENT ANALYSIS CHARACTERISTIC IN THE EFFORT OF APPLYING TOTAL QUALITY MANAGEMENT (TQM) IN LEARNING PROCESS<br><i>WawanPurwanto, Bahrul Amin, NuzulHidayatSukardjo, ErzeddinAlwi</i><br><i>Universitas Negeri Padang</i> | 15.1-2   |
| 2 | MANAGEMENT AND OPTIMIZATION OF VOCATIONAL EDUCATION TECHNOLOGY (VET) AND DEVELOPMENT OF VOCATIONAL FIELD<br><i>Legiman Slamet</i><br><i>Universitas Negeri Padang</i>   | 15.3-7   |
| 3 | NEEDS ANALYSIS OF PRODUCTIVE SUBJECT TEACHERS OF CONSTRUCTION TECHNOLOGY AND PROPERTY PROGRAMEko Nugroho Julianto, Soesanto, FathurRokhman, HeriYanto<br><i>Universitas Negeri Semarang</i>                               | 15.8-13  |
| 4 | THE ACCELERATED LEARNING<br><i>Dedy Irfan</i><br><i>Universitas Negeri Padang</i>   | 15.14-16 |
| 5 | IMPLEMENTATION OF ISO CERTIFICATION IN EDUCATIONAL ORGANIZATION<br><i>Sudjani</i><br><i>Universitas Pendidikan Indonesia</i>  | 15.17-21 |
| 6 | VOCATIONAL EDUCATION MANAGEMENT IN DISRUPTION ERA<br><i>Danar Susilo Wijayanto, Herminarto Sofyan</i><br><i>Universitas Sebelas Maret</i>   | 15.22-28 |

**Sub Theme 6: Technology and Vocational Education Curriculum (TVEC)**

- |   |  |          |
|---|--|----------|
| 1 | FISH JOURNEY “ INNOVATION EDUCATIONAL GAMES BASED ON PSYCHOMOTOR TECHNOLOGY AS IMPLEMENTATION CURRICULUM 2013 ON EDUCATION INDONESIA<br><i>Dieta Wahyu Asry Ningtias, Muhamad Iqbal Fahrian, Arimaz Hangga</i><br><i>Universitas Negeri Semarang</i> | 16.1-4   |
| 2 | IMPLEMENTATION OF INTERACTIVE MULTIMEDIA LEARNING BASED ON WEBSITE FOR DISTANCE AND GEOMETRY OF VOCATIONAL HIGH SCHOOL<br><i>Moch. Sukardjo, LipurSugiyanta</i><br><i>Universitas Negeri Jakarta</i>   | 16.5-7   |
| 3 | IMPROVING PRE TEACHER’S SOFT SKILL THROUGH THE MIX AND MATCH LEARNING METHOD<br><i>Anis Rahmawati</i><br><i>Universitas Sebelas Maret</i>  | 16.8-16  |
| 4 | LEARNING METHOD FOR IMPROVEMENT THE QUALITY OF STUDENTS AS A MILLENIAL GENERATION<br><i>Veronika Asri Tandirerung</i><br><i>Universitas Negeri Makassar</i>  | 16.17-20 |
| 5 | EFFECTIVENESS OF THE PROJECT-BASED LEARNING (PJBL) INSTRUCTIONAL MODEL ON POWER ELECTRONICS COURSE<br><i>Ruslan, Lu’muTaris, Zulfiati Syahrial, Basuki Wibawa</i><br><i>Universitas Negeri Makassar</i>  | 16.21-25 |
| 6 | STRENGTHENING VOCASIONAL SCHOOL WITH RENEWABLE ENERGY COMPTENCY TO FACE GREEN JOB ERA  | 16.26-29 |



- Yuni Rahmawati, Arif Nur Affandi, Ahmad Sonhadji, RM Sugandi*  
*Universitas Negeri Malang*
- 7 MODELS FOR STUDENT COMPETENCY IN SUNDAPUTRI'S BRIDAL BASED ON INDONESIAN NATIONAL WORKING STANDARDS COMPETENCE (SKKNI) 16.30-34  
*Sri Usodoningtyas, LuthfiyahNurlaela, Munoto*  
*Universitas Negeri Surabaya*
- 8 DEVELOPMENT OF STONWORK JOB SHEET PRACTICES TOWARDS VOCATIONAL CURRICULUM 16.35-37  
*Nurhayati Aritonang, Nur Andajani, Satriana Fitri Mustika Sari*  
*Universitas Negeri Surabaya*
- 9 CURRICULUM 2013: IMPLEMENTATION AT ENTREPRENEURSHIP AND PRODUCTION UNITS IN VOCATIONAL HIGH SCHOOLS IN INDONESIA 16.38-42  
*Marniati, Mein Charnolis*  
*Universitas Negeri Surabaya*
- Sub Theme 7: Teacher Technology and Vocational Competencies and Professions (TTVCP)**
- 1 ANALYSIS OF PROJECT MANAGEMENT NEEDS AND STUDENT'S COMPETENCIES THROUGH A MAKERSPACE APPROACH IN DEALING WITH DISRUPTIVE TECHNOLOGY ERA 17.1-6  
*Andika Bagus Nur Rahma Putra, Amat Mukhadis, Eko Edi Purwanto, Hary Suswanto, Widiyanti, Tuwoso, Ahmad MursyidunNidhom, Erwin Komara Mindarta*  
*Universitas Negeri Malang*
- 2 THE FIRST JOB OF CULINARY EDUCATION PROGRAM GRADUATES OF UNIVERSITAS NEGERI SEMARANG IN 2011 – 2017 17.7-10  
*Muhammad Ansori, Leli Rizka Mawalidia, Musdalifah*  
*Universitas Negeri Semarang*
- 3 THE INFLUENCE OF STUDENTS' PERFORMANCE ON THE PRODUCTIVE COMPETENCE OF VOCATIONAL SCHOOLS IN PADANG 17.11-14  
*Ramli Bakar*  
*Universitas Negeri Padang*
- 4 STUDENT TEACHING COMPETENCE EDUCATIONAL FIELD PRACTICE IN SMKN 5 PADANG 17.15-19  
*Juniman Silalahi*  
*Universitas Negeri Padang*
- 5 CONTINUOUS PROFESSIONAL DEVELOPMENT PROFILE OF MECHANICAL AND AUTOMOTIVE TEACHER AT VOCATIONAL HIGH SCHOOL IN SOUTH SULAWESI INDONESIA 17.20-24  
*Samnur, Asmah Adam*  
*Universitas Negeri Makassar*
- 6 EFFECTIVENESS OF TRAINING MODELS BASED ON KNOWLEDGE MANAGEMENT SYSTEM 17.25-30  
*Kasman Rukun, Gunawan Ali*  
*Universitas Negeri Padang*
- 7 CORRELATION BETWEEN SOFT SKILLS AND HARD SKILLS WITH PREPARATION TO BE TEACHER OF MECHANICAL ENGINEERING EDUCATION STUDENTS 17.31-34  
*Budi Harjanto, Budi Harjanto, Nyenyep Sri Wardani, NiaNurAini*  
*Universitas Sebelas Maret*
- 8 VOCATIONAL FIELD TEACHERS' COMPETENCES IMPROVEMENT IN IMPLEMENTING CHARACTER VALUES IN STUDENTS 17.35-41

- Sugiyanto Sugiyanto , Priyono, Made Wena*  
*Universitas Negeri Malang*
- 9 MASTERY LEARNING BASED LEARNING ENRICHMENT THROUGH INFORMATION TECHNOLOGY TO INCREASE VOCATIONAL HIGH SCHOOL STUDENTS LEARNING RESULTS 17.42-46  
*Priyono*  
*Universitas Negeri Malang*
- 10 IMPROVING TEACHERS IN DEVELOPING & ANALYZING MADE TEST THROUGH FOLLOW-UP AT CNC MACHINE TRAINING 17.47-53  
*Yufrizal, EkoIndrawan, Abdul Aziz*  
*Universitas Negeri Padang*
- 11 THE RELATION OF STUDENT PERCEPTIONS TO TEACHER PROFESSIONALISM AND PARTICIPATION IN CLASSROOM WITH SCIENCE SUBJECT STUDY RESULTS AT SMAN I MANADO 17.54-61  
*Billy Morris Kilis, Moudy M. Kambey*  
*Universitas Negeri Manado*
- 12 EFFECTIVENESS OF PATTERN CONSTRUCTION MODULE IN THE STUDY PROGRAM OF FASHION EDUCATION UNIVERSITAS NEGERI MEDAN 17.62-69  
*Farihah, Dina Ampera, Surniaty, Chalid*  
*Universitas Negeri Medan*
- 13 CONTRIBUTION OF HARD SKILL, SOFT SKILL AND WORK ENVIRONMENT ON K3 BEHAVIOR OF WELDING PRACTICE OF VOCATIONAL HIGH SCHOOL STUDENTS IN NORTH SULAWESI 17.70-75  
*Parsaoran Tamba*  
*Universitas Negeri Manado*
- 14 REDESIGNING THE TOOL OF BRIQUETTE PROCESSING AS A VOCATIONAL LEARNING MEDIA ON MECHANICAL ENGINEERING 17.76-78  
*Indra Koto*  
*Universitas Negeri Medan*
- 15 RESEARCH AND DEVELOPMENT APPROACH (R & D) IN THE PROCESS OF MENTORING TESTING CERTIFICATION SYSTEM OF COMPETENCY PROFITENCY INFORMATICS BASED ON UBIQUITOUS LEARNING 17.79-89  
*Rangga Firdaus, Basuki Wibawa, Khaerudin*  
*Universitas Negeri Jakarta*
- 16 SEARCHING NEW FORMULA FOR INCREASING ICT COMPETENCE OF VOCATIONAL TEACHERS 17.90-95  
*Wahyu Nur Hidayat, Muladi, Syaad Patmanthara, and Tri Atmadji Sutikno, Rahajeng Kartika Sari*  
*Universitas Negeri Malang*
- 17 IMPROVING VOCATIONAL TEACHERS' PEDAGOGICAL COMPETENCES THROUGH INTRODUCTION TO LIFE-BASED INNOVATIVE LEARNING PRACTICE MODEL 17.96-102  
*Made Wena, Sugiyanto, Pribadi*  
*Universitas Negeri Malang*
- Sub Theme 8: Public-Private Partnership Technology and Vocational Education (PPPTVE)**
- 1 OPTIMIZATION OF HYBRID POWERED REFRIGERATOR SYSTEM (SOLAR CELL PLUS DIESEL ENGINE) FOR TRADITIONAL FISHING VESSELS IN MAKASSAR. 18.1-6

*Soetyono Charles Iskandar, Moch. BruriTriyono, A. Muh.Idkhan*  
*Universitas Negeri Makassar*

- 2 DEVELOPMENT OF WEB-BASED INFORMATION SYSTEM FOR WOMEN EMPOWERMENT RESEARCH CENTER IN UNIVERSITAS NEGERI MAKASSAR 18.7-10

*Lu'mu, Harifuddin, Wahyuni Yusuf*  
*Universitas Negeri Makassar*

- 3 THE PARTNERSHIP APPROACH BETWEEN VOCATIONAL EDUCATION INSTITUTIONS AND ENTERPRISES 18.11-13

*Nur Qudus, Virgiawan Adi Kristianto*  
*Universitas Negeri Semarang*

**Sub Theme 9: Technology and Vocational Education Policy (TVEP)**

- 1 THE CONTRIBUTION OF EMPLOYABILITY SKILL TOWARD TECHNICAL ABILITY OF AUTOMOTIVE BUSINESS LABOR OF VOCATIONAL HIGH SCHOOL GRADUATE 19.1-5

*Darmawang*  
*Universitas Negeri Makassar*



# Creative and Productive Learning Model of Cake Decorating Subject Culinary Art Department of State University of Medan

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**Abstract:** Culinary art Departemen of State University of Medan basically provide a quality learning. A quality learning climate can be achieved if the learning is interesting, challenging, fun and meaningful for students. One of a quality learning climate by developing the creativity of students to Produktif, namely a learning that emphasizes Student active or Student Centered learning (Student Centered). The quality learning process is done intensively, but in fact the field shows a lecturers has not done it in the studying. Some of lecturers in teaching are still conventionally focused on teaching rather than learning. Presentation of materials with lectures. Students viewed the course material as too theoretical, lacking a contextual example. Semester exam questions for Students use multiple choice form, less tilting ability to think critically and creatively to the Student. Creative-productive learning has a strategic position for the development of student competence, especially technical competence (hard competence). This study aims to find productive-productive learner model to develop competence in Decorating Cake pada study of Culinary Study Program including teaching material, learning method, and evaluation of learning result that can develop creativity in decorating cake. Result of research of creative-productive learning model covering three aspects, namely learning materials, learning method, and evaluation of productive-creative learning outcomes. Learning materials need to be designed by focusing on productive activities (creating or creating goods and services), instructional or project-learning methods, and evaluating learning outcomes need to apply performance evaluation techniques by emphasizing evaluation of processes and products. This research develops instructional media based on orientation, exploration, interpretation, and re-creation, with Decorating cake material. Validation results by two media experts, obtained an assessment (90.63%), while from the validation by two material experts, memproleh assessment (97.35%). Result of questionnaire of student responses that have been done, orientation-based learning media, exploration, interpretation, and re-creation of learning Decorating cake get response (90,9%).

*Keywords: Productive creative learning model, Decorating cake*

## I. INTRODUCTION

Some National Education functions to develop the ability and form the character and civilization of a dignified nation in order to educate the nation's life, that's aimed to develop the potential of learners to become human beings who believe and

piety to God Almighty, noble, morality, healthy, knowledgeable, capable, creative, independent, and become a democratic and responsible citizen. The learning process is essentially to develop the activities and creativity of learners through various interactions and learning experiences. But in the implementation there are many learning activities that are implemented just inhibits the activity and creativity of learners.

The learning process by many lecturers today only to attain the target of the curriculum material and is more concerned with concept recitation rather than on understanding. This can be seen from the learning activities in the classroom which is always dominated by lecturers. In the delivery of materials, usually lecturers use expository method where of the students just sitting, taking notes, and listening to what the lecturers are saying and few opportunities for students to ask questions. Thus, the learning atmosphere was not conducive so the students passive.

This condition can be seen in the process of learning in the classroom, generally lecturer emphasizes the cognitive aspect. The intellectual abilities learned are largely centered on the understanding of memorable lecture materials. Lecturers more often use one-way communication, namely by using expository method. In this situations, students are usually required to accept what is considered important by the lecturer and memorize it

Learning creative and productive models are still more oriented to the provision and achievement of hard competence, namely competence / technical skills according to work competence standards (KKNI). While the soft competence aspect, especially the production skill has not been developed optimally. The impact that arises later is the tendency of declining cake decorating production at the graduates of the Culinary art Department from year to year, the graduates did not dare to produce catering due to less creative students so the result of cake decorating is less attractive, although sometimes their competence is enough. Creativity is a very important thing to develop. Creativity is needed in many aspects of life, in social life, the world of work, the development of science and technology. According to Wena (2013) creativity is directly related to productivity and is an essential part of problem solving. Creativity and

productivity are interrelated and in the learning process it must be grown simultaneously.

This learning is based on constructivistic theory where learning is an effort of giving meaning by students to their experience, so in this learning the students are expected to construct their own concept or material they get. Productive creative learning approaches include: active learning, creative, constructive and collaborative and cooperative. An important characteristic of each approach is integrated so it can produce a model that allows students to develop creativity to produce a product that derives from their understanding of the concept under study. Creative productive learning begins with the active nature of the learner. Active can be interpreted as an intellectual and emotional learning involvement in learning to construct his knowledge

From the results of observation on the Culinary art students that the teaching materials and learning strategies given today are not effective enough in developing student productive values. Similarly, the understanding and experience in cake decorating (lecturers and field counselors) was not fully support the achievement of creative and productive improvement goals in cake decorating.

The development of the main productive courses in the Culinary art Department requires an appropriate approach to education and training, both in the classroom and in productive practices. The Development of teaching materials, learning methods, and learning outcome assessment system that focuses on the indicator of creative and productive character. Learning of creative and productive programs basically can develop and form the competence of students. The purpose of this study are described as follows: 1) To develop creative and productive learning program model in cake decorating subject of culinary art department Culinary Education, 2) To know the result of learning cake decorating using creative and productive learning program model in cake Decorating of students in culinary art department of state University Medan.

## LITERATURE REVIEW

### A. *Creative and Productive Learning Model*

Creative and productive learning is a model that developed with reference to various learning approaches that are assumed to improve the quality of the learning process and outcomes. This learning is based on constructivistic theory where learning is the effort of giving meaning by the students to their experience, thus in this learning the students are expected to construct their own concept or material they get. Productive creative learning approaches include: active learning, creative, constructive and collaborative and cooperative. The important characteristics of each approach are integrated so as to produce a model that allows students to develop their creativity to produce a product that derives from their understanding of the concept.

This productive creative learning is based on basic principles:

- 1) 1. *Intellectual and emotional student involvement in learning*
- 2) 2. *Students are encouraged to discover / construct their own concepts through interpretation conducted in various ways such as observation, discussion or experiment*
- 3) 3. *Give an opportunity for students to be responsible for completing joint tasks*
- 4) 4. *To be creative, some one have to work hard, high dedicated, enthusiastis and self confidence*

With reference to these characteristics, this learning model can be applied in learning various fields of study, both abstract and concrete topics. The material in accordance with the learning model is a material that demands a high understanding of actual values, concepts or problems in the community and the skills of applying the understanding in the form of real work. This material come from cake decorating . The purposes of the lesson are :

- Understand the concept of a certain value, concept or a certain problem.
- Able to apply concepts / solve problems
- Being able to create something based on that understanding.

### Steps of Productive Creative Learning Model

There are five creative productive learning steps. The length of time that's required to complete each of the learning stages depends on the extent of the problem being solved.

According to Wena (2013), learning activities are divided into five steps: They are orientation, exploration, interpretation, recreation and evaluation. Each step can be further developed by the Lecturers by holding the essence of each step as follows:

#### 5) *Orientation*

This stage begins with an orientation to agree on the tasks and learning steps in this case Lecturer communicates the objectives, materials, time, learning steps, expected outcomes of the Student, and the assessment applied. According to Borich (in Wena, 2013) orientation stage is very important to do at the beginning of learning, because it can give direction and instructions for Students about learning activities to be performed. On this occasion students are given the opportunity to express opinions about the steps / how to work as well as the expected results and the achievement. In this stage there is a negotiation between the Student and Lecturer about the aspects of this stage, the student, but in the end there is an agreement between the lecturer and the student.

#### 6) *Exploration*

This stage, students explore the problem / concept studied. Exploration can be done in various ways such as reading, observation, interviewing, experimenting, browsing via the Internet and so on. In Black's opinion (in Wena, 2013) through students exploration activities is stimulated to enhance her

curiosity and that can spur further learning activities. This activity can be done individually or in groups. The time for exploration is tailored to the wide of field coverage / discussion that will be discussed. In order for directional exploration, the Lecturer should make a short guide, which contains the intended purpose, time, materials, work and expected outcomes.

#### 7) Interpretation

In this stage the results of exploration interpreted through analytical activities, discussions, frequently asked questions, or even a re-experiment, if indeed it is necessary again. According to Brooks & Brooks (Wena, 2013) the interpretation stage is very important in learning activities because through the interpretation stage Students are encouraged to think high level (analysis, synthesis, and evaluation) so accustomed in solving problems review from various aspects. Interpretation should be done in the face-to-face hours. If the exploration is done by the group, each group is and required to present the results of their understanding in front of the class in their own way, followed by the response by other students. At the end of this stage is expected that all students have understood the concept / topic / problem studied.

#### 8) Re-creations

In this the Students are assigned to produce something that reflects their understanding of the concepts / topics / issues studied according to their own creations. According to Cregg & Berch (in Wena, 2013) at the end of each lesson, students should be able to produce something so that what they have learned becomes meaningful, especially to solve problems that are often encountered in the daily life. Re-creations can be done individually or in groups according to the Student's choice. The re-creations are creative products that can be presented, displayed or followed up.

#### 9) Evaluation

According to Wena (2013) evaluation is done during the learning process and at the learning end. During the learning process evaluation is done by observing the attitude and thinking ability of students. The things that are assessed during the learning process are they have to do the task seriously, exploration, result critically thinking and logical thinking in providing views / arguments, the ability to work together and assume shared responsibility. While the evaluation on the end of learning is the evaluation of the creative products that's produced by the Students. Assessment criteria can be mutually agreed upon at the time of orientation.

To form the creative and productive character towards the creation of independence for the Students, then developed a learning cycle that includes five aspects of learning experience as follows:

1) *Exploring; Respond to new information, explore facts with simple instructions, share knowledge with others or retrieve information from other Lecturers / experts / experts / sources.*

2) *Planning: Compile work plans, identify the necessary tools and materials, determine steps, design works and other plans.*

3) *Doing / acting: Conducting experiments, observing, finding, creating works and reporting results and solving problems.*

4. Communicating: Communicating / presenting the results of the experiment, observation, discovery, or the results of his work, sharing and discussion

5. Reflecting; Evaluate the processes and outcomes that have been achieved, looking for weaknesses to improve the effectiveness of planning.

#### B. Cake Decorating

Decorating Cakes or cake decorating is the most exciting part of cake processing, decorating a cake is to close the cake with trimmings or cake decorating has some arms they are :

- Improve the quality of the cake in terms of taste, appearance and shape appearance.
- Closing the lack of physical form that is less interesting. In this case it can improve the portion of the cake that is defective with the cake decorating material, even with the creativity and imagination that can change the shape of new cake that is more interesting than ever.
- Declare the expression or intention of decorating the cake. For example as an expression of affection made cake shaped (love) decorated with cream in the form of roses using dominant colors pink.
- Being the center of interest (center of interest) beautiful cake with beautiful decoration on one occasion will make many people are interested.

Cake Decorating principles:

#### 1) Themes

Before producing a cake product should determine the shape of the cake and what decoration will be shown, so we must know the theme of the cake to be made. The theme is required for the cake to be shown in accordance with the intent or purpose of the cake placement in an event.

#### 2) The center of attention

Decoration on the cake must be a substitution of beauty and theme, the decoration on the cake must have a certain part of the center of attention when people see the cake that has been decorated. By showing the cake, we will know the theme of an event.

#### 3) Match

The Matching on the cake can be seen in terms of design, as well as the selection of colors that return the role of the theme.

#### 4) Be balanced

The balance between the size of the cake with the decorations to be displayed should be balanced. balance can

be made by considering the size of the cake with the size of the decoration to be made.

5) *Exactly*

The exact precision is precisely in all matters pertaining to the principle of cake mnghias. The cake decoration should be precise with the event or theme of the event, precisely in the selection of shapes and ornaments and precisely in determining the color.

## II. METHOD

Before The design applied in this research is research and development (Borg & Gall, 1993). The location of this study On Education Studies Program Culinary Department PKK FT State University of Medan, with the subject of student research, namely the field of decorating cake expertise. Taken one skill competency to be developed teaching materials, learning methods, and evaluation system with reference to the character production indicator of decorating cake.

The predecessor study was carried out using the needs and literature review, on the students and lecturers. At tahobobodel stage, the collecting technique used is the assessment of the success of the productive-creative model on the production of decorating cake. The data collection instruments used in this study are: (1) questionnaires used to collect datapada preliminary study stage and development; (2) a questionnaire (assessment scale) is used to assess the results of model implementation on the formation of productive characters. The preliminary study was conducted descriptivanalitis, to describe the analysis of the factual model of learning productive program, mainly teaching materials, learning methods, and evaluation, in shaping productive character. . On the basis of these findings, researchers formulate a model for the development of creative-productive programs.

## III. RESULTS AND DISCUSSION

The results of the study consist of two, namely : (1) needs analysis of the development of creative-productive learning model to shape the production character of the Student, and (2) description of the factual model of creative-productive programming. The applied of teaching model can adopt from creative-productive learning model. The characteristics of the creative-productive model are characterized first, the intellectual and emotional involvement of students in the learning of decorating cake, facilitated through the provision of opportunities for students to explore the concept of decorating cake learned and interpret the results of exploration. This exploration allows students to interact with environment and their experience, as a medium for constructing knowledge.

Secondly, students are encouraged to construct their own decorating cake concept that is being studied through interpretation done in various ways such as observation to food industries, to outlets or to food stores, discussing among friends or lecturers, or experimenting. In this way the concept is not transferred by the lecturer, but is formed by the students themselves based on experience and interaction with the

environment that occurs when exploring and interpreting. In this way the Student is encouraged to build the meaning of his experience, so his understanding of the phenomenon being studied increases. In addition, students are encouraged to come up with different points of view, relevant arguments to the same concepts / topics, this is one of the realizations of the nature of constructivism in learning

Third, students are given responsibility for completing joint tasks through exploration, interpretation and re-creation activities. Another experience, Students have the opportunity to help friends in completing a task. Togetherness, whether in exploration, interpretation and recreation, and the show of results is an interaction achieve that enriches the experience of the Students.

The last characteristic, that basically someone to be creative, must work hard, dedicated, enthusiastic, and self-confident (Erwin Segaldalam Black, 2003). In the context of learning, creativity is grown by creating a classroom atmosphere that allows students and lecturers feel free to review and explore. Lecturers ask questions that make students think, then ask the opinions of students from various perspectives. Lecturers encourage students to demonstrate or demonstrate important topics in the curriculum in their own way (Black, 2003).

So the learning model is successful if applied correctly a) Material; decorating cake material suitable to be presented with this creative model is a material that demands a high understanding of actual values, concepts or problems in society and the skills of applying such understanding in the form of real work. b). Learning Activities; learning with creative-productive model, divided into 4 steps, namely: orientation, exploration, interpretation and re-creation. First: Orientation, in this activity begins with orientation, this activity is meant to communicate the task and step of learning. The lecturer communicates the purpose, material, time, step, expected end result, and assessment to be applied.

On this occasion, the First Student is given the opportunity to express his opinion about the steps or work, and how the assessment will be done and the expected results. Negotiations between the lecturer and the Student may occur, but at the end of the orientation it is expected to have an agreement. Second; Step Exploration, at this stage Students explore the concepts or problems studied. Exploration for the material can be done by reading, observing or observing, interviewing or experimenting, browsing through the internet. Exploration activities may be undertaken individually or in groups as agreed on time of orientation. The time for exploration is tailored to the extent of field to be explored, long-lasting exploration takes place outside of the learning hours and a short exploration can be done in the classroom. A brief guide should be prepared by a Lecturer that includes the intended objectives, materials, work, and expected outcomes. Third; The Step of Interpretation, after conducting exploration activities Students are assigned to interpret through activities of analysis, discussion, question and answer, or in the form of experiments.

Interpretation is done in teaching learning hours, exploration is done in groups, so each group presents the results of their understanding in front of the class. At the end of the interpretation phase, it is expected that all students have understood the concept or topic of the problem under study. Fourth; Re-creation stage, Students are given the task to produce something that reflects their understanding and concern for the concept or topic being studied. Re creations can be done individually or in groups according to the choice of each Student. The re-creations are creative products decorating cake. While for the evaluation phase, evaluation of learning is done during the learning process and at the end of learning. During the learning process evaluation is done by observing attitudes and thinking ability of students.

In addition to the seriousness in doing the tasks, the results of exploration, the ability to think critically and logically in providing views, arguments, willingness to cooperate and think of shared responsibility are aspects that can be assessed during the learning process. Final evaluation is done on the creative-productive generated by the Students. Student involvement in the learning process and courses studied is clear and has an interest for their personality making learning more interesting, they become passionate, seriously and have real-life experiences that are benefits to their lives. The Implementation of The developed teaching model can be described as follows.

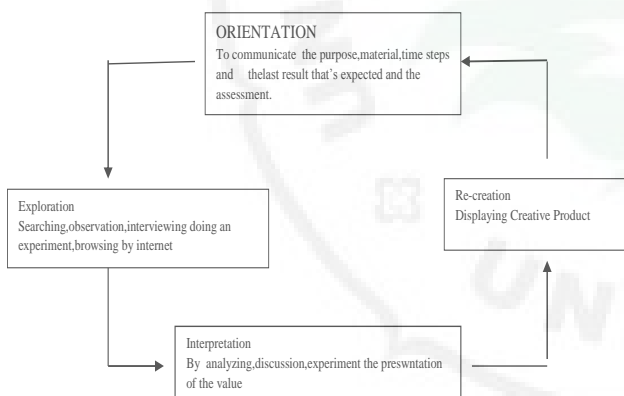


Fig. 1. Chart stage of creative and productive learning model

The result of questionnaire of lecturers needs (100%) stated Creative-productive learning model has never been used in Decorating cake. Therefore, in the development of creative-productive model, it is necessary to develop a learning model in the form of Decorating Cake as a model of learning in order to increase creativity and productivity of learning which has orientation, exploration, interpretation, and re-creation. Questionnaire Results Students stated (52%) agreed, the model of creative-productive model development has not been too popular in Decorating cake learning.

Therefore it is necessary to develop productive creative models through the development of animation media in the Decorating cake course to enhance learning activities by developing orientation, exploration, interpretation, and re-creation. After obtaining the conclusion from the needs

analysis, the next step is the collection of teaching materials. The collection of learning materials aimed at presenting the material on the media animation does not deviate from the curriculum. In the Decorating Cake course, the basic competence to be achieved is to make the dough of cake Decorating. The main subject in the cake Decorating is the definition of dough Decorating cake, various tools and materials for Decorating cake, Decorating cake techniques. Once the learning material is collected, it is followed by the initial product development stage.

The analysis by the material expert on each aspect of the overall assessment is determined by the average score in each category. The results are analyzed to determine the feasibility or not development of animated learning media based on orientation, exploration, interpretation, and re-creation in the Decorating cake course. The stage of this creative-productive learning module is the stage of re-creation, where students are given the opportunity to create decorating products of their own understanding. In this re-creation stage can be a stage where students can still realize more concrete lessons and involve them more actively in decorating lessons cake.

The design aims to develop creative-productive models through animation based on orientation, exploration, interpretation, and re-creation. Decorating cake is based on three aspects: program display aspect (90%), efficiency aspect (90%), and technical quality aspect, effectiveness (88.75%). Overall these three aspects are in very good criteria (89.58%). The average percentage result of expert media research can be seen in figure 2 below..

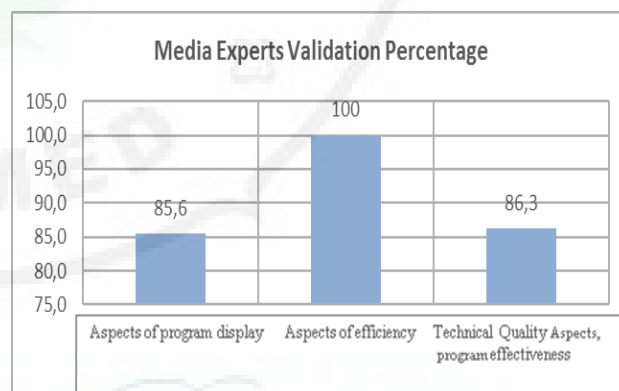


Fig. 2. Acquisition of Animation Media Development Scores Based on orientation, exploration, interpretation, and re-creation In the Decorating Cake course by Media Experts.

Media experts assess the development of animation media based on orientation, exploration, interpretation, and re-creation on Decorating cake subject by education aspect (98,0%), material accuracy aspect (96,7%). Both aspects of the criteria are very good (97.35%). The average percentage result of the study of material experts is seen in Figure 3 below.



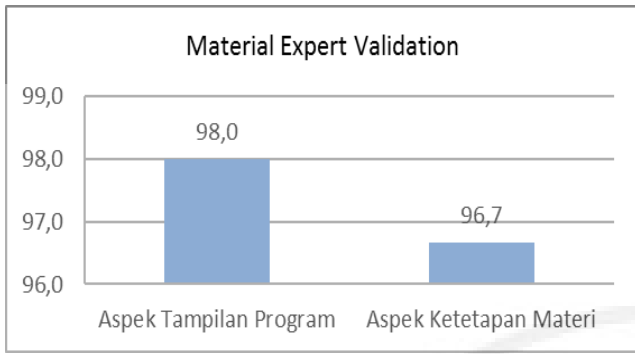


Fig. 3. Obtaining Scores Developing creative and productive models based on orientation, exploration, interpretation, and re-creation In the Decorating cake course by the Materials Expert.

The result of the percentage of product experiment assessments according to the students are aspects of attractiveness (75.3%), aspects of difficulty level (71%), display aspects (74%), and benefits (76%). Overall the criteria agreed (74%) percentage of product experiment in Figure 4 below. Text heads organize the topics on a relational, hierarchical basis. For example, the paper title is the primary text head because all subsequent material relates and elaborates on this one topic. If there are two or more sub-topics, the next level head (uppercase Roman numerals) should be used and, conversely, if there are not at least two sub-topics, then no subheads should be introduced. Styles named "Heading 1," "Heading 2," "Heading 3," and "Heading 4" are prescribed.

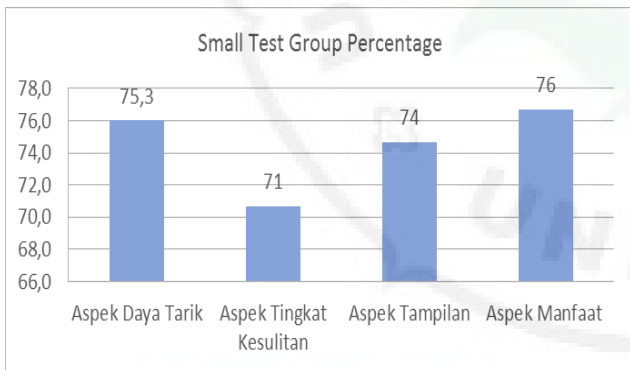


Fig. 4. acquisition of Animation Media Development Scores Based on orientation, exploration, interpretation, and re-creation of the course decorating cake product trial

The result of the percentage of assessment according to the students based on the aspects of attractiveness appraise (91.7%), aspects of difficulty (89%), display aspects (91.3%), and benefits (91.4%). Overall in very good criteria (90.9%) percentage the experiment of usage in figure 5 below.

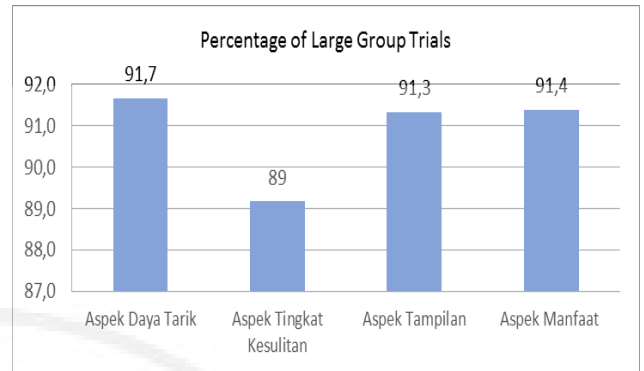


Fig. 5. Obtaining Scores of Animation Media Development Based on orientation, exploration, interpretation, and re-creation of courses Decorating cake trial usage

The results of the assessment on the development of animation media based on orientation, exploration, interpretation, and re-creation in the Decorating Cake course in general the response value from the Students is considered very agree, this is seen from product experiment and experiment usage increased from the student's response. Percentage of Product and Testing usage can be seen in figure 6 below:

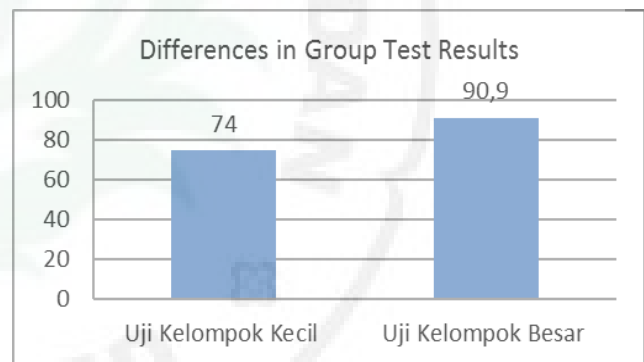


Fig. 6. Difference diagram of product trial and trial usage

Further product development results are validated by media experts and material experts. In the implementation, validation of media experts and materials experts to look at the animated learning media that has been developed, then the validator provides an assessment, comments and suggestions for improvement related to aspects that exist in the sheet of validation of media experts and material experts. In some cases, researchers ask directly and discuss with the validator about matters relating to aspects that still require improvement so that the resulting product is really worthy of use for learning activities.

On the validation of media experts, get score (90.63%), the media is feasible to use because the media display good image, animation, sound is good and attract the attention of Students so as to create interactive learning. Then the material expert gives an assessment (97.35%), that the decorating cake material is feasible because the material in the animated learning media is in accordance with the Curriculum, Syllabus, Learning Implementation Plan (RPP), Competency

Standards (SK), Basic Competence (KD), Indicator and Learning Objectives.

The media product is revised in accordance with the advice of the media expert and after being declared eligible, the next is Product testing (small group), and pilot (large group) of learning media products. From the experiment (small group) states agree animation-based learning media orientation, exploration, interpretation, and re-creations used in learning. In the experiments (large groups) Decorating cake learning expressed strongly agree learning media based on orientation, exploration, interpretation, and re-kreasidigunakan in learning.

Based on the above findings, the need for concrete solutions through the application of creative-productive learning models on decorating cake learning. With the implementation of this productive creative-learning model, it is expected that students can obtain the principles of the experimental method that are preferred by the Student. This creative-productive learning model not only uses practical methods in learning, but also allows students to plan and reflect activities that have been obtained from practicum decorating cake through re-creation stage. Thus expected goal of decorating cake instruction that refers to the essence of decorating cake as a product that can enhance entrepreneurship, productive processes, and attitudes can be realized properly.

According to Clegg & Berch (2001) at the end of each lesson, students should be able to produce something so that what they have learned becomes meaningful, especially to solve problems that are often encountered in everyday life. Re-creations can be done individually or in groups according to the Student's choice. The re-creations are creative products that can be presented, displayed or acted upon. Based on the description above, it can be concluded that there are five stages in creative-productive learning strategies, among others: (1) orientation; (2) exploration; (3) interpretation; (4) re-creation; and (5) evaluation. Implementation in the implementation plan of the lesson (RPP) can be classified in the orientation and exploration stage including in exploration activities, interpretation and recreation stages including in elaboration activities, and evaluation stage including in evaluation activities.

#### IV. CONCLUSION

Based on the results of research development that is done and the discussion that has been defined, can be taken some conclusions in the research as follows: 1) In this development research using productive-creative development model. This research develops instructional media based on orientation, exploration, interpretation, and re-creation. The material on learning media is Decorating cake material. From the result of validation by two media experts, obtained the assessment (90.63%), while from the validation by two material experts, it get assessment (97.35%). 2) Based on the results of questionnaires, responses Students who have done, orientation-based learning media, exploration, interpretation, and re-creation of learning Decorating cake received a response (90.9%) that the animated learning media based on

orientation, exploration, interpretation, and re-kreasit attract attention, increase interest in learning, motivate and looks interesting so that the media declared effectively used as a medium of learning on learning cake decorating for student on Culinary art Department of State University of Medan.

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