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# PROCEEDING INTERNATIONAL CONFERENCE

Revitalization of Technical and Vocational  
Education to Face Industrial Revolution 4.0

Surabaya, July 11 - 14, 2018

**PROCEEDING INTERNATIONAL CONFERENCE**  
Revitalization of Technical and Vocational  
Education to Face Industrial Revolution 4.0

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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)*

Prof. Dr. Wenny Rahayu  
*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)



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”

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UNIVERSITAS NEGERI SURABAYA  
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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.

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# Development of Contextual Based Entrepreneurship Materials for Vocational Secondary School Students (SMK) Negeri 8 Medan

Siti Wahidah  
Universitas Negeri Medan  
sitiwahidahrias@gmail.com

**Abstract**—Schools should always improve the competence of graduates, therefore teachers should continuously improve capacity and capability in order to improve the quality of the graduates is one of them through the development of innovative teaching materials. This study aims to: (1) produce teaching materials that are feasible to use, easy to learn and can be used for individual learning, (2) to know the effectiveness of teaching materials developed on contextual based entrepreneurship subjects. This type of research is development research using Borg and Gall development model combined with Dick and Carey learning design model. The research method consists of two stages, stage I developed the teaching materials and test, and stage II product effectiveness test. The research was conducted on the students of class X Vocational High School (SMK) Negeri 8 Medan, with a sample of 47 students Contextual-based entrepreneurship-based instructional products developed have been eligible and suitable for use as a learning book, based on expert material assessment, instructional design, student responses on individual trials, small group trials, and limited field trials of developed materials are categorized as excellent so they are acceptable and worthy of use as teaching materials. It was concluded that the effectiveness of the use of contextual based teaching materials was 27.37%.

**Keywords:** entrepreneurship teaching materials, contextual, vocational students

## I. INTRODUCTION

In accordance with the vision of Vocational High School (SMK) is Quality, Superior, Skilled, Characteristic and Competitive In Habit, also conducts learning to produce graduates who are superior and competitive and relevant to the needs of the labor market. Besides, it also develops students' skill in conducting assessment of knowledge development in giving recommendation to improve institutional quality and educational unit by upholding integrity, character and able to adapt to global environment change.

An essential role in designing various learning is how teachers address the competencies to be conveyed. Improving learning approaches in learning activities, and is expected to create activity learning situations that involve more student activities. While the student should be able to motivate himself to be active in teaching and learning activities. As a teacher must be able to convey the learning materials by having its own way so that students understand with the material that is conveyed by developing the

learning model. According Daryanto (2012) education is the maturity of students in order to develop talents, potential, and skills that have in life. The above statement is in line with the purpose of Vocational High School education in Indonesia that is to "increase intelligence, knowledge, personality, noble character and skills to live independently and follow the education in accordance with the vocational" (Permendiknas number 22 year 2006).

From the objectives to be achieved through the vocational education is expected to graduate from Vocational High School (SMK) prepared to enter the workforce, which is structured in the industry, and also in the informal sector that requires independence (PP number 29 of 1990). Therefore, the SMK curriculum emphasizes the provision of appropriate skill sets and oriented to the needs of the user of the graduates (demand driven). In the learning activities, teachers use lecture learning methods, discussion and question and answer, and use teaching materials in the form of entrepreneurship textbooks that exist, but the application has not been maximal so that learning activities are still monotonous and dominated by teachers. The way is felt less appreciative because the teacher only explains about the things that are general and its only theory, without concrete examples. It makes students less aware of the nature of entrepreneurship and its application in life, while the subjects of entrepreneurship are important to teach students to support the purpose of vocational high school (SMK) is preparing graduates who are ready to work and ready to go public. In addition to productive subjects, entrepreneurship subjects are needed to support the success of students in entrepreneurship so as a compulsory subject, where the subjects of entrepreneurship introduce students in different contexts studied in relation to theory, and the material learned in its application in entrepreneurship. (Welter, 2016).

From the documentation of entrepreneurship subject value from the Lesson Year 2013/2014 to the 2015/2016 Lesson Year obtained in the Lesson Year 2013/2014 obtained the highest score of students is 78, the lowest score of students (60) and the average score is (69). In the Lesson Year 2014/2015 obtained the highest score of students (75), the lowest score (60) and the average score (67.5). In the 2015/2016 Lesson Year obtained the highest score (78), the lowest score (62) and the average score (70). Based on the data can be seen there are students whose average value is below the minimum thoroughness, while the minimum value of entrepreneurial subjects is (75). The existence of students who have not achieved the competence is a serious problem and should be sought the solution. For that the role of teachers in learning is very important and needed

teaching materials that support the learning process so that the material learned can be applied by students.

The entrepreneurship teaching materials used now are not well organized, as they tend to pay attention only to cognitive developmental structures. Found in entrepreneurial books only discuss the entrepreneurial material alone without observing the environment, and boring because too much theory without applying it. The authors suspect that one of the weaknesses of achievement of learning achievement of entrepreneurship subject is caused by teaching materials that are used to give less opportunity for students to actively observe, seek, find and communicate the teaching materials used. By using interesting teaching materials with child development level and concepts to be taught will more easily understand the learning materials. Teaching materials is a set of subject matter to facilitate students to understand the material and as a medium to facilitate students in conducting learning activities that can improve student learning outcomes. The development of entrepreneurial learning materials needs to be applied in entrepreneurial learning. Entrepreneurship learning requires students to have different abilities such as conceptual understanding, social skills, critical thinking skills, and attitude skills. Entrepreneurship skills can be trained through learning that involves cooperation among students that is achieved by the process of learning in the classroom and able to apply it.

There are several important factors in achieving the expected learning outcomes of entrepreneurship such as the availability of contextual-based entrepreneurship teaching materials that is linking the material that students learn with real-life students. The availability of contextual-based learning materials is meaningful in optimizing students' learning attitudes in order to achieve optimal learning outcomes. By using contextual-based teaching materials so students can be directed to explain real phenomena and solve problems in everyday life with the mastery of the concepts they build themselves through the material associated with their own environment. As in the subject matter of attitudes and behaviors in entrepreneurship, where the students are expected to be able to identify attitudes and behaviors of an entrepreneur, the factors that influence success, entrepreneurial failure and skills that must be owned by an entrepreneur, and how entrepreneurs address the problems in the business by observing environment, students are required not only to understand the material but to apply and can connect the material learned with the environment. In Ampa's research, et al (2013), entitled *The Development of Contextual Learning Materials for the English Speaking Skills*, says using contextual materials derived from models designed to be very effective for use in teaching English proficiency. According to Utama, et al (2013) entitled *Contextual Math Learning Based on Lesson Study Can Increase Study Communication*, said contextual based mathematics learning based on lesson study can improve the communication of learning mathematics. Lesson Study is done by teachers with their cyclic groups, in particular; (1) to read out Standard content and syllabus, (2) RPP development, (3) Teacher model that conducts Process learning, and (4) reflection on learning outcomes.

## II. METHOD

This development research refers to the research steps of developing Borg and Gall, the development of teaching materials

referring to Dick and Carey. The steps taken in the development of Borg and Gall are: (1) requirement analysis stage, (2) design stage of teaching materials, and (3) test phase (validation).

Sukmadinata (2006: 186) refers to Borg and Gall's theory into four stages: (1) preliminary study, (2) model planning and development, (3) trial and revision, and (4) module validation. Research this is done with a broader trial stage that is produced the product of teaching materials and continued until the test results (media validation).

The developed product is the teaching book to be used to be easy to understand and attract the students' learning interest, for the purpose of learning hence the research and development is combined with instructional development of Dick and Carey model (2005) with stages such as: (1) identification of learning needs and determining (4) writing basic competencies and indicators, (5) writing benchmark reference tests, (6) developing learning strategies, (7) developing a learning competency, materials / learning materials. The Dick and Carey development model is chosen because it has a programmable learning format that can be used for individual learning purposes and develop learning materials in the cognitive learning sphere.

With experiments from teaching materials on the basic competence to identify attitudes and entrepreneurial behaviors for SMK Class X consists of several stages are as follows: (1) Validation of material experts on entrepreneurship subjects, (2) Validation of learning experts, (3) Validation of media experts, (4) Revision of development (stage I), based on an assessment of input, criticism or suggestion from three experts, design and media materials, (5) Individual trials by three students (one-on-one testing), (6) try nine students (small group trials), (7) Revision phase II, based on judgments in the form of input, criticism or suggestion from individual and small group trials, (8) Revision of product III based on inputs and suggestions on small group trials, (9) Field trials of 24 class X students on appraisal of product attractiveness and appropriateness, (10) Revision of stage III, based on an assessment of input, criticism or suggestion from field trials, (11) her for perfection, and continued with product effectiveness test in the learning process.

Contextual based teaching materials development products require feedback to get the desired results. The feedbacks were obtained by a subject consisting of two learning media experts and product users, namely the Class X Program of Culinary Expertise of SMK Negeri 8 Medan consisting of 3 students (individual testing), 9 students for small group trials and 24 students for field test. Product trials in this development are carried out through the following steps: (a) The first step, determining the experimental objectives of learning media experts, designers of learning instruments, learning media experts and students as users. Input from experts is the suitability of learning materials, instructional design, and media design data, then performed improvements (revision I). While the students as the user is expected to input from the quality of the display, presentation of material, ease, attractiveness and usefulness of the resulting product, (b) The second step, set the subject of the trial based on educational criteria, expertise, as well as the availability of time and energy to provide necessary data, (c) The third step, the implementation of an expert review prior to the individual and field trials, the product is first given to the expert to obtain advice and input with his / her own expertise, (d) Fourth step, individual trials. In this step the product

No	Type Information	Answers	Frequency			Percent age
			teacher	Student	Amount	
1.	Already familiar or not familiar with learning media teaching materials	Yes no	2 8	0 40	2 48	8 92
2.	Using or not using learning media teaching materials in the learning process	Yes	0 10	0 40	0 50	0 100
3.	Requires or does not require learning media teaching materials in the learning process	no	10 0	40 0	50 0	100 0

individual learning tools. The needs analysis data are shown in table 1.

Table 1. Data Requirement Analysis

Based on table 1, the data of requirement analysis by teacher and student obtained the following conclusion: a) Most teachers and students (92%) stated that they have not known learning media in the form of teaching materials only a small part (8%) teachers and students claim to have known media b) All teachers and students declare never use instructional media in the form of teaching materials, c) All teachers and students declare require instructional media in the form of teaching materials in the learning process.

Based on the results of needs analysis can be concluded that the development of instructional media in the form of teaching materials is very needed by teachers and students in the learning process to improve student learning outcomes. Then after getting a series of development process the next step is to design and develop instructional media in the form of teaching materials.

The initial product of the developed teaching materials is context-based entrepreneurship teaching materials for Vocational High School Class X, which outlines the following:

- 1) Material; the materials presented in this contextual-based teaching materials are entrepreneurial subjects for the odd semester V odd secondary school. Matter compiled based on Curriculum. The material presented is a supporting material that contains the material explanation in the standard of competence. This teaching material is used for self-study as well as classical in class. The standard of competence contained in these teaching materials is to actualize attitudes and entrepreneurial behavior.
- 2) Component of Presentation; Competency of presentation in this resource are as follows: (1) introduction, (2) table of contents, (3) competency standards, (3) manuals for use of books, (4) competency standards, (5) map of book positions, (6) ) learning flow chart, (7) conceptual learning map, (8) description of material, (9) summary, (10) practice questions, (11) glossary, and (12) bibliography list. The initial product of the contextual based teaching material is then tested, intended to obtain the complete data used as the revised material of the resulting product. Aspects that become materials to revise include the content feasibility components, presentation, graphic, linguistics to produce a good resource materials that are used in learning entrepreneurship for students. Based on the product assessment through a series of tests and revisions that have been done then this contextual entrepreneurship-based teaching material is declared to be valid. (3) Validation of instructional media experts, (4) individualized trials, (5) small group trials, and (6) validation of the instructional experts, field trial is limited.

Validation of the product is intended to know the opinion of the material expert of the content feasibility aspect, the presentation aspect, the linguistic aspect, and the aspects of graphic. Assessment is conducted to obtain information that will be used to improve the quality of learning in SMK Negeri 8 Medan on the standard of competence to actualize attitudes and entrepreneurial behavior. Based on the results of expert assessment of the material on the feasibility of content-based entrepreneurship contextual content is declared valid with the score (87.50%) and the criteria of very good.

that has been fixed in revision I is given to 3 students who study entrepreneurship with the aim of knowing the validity of the product after being improved based on expert review. Input from this trial is used as a basis for improving the product (revision II), (e) Step 5, small group trial, this is done to determine the deficiencies that need to be improved from the developed product. If there are deficiencies then the revision is made (revision III), (f) The sixth step, field trials, this is done in addition to knowing the shortcomings of the developed products are then discussed both in expert review and in individual and small group trials. If there are still deficiencies then based on the input obtained will be repaired (revision IV). If no input is given, then the product can be declared eligible as a valid learning resource used.

### III. RESULTS AND DISCUSSION

The data collected from the product trial results are used as the basis for determining the feasibility and attractiveness of products developed prior to use in the field. In accordance with the development design undertaken, the types of data extracted are as follows: (a) the learning and content conformity aspects of the material and instructional design, (b) the learning media aspects obtained from the media expert, (c) the display quality and presentation of material, obtained from the result outlines the definition of contextual based entrepreneurial teaching materials in the questionnaire so that respondents have a description of the questions in the questionnaire submitted. The search results from the questionnaire that were found found 100% of the teachers stated that they need instructional materials in the learning process to make the learning process run more effectively and 100% of the students stated that they need instructional media in order to make them as

Then in the presentation aspect, the percentage of score is 89,58% with criterion very good, linguistic aspect score (91,66%) with criterion very good and aspect graphic score (88,23%) with criterion very good average (88.23) with very good criteria. The results of the expert assessment of the material on the content feasibility aspects, the feasibility of linguistic presentation, and overall graphic (100%) indicate very good criteria, this can be summarized in the following table.

Table 2. Level of Expert Content Assessment Trend of Contextual Based Entrepreneurship Materials

No	categoris	Scor	Frequency	Percentage
4	Very good	$75\% \leq X \leq 100\%$	2	100,00%
3	Good	$55\% \leq X < 75\%$	0	0,00%
2	Less good	$40\% \leq X < 55\%$	0	0,00%
1	Not good	$X < 40\%$	0	0,00%
Amount			2	100%

Validation of products to find out the expert opinion of instructional design on the design of contextual based entrepreneurship teaching materials. Assessment is conducted to obtain information that will be used to improve the quality of learning on the standard of competence to actualize attitudes and entrepreneurial behavior. Based on the results of expert design assessment of learning on the aspect of the contents of contextual entrepreneurship based content is declared valid with the score (87.50%) and the criteria is very good. Then in the aspect of presentation of score material (78,75%) with very good criterion, and score graphic aspect (87,50%) with very good criterion with average amount (88,23%) with very good criterion. Assessment done by two design experts include the content feasibility aspects, the feasibility of presentation and graphic on the standards of competence to actualize attitudes and entrepreneurial behavior. The results of the assessment of the content feasibility aspect, the feasibility of linguistic presentation, and overall graphic (100%) indicate very good criteria, this can be summarized in the following table.

Table 3. Level of Design Expert Assessment Trends on Contextual Based Entrepreneurship Materials

No	categoris	Scor	Frecwensi	Percentage
4	Very good	$75\% \leq X \leq 100\%$	2	100%
3	Good	$55\% \leq X < 75\%$	0	0,00%
2	Less good	$40\% \leq X < 55\%$	0	0,00%
1	Not Good	$X < 40\%$	0	0,00%
amount			2	100%

Validation of the product is intended to know the opinion of the media expert on the media of contextual entrepreneurship-based teaching materials developed. This assessment is conducted to obtain information that will be used to improve the quality of developed learning media. Based on the assessment of media expert on the aspect of the content of entrepreneurship based on contextual content is declared valid with the score (91.60%) and the criteria is

very good. Then on the aspect of presentation of score (85%) with very good criteria and aspect of score graphics (77,08%) with very good criterion with the average amount (83,55%) with very good criterion. Overall, the tendency level of media expert's judgment on feasibility aspects of content, feasibility of presentation, language, and picture selection have very good criteria, this can be seen in the following table.

Table 4. Level of Trend of Media Expert on Contextual Based Entrepreneurship Teaching Materials

No	categoris	Scor	Frekwensi	Percentage
4	Very good	$75\% \leq X \leq 100\%$	2	100,00%
3	Good	$55\% \leq X < 75\%$	0	0,00%
2	Less good	$40\% \leq X < 55\%$	0	0,00%
1	Not Good	$X < 40\%$	0	0,00%
amount			2	100%

Individual trials were conducted at SMK Negeri 8 Medan in three X grade students. The purpose of this individual trial is to identify product deficiencies and student responses to products that have been developed. Assessment of this trial is about students' perceptions of products that have been developed. The results of student testing on individual testing of contextual based entrepreneurship teaching materials on competency standards actualize attitudes and entrepreneurial behaviors for class X SMK developed with individual trials that contextual entrepreneurship teaching materials viewed on the aspect of scoring contestability (93.33%) with the criteria are very good, the feasibility aspect of the score (87,50%) with the criteria is very good, the linguistic aspect score is (95,83%) with very good criteria and the aspect of choosing the score image (100%) with very good criterion, average (92.94%) with very good criteria. The results of the assessment on individual tests on content feasibility aspects, presentation feasibility, language, and image selection of entrepreneurship teaching materials are summarized in table 5.

Table 5. Level of Assessment Trend

No	categoris	Skor	Frekwensi	Percentage
4	Very good	$75\% \leq X \leq 100\%$	3	100,00%
3	Good	$55\% \leq X < 75\%$	0	0,00%
2	Less good	$40\% \leq X < 55\%$	0	0,00%
1	Not Good	$X < 40\%$	0	0,00%
amount			3	100%

Based on the above results it can be concluded that there is no need to be revised again, so that followed by the next test phase, i.e. small group trial. Small group trials were also conducted at SMK Negeri 8 Medan. Small group trials were conducted on nine students. The small group trial data is intended to re-examine students' perceptions of contextual-based entrepreneurship-based teaching

materials that have been developed. The result of small group experiment on contextual based entrepreneurship teaching materials on competency standard actualize entrepreneur attitude and behavior developed by small group experiment of contextual entrepreneurship study seen on feasibility aspect of content score (90,44%) with very good criteria, feasibility aspect of score presentation (92,91%) with very good criterion, linguistic aspect score (90,94%) with very good criteria and aspect of choosing drawing score (91,83%) with very good criteria, with average amount (95,72% ) with very good criteria. Assessment results on small group trials of contextually based entrepreneurial teaching materials can be summarized in table 6.

Table 6. Level of Trend of Small Group Trial Assessment of Contextual Based Entrepreneurship Materials

No	categoris	Scor	Frekwensi	Persentase
4	Very good	$75\% \leq X \leq 100\%$	9	100,00%
3	Good	$55\% \leq X < 75\%$	0	0,00%
2	Less good	$40\% \leq X < 55\%$	0	0,00%
1	Not Good	$X < 40\%$	0	0,00%
amount			9	100%

Based on the above results it can be concluded that there is no need to be revised again, so it can be continued next test is a field trial is limited.

A limited field trial was conducted at SMK Negeri 8 Medan consisting of 24 students. A limited field trial yields data that will be used to find out how the product benefits the wearer. The result of field trial is limited to contextual based entrepreneurship teaching materials on competency standard to actualize attitudes and entrepreneurial behavior for class X which is developed with limited field trial that contextual entrepreneurship teaching material seen on the aspect of scoring content ability (90,16%) with very good criterion (92.01%) with very good criteria, linguistic aspect score (91.87%) with very good criteria and aspect of choosing the score image (93,91%) very good criteria, with the average amount ( 92.10%) with very good criteria. Assessment results on limited field trials of entrepreneurial learning materials can be summarized in Table 7.

Table 7. Level of Trend of Field Trial Assessment on Contextual Based Entrepreneurship Teaching Materials

No	categoris	Scor	Frekwensi	Persentase
4	Very good	$75\% \leq X \leq 100\%$	24	100,00%
3	Good	$55\% \leq X < 75\%$	0	0,00%
2	Less good	$40\% \leq X < 55\%$	0	0,00%
1	Not Good	$X < 40\%$	0	0,00%
amount			24	

Field trials are limited to 24 students of class X SMK Negeri 8 Medan, it turns out that students generally stated that the

contextual based entrepreneurship developed materials have very good criteria and there are no problems to be fixed. Thus no revision is made in the limited field trial phase which also means that contextual-based entrepreneurship teaching materials are ready to be tested for effectiveness. The results of these studies are then analyzed to determine whether or not competence-based entrepreneurship-based teaching materials are developed. Learning material experts assess contextual entrepreneurship based materials on competency standards to actualize attitudes and entrepreneurial behaviors have been feasible with percentage of assessment on four aspects of the feasibility of the contents of indicators of assessment of contextual entrepreneurship based materials with scores (87.50%) for the content feasibility aspects, presentation (88.15%), linguistic aspects (90.66%), and aspects of graphic (81.25%). This means that context-based entrepreneurship-based teaching materials that have been developed can meet the demands of learning needs. The average percentage of the assessment of the material expert on the developed material is shown in Table 8.

Table 8. Average Percentage of Experts Results of Material Subjects to Contextual Based Entrepreneurship Materials

No	Incikator	Percentage	criteria
1.	Feasibility Aspect of Content	87,50%	Very good
2.	Feasibility Aspect of Presentation	88,15%	Very good
3.	Aspects of Language	90,66%	Very good
4.	Aspects of the graph	81,25%	Very good
average		88,23%	Very good

The result of the expert opinion of the material on the contextual based entrepreneurship-based entrepreneurship material shows the percentage (88.23%) including the excellent category which means the presentation of the material on contextual entrepreneurship-based teaching materials is very good on the content feasibility aspect, presentation feasibility aspect, linguistic aspect, and aspect graphics and can be used in the learning process, especially on the standards of competence to actualize attitudes and entrepreneurial behavior. Based on the responses of subject matter experts, it is stated that this contextual based entrepreneurship teaching material is feasible for field trials with revisions in accordance with developed and generally accepted recommendations. Learning design experts assess contextual-based entrepreneurship-based teaching materials on competency standards to actualize attitudes and entrepreneurial behaviors for grade X students who are developed have feasibility with percentage of assessment on feasibility aspects of content, presentation feasibility, and graphic with average score (82.89%). This means that the teaching materials developed can meet the demands of learning needs seen from the indicators of the assessment of content feasibility aspects, feasibility of presentation, and graphics criteria "very good". The average percentage of the results of the design expert's assessment of contextual-based entrepreneurship-based teaching materials developed is shown in table 9.



Table 9. Average Results of Design Experts' Assessment of Contextual Based Entrepreneurship Materials

No	Indikator	Percentage	criteria
1.	Feasibility Aspect of Content	87,50%	Very good
2.	Feasibility Aspect of Presentation	78,75%	Very good
3.	Aspects of Language	87,50%	Very good
Average		82,89%	Very good

The result of the expert design appraisal on the contextual-based entrepreneurship-based teaching materials shows the average (82.89%) including the excellent category which means the feasibility aspect of contextual based entrepreneurship teaching materials can be used in the learning process especially in the standard of competence to actualize attitudes and entrepreneurial behavior. Based on the responses of the instructional design expert, it is stated that this contextual based entrepreneurship teaching material is feasible for limited field trials with revisions as per the suggested suggestions and generally accepted. Learning media experts assess contextual-based entrepreneurship teaching materials on basic competencies to actualize entrepreneurial attitudes and behaviors to have feasibility with percentages on the components of score grading feasibility (84.56%). This means that context-based entrepreneurship-based teaching materials that have been developed to meet the demands of learning needs on contextual-based entrepreneurship-based teaching materials developed are shown in table 10.

Table 10. Average Results of Media Expert's Evaluation of Contextual Based Entrepreneurship Materials

No	Indikator	Percentage	criteria
1.	Feasibility Aspect of Content	91,60%	Very good
2.	Feasibility Aspect of Presentation	85,00%	Very good
3.	Aspects of Language	77,08%	Very good
Average		83,55%	Very good

The result of the research by the expert of learning media on contextual based entrepreneurship-based entrepreneurship materials showed percentage (83,55%) including very good category which means the content feasibility aspect, presentation aspect, and graphics aspect can be used in the learning process especially the competence standard to actualize attitude and entrepreneurial behavior. The results of individual trials on perceptions of students on entrepreneurial learning materials developed showed very good criteria (92.94%). The implementation of this individual trial aims to find out the students' initial opinions as users before the small group trial. Student perceptions consist of several categories of assessment indicators that are content feasibility, feasibility of presentation, language, and picture selection.

Table 11. Obtaining Individual Test Scores on Contextual Based Entrepreneurship Materials

No	Indikator	Percentage	criteria
1.	Feasibility Aspect of Content	91,60%	Very good

2.	Feasibility Aspect of Presentation	85,00%	Very good
3.	Aspects of Language	77,08%	Very good
Average		83,55%	Very good

The result of the students' perception on small group experiment stated that the contextual based entrepreneurship teaching materials that have been developed are stated with very good criteria with score (92,94%). In the small group test phase that is considered very good, it does not need to be revised so it can be continued on field trials.

Table 12. Obtaining Small Group Trial Scores of Contextual Based Entrepreneurship Materials

No	Indikator	Percentage	Criteria
1.	Feasibility Aspect of Content	94,44%	Very good
2.	Feasibility Aspect of Presentation	97,91%	Very good
3.	Aspects of Language	95,44%	Very good
Average		95,72%	

A limited field trial was conducted on 24 students of class X SMK Negeri 8 Medan. The result of students' perceptions on teaching materials that have been developed has very good criteria with score (95,11%). The assessment of this limited field trial is the final stage of the experiment of contextual based entrepreneurship teaching products. The results of this assessment conclude that the developed teaching materials received excellent responses for students as product users. Percentage of student perception on limited field trial can be seen in table 13. below.

Table 13. Limited Field Trial Scores of Contextual Based Entrepreneurship Teaching Materials

No	Indikator	Percentage	criteria
1.	Feasibility Aspect of Content	94,16%	Very good
2.	Feasibility Aspect of Presentation	94,01%	Very good
3.	Aspects of Language	96,87%	Very good
Average		97,91%	Very good

Based on the suggestions and improvements of material experts, learning design experts and learning media experts, researchers made some revisions to the developed learning media. The revisions are;

1. Expert material explains that teaching materials should be revised ie; a) Improve the size of the letters and should be the same for all chapters except for the title, b) The learning flow chart of the contents is not appropriate, c) Improving the concept map form, and must be consistent in the presentation of the material items, d) Fixing the tasks on the material with the student task at the end of the chapter, f) Deeply contextualize the material, g) Add cases that occur in textbooks.
2. The design expert of the lesson; a) Adding references / reading sources taken, and b) Adding a conceptual learning map.

3. Expert of learning media; a) Improving uniformity of type and size of letters and enlarged for easy reading, b) Improving the placement of images, and drawing can be placed in the middle, left and right margins, c) Adding references/reading sources taken, d) Improving the paragraph in the shifting aspects of the discussion, by inserting a connecting sentence, d) Fixing the problem on the test item. From the evaluation results will be used as material for product revision.

This is in line with Belawati's (2003) opinion that formative evaluation is defined as a program undertaken during the development process and production of teaching materials. In the development and production of teaching materials, formative evaluation is often done in the form of experimental material experiments before being used on targets. Meanwhile, Heinich et al in Belawati (2003) stated that the purpose of the testing of teaching materials is to know the weaknesses that the resource developers can make the necessary improvements and improvements before the teaching materials are produced. Concluded the benefits gained from the development of teaching materials is the concept presented easy to learn, understand and systematically. Contextual-based teaching materials provide students with the opportunity to learn at their own pace, to learn faster, to be independent and not to become bored as they are equipped with concept maps of learning, drawings, easy-to-understand material and various practice questions. The existence of individual tasks and group tasks make students better understand the material and play an active role in learning.

According to Belawati (2003) a teaching material is considered final after showing satisfactory results in achieving a predetermined goal. For this matter required product trial on learning process to know effectiveness of learning. To see the effectiveness of the analysis of the results of learning on 24 students who were taught by using teaching materials developed, and compared with student learning outcomes in the classroom that uses textbooks. Based on the analysis, the average score on the basic competencies using contextual based teaching materials is higher than the average score of students using textbooks. So it can be stated that there are differences in learning outcomes between classes using contextual-based teaching materials on learning outcomes using textbooks. In line with the opinion of Nurhadi, et al (2004) which states that contextual learning will encourage students to understand the material and embedded in the memory of students. This is explained Toyib, et al (2014) in his research that found that entrepreneurship teaching materials with Contextual Teaching Learning approach, more effectively used. Contextual-based teaching materials offer potentially powerful learning to improve the quality of student learning, developed also based on learning theory, then synergize in short-term and long-term memory and activated through the creation of external factors ie learning environments, that learning is more meaningful when material is linked to situations real-world students thus encouraging students to make connections between the knowledge it possesses with its application in life. Teaching materials developed in the theory of learning, in material presentation based on Bruner's theory of learning and learning events according to Gagne. Bruner's theory is used as the principle of the presentation of matter that starts from the easy thing gradually towards more complex material. In teaching materials, this presentation is shown in

the formulation of indicators that start from easy to difficult. The formulation of indicators as well as a reference presents the content of textbooks. Similarly, research Situmorang, et al (2015) under the title The Development of Innovative Chemistry Learning Materials for Bilingual Senior High School Students in Indonesia.

The results showed that the use of teaching materials developed to provide significant benefits and added value to students, especially as an independent material and significant added value to students, especially as an independent material. From the above explanation can be concluded that the development of teaching materials developed by using the design of Dick and Carey worthy of use as a source of learning in school. The same is also stated Purwati, et al (2015) with the title Development of Virus Based Learning Material Contextual Learning Approach in Improving Student Outcomes Class X High School concluded that the teaching materials students deserve to be used as a source of learning to class X high school model Dick and Carey which concluded that the teaching material of its development is worthy of use as a learning resource.

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