

JURNAL

PTK

PENDIDIKAN TEKNOLOGI KEJURUAN

Special Issue: International Conference Technology and Vocational Education and Training 6th 2019

E-ISSN 2621-1548

EDUCATION and **EDUCATION ENGINEERING**
TRAINING **MECHANICAL** **ENVIRONMENT**
VOCATIONAL ELECTRICAL
ENGINEERING **EDUCATION** **AUTOMOTIVE** **VOCATIONAL**
INFORMATION **ELECTRONICS** **STUDIES**
TECHNOLOGY
CIVIL AND BUILDING **CONSTRUCTION**



Diterbitkan Oleh : Program Pascasarjana
 Fakultas Teknik
 Universitas Negeri Padang



Jurnal Pendidikan Teknologi Kejuruan welcomes submissions that provide insight into current and key issues related to vocational education and technology. This journal provides a place for researchers and practitioners to discuss, pursue and promote knowledge in emerging and emerging areas of vocational technology education studies. The language of the manuscript can be in English, Indonesian, and Malay. There should be a critical discussion of new and significant issues and contributions to the related field. Articles can come from one of the following fields:

- Mechanical
- Electrical
- Electronics
- Automotive
- Information technology
- Civil and building construction engineering
- Environment
- Industrial
- Vocational studies

Chief Editor

Prof. Dr. Nizwardi Jalinus, M.Ed (Universitas Negeri Padang)

Managing Editor

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

Editors

Yaumal Arbi, S.T, M.T (Universitas Negeri Padang)

Syaiful Islami, M.Pd.T (Universitas Negeri Padang)

Rahmat Azis Nabawi M.Pd.T (Universitas Negeri Padang)

Dr. Ija Darmana, M.T (Universitas Bung Hatta, Indonesia)

Dr. Yahfizham (Universitas Islam Negeri Sumatera Utara)

Dr. Rice Novita, (Universitas Islam Negeri Sultan Syarif Kasim)

Vol 3 No 1 (2019): Special Issue ICTVET 2019

Chief Editor

Prof. Dr. Nizwardi Jalinus, M. Ed

It is my great pleasure to present to you this special issue containing selected extended papers originally presented at the **International Conference on Technical and Vocational Education and Training 2019 (ICTVET 2019)**, which took place in Padang, October 31, 2019. ICTVET 2019 received 95 papers. Each paper was reviewed by 2 program committee members' experts in the relevant field ensuring the publication of top-quality contributions. The peer-review process was based on the following criteria: relevance to conference themes, quality of the content, significance for theory or practice, quality of presentation or standard of writing and originality. The final program consists of 76 contributions were presented at the conference. Of those, 16 have been accepted to be included in this issue. I would like to thank all publication committee and reviewers for their hard work and for meeting the deadlines. In most cases there has been enough time for a round or two of revisions, I am confident, therefore, that the published papers have achieved a high standard in terms of both technical content and the quality of presentation. This special issue includes a study in Technical and vocational education and training area. I hope that all paper appears in this special issue can spark a new idea among educators and provide new gaps among researchers for better education all around the world.

Published: 2020-02-24

Contents of List

CONCEPT OF CURRICULUM EVALUATION IN EDUCATION PROGRAM OF ELECTRICAL ENGINEERING USING AUN-QA AS BENCHMARKING

Vice Pramutia Dolly, Riki Mukhaiyar

1-5

THE DEVELOPMENT OF KOLB LEARNING STYLE AND 4C's 21ST CENTURY SKILL INTEGRATION E-BOOK IN PEDAGOGY SUBJECT

Tiara Santika, Ganefri Ganefri, Nizwardi Jalinus, Syahril Syahril, Fahmi Rizal, Sukardi Sukardi, Rispendra Rispendra, Rahmat Azis Nabawi

6-9

ANALYSIS OF FACTORS FORMING THE STUDENTS' BUSINESS INTERESTS AT VOCATIONAL HIGH SCHOOL 2 PAYAKUMBUH

Fajar Maulana, Wakhinuddin Wakhinuddin, M. Giatman, Edidas Edidas

10-13

DEVELOPMENT OF MOBILE-LEARNING MEDIA ON BASIC ELECTRICITY AND ELECTRONICS SUBJECT

Mery Sumiati, Fahmi Rizal, Muhammad Anwar

14-19

NEED ANALYSIS FOR THE DEVELOPMENT OF KOLB AND 4C INTEGRATION LEARNING MODEL-BASED LESSON PLAN IN PEDAGOGY COURSE

Isnawati Isnawati, Nizwardi Jalinus

20-24

THE CONTRIBUTION OF PRINCIPAL LEADERSHIP STYLE, TEACHERS' PROFESSIONAL COMPETENCE AND SCHOOL CLIMATE ON THE QUALITY OF LEARNING OUTCOMES AT VOCATIONAL HIGH SCHOOL IN PADANG

Putri Purnomo Sari, Ganefri Ganefri, Muhammad Anwar

26-30

NEEDS ANALYSIS IN LEARNING MEDIA DEVELOPMENT BASED ON AUGMENTED REALITY (AR) FOR COMPUTER NETWORK INSTALLATION COURSES

Akrimullah Mubai, Kasman Rukun, M. Giatman, Edidas Edidas

31-35

NEEDS ANALYSIS: AN INTERACTIVE E-ASSESSMENT FOR BASIC DESIGN GRAPHIC COURSE

Sari Azhariyah, Ambiyar Ambiyar

36-40

A NEEDS ANALYSIS FOR THE DEVELOPMENT OF E-MODULES PROJECT-BASED LEARNING

Ismi Rahayu, Sukardi Sukardi

41-45

DEVELOPMENT OF COMPUTER LEARNING AND BASIC NETWORK E-MODULES

Satria Ami Marta, Suparno Suparno, Usmeldi Usmeldi, Devri Ramdhan Apriyus

46-49

THE DEVELOPMENT OF INTERACTIVE LEARNING MEDIA IN COMPUTER AND BASIC NETWORKS SUBJECT ON COMPUTER AND NETWORKS ENGINEERING OF SMKN 2 LUBUK BASUNG

Deni Ferdiansyah Putra, M. Giatman

50-54

TEACHING MATERIAL DEVELOPMENT ORIENTED ON THE SCIENTIFIC APPROACH OF 5M IN LEARNING AUTOMOTIVE BASIC TECHNOLOGY

Supriadi Supriadi, Suparno Suparno, M. Giatman, Edidas Edidas

55-59

ALTERNATIVE CONCEPTS TO IDENTIFY THE CHARACTERISTICS OF VOCATIONAL TECHNOLOGY EDUCATION CURRICULUM

Nadia Utari, Riki Mukhaiyar

60-63

VALIDATION OF MEDIA INTERACTIVE LEARNING IN VOCATIONAL HIGH SCHOOL

Devri Ramdhan Apriyus, Kasman Rukun, Asrul Huda, Satria Ami Marta

64-67

APPLICATION OF DATA MINING FOR ANALYSIS OF CONSUMER PURCHASE DATA ON SALES TRANSACTION DATA AT HALAL MART HNI HPAI DHARMASRAYA

Sri Kurnia Yuliarnis, Yeka Hendriyani, Denny Kurniadi, M. Giatman

68-75

A NEED ANALYSIS FOR EVALUATION MEDIA DEVELOPMENT OF THE PROJECT-BASED QUIZ CREATOR IN COMPUTER AND BASIC NETWORK SUBJECT

Deni Saputra, Sukardi Sukardi, M. Giatman, Edidas Edidas

THE DEVELOPMENT OF KOLB LEARNING STYLE AND 4C's 21ST CENTURY SKILL INTEGRATION E-BOOK IN PEDAGOGY SUBJECT

Tiara Santika, Ganefri, Nizwardi Jalinus, Syahril, Fahmi Rizal, Sukardi, Rispendra and Rahmat Azis Nabawi

Universitas Negeri Padang, Padang, Indonesia

* Corresponding author, e-mail: tiarasantika1995@gmail.com

Abstract: This research was based on the demands of the 21st century in which teachers should have 4 skills (critical thinking, creativity, collaboration, and communication). Teachers are required to change the way of teaching that initially (teacher-centered) turns into (student-centered) and able to participate to follow the development of technology. Therefore, E-book learning is needed that can present material pedagogy integrated with kolb learning and 4C's. This research aims to produce the final product in the form of valid e-book media learning, practical and effective in pedagogy subject. This was a research and development (Research and Development) research. This development research used ADDIE development model consisting of 5 stages which were Analysis, Design, Development, Implementation and Evaluation). Based on the results, e-book validation testing conducted by three validators, it obtained Aiken's score 0.9 with a valid category. The test results practicalities of the teachers and the students were 86% in the practical category. The effectiveness test results was 89.65%. Thus, it can be concluded that this research has produced a pedagogical e-book which is valid, practical and effective.

Keywords: 21st Century, 4C's, e-book and Pedagogy

Copyright © 2020 JPTK. All rights reserved

I. INTRODUCTION

Nowadays, 21st-century skills became one of the themes discussed. It is characterized by the widespread use of digital. Then, this has a significant effect to education, namely the change in the characteristics of students and learning management [1] *Book Review: 21 Century Skills-Learning for life in Our Time* is one that should be pursued facing educators in the 21st century to integrate learning with the development of ICT (Information and Communication Technology) as well as on the management of learning, so students become active. *Center for Curriculum Redesign* has identified four skills that must be possessed and studied learners to confront the 21st-century challenges: *critical thinking, creativity, collaboration, and communication* [2].

In his book entitled *21st Century Skills* to describe the competency framework of the 21st century (see figure 1) [1]. The ability of teachers in the 21st century are expected to have networking capabilities, administration, teaching and learning, development and quality assurance. In addition, teachers are also expected to collaborate with students, parents, friend profession and so on. In this 21st century, the teachers are required not only able do a good learning process in the classroom, but also required to be able to follow the changes in information and communication technology and utilize it in the learning process and the teachers must be able to continue to enhance its capabilities especially in the digital literacy [4].

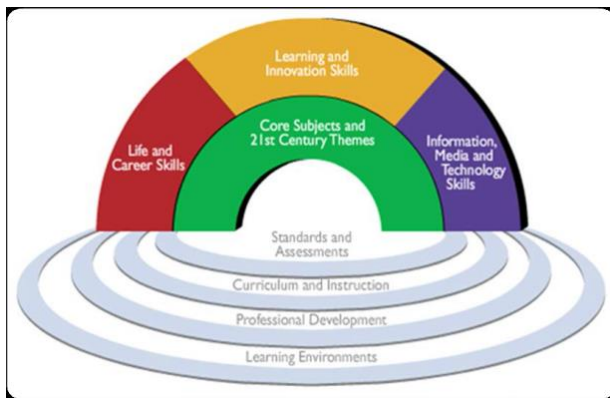


Figure 1. The Framework for the 21st Century competencies

The Education Laboratory (NCREL) and the Metiri Group [5] describe the learning skills of the 21st century. The digital era is not only focusing on digital literacy, high productivity, effective communication, and inventive thinking. However, 21st Century Skills are more than just technology literacy, but including proficiency in critical thinking, problem-solving, communication, and teamwork. Hence, teachers play an important role which the ability to be possessed of teachers in the implementation of learning ranging from the ability to open the lesson, to use strategies with methods/media/props, to expose the materials, to use the language that is easily understood and to interact with the students, to motivate the students, to organize the learning process, to draw the conclusions of learning, to provide reflection, assessment, and to use time effectively. Teachers should also be able to control the spread issues which the truth is unknown because sometimes these issues are not necessarily verified and may not necessarily conform to the norm. For this reason, the knowledge and information must be selected before consumed by the students in learning, and the teachers should be able to show their professionalism and have ethics in doing their teaching practice [6].

The development of Information and Communication Technology (ICT) in its use has significant influence and is expected to produce students who have four competencies: *critical thinking, creativity, collaboration, and communication*. Information technology (IT) the handling of information by electric and electronic (and electronic) mean. Here handling includes a transfer. Processing, storage and access, IT special concern is the use of hardware and software for these tasks for the benefit of individual people and society as a whole [7].

The above description makes clear that information technology (IT) as a place to move, manage, access, process information. In a society as a whole, it gives a good impact in the social context. Information and Communication Technology (ICT) gives a good influence on the learning process, for teachers and students. The availability of teaching materials in digital format makes the time-effective because learning without the latest technology updates spends much time. Moreover, the renewal of a printed book requires substantial funds for the purchase of paper and so on. Learning using ICT makes it look attractive, for example by displaying a voice in the form of video images, so that students become more enthusiastic and high motivated to learn. There is an improvement in student learning outcomes in critical thinking skills and the mastery of concepts after ICT media are applied in the classroom. In facing the 21st century to prepare students for future careers, teachers can integrate their learning with the use of ICT [8].

II. METHODOLOGY

The method used in this research was development research. Research development is a simplified term from *research and development* Research and Development (R & D). Research and development is a process of education to make development and validation of a product [9]. The subject was the e-book course pedagogy. The subjects of the research were Mechanical Engineering students of Universitas Negeri Padang and one lecturer in pedagogy subject as the respondents. The development model used in this research was the ADDIE development model. [10] ADDIE development model has five stages in its development: Stage I (*analysis*), Stage II (*design*), stage III (*Development*), Stage IV (*Implementation*), and stage IV (*Evaluation*) as in Figure 2.

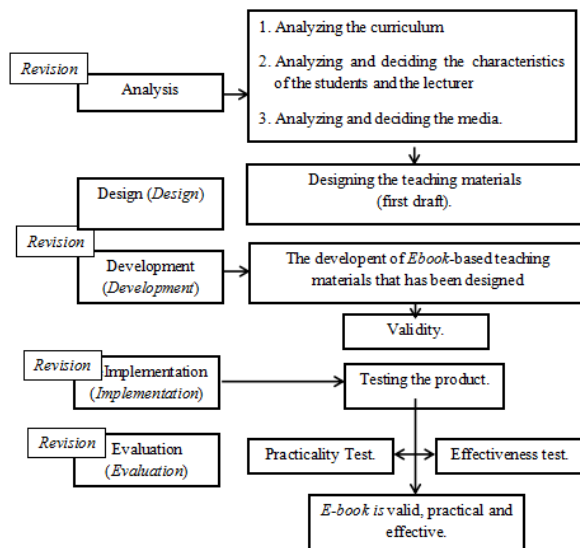


Figure 2. The Ebook-Based Teaching Materials Development Research Procedure

III. RESULTS AND DISCUSSION

This development research produced a product a pedagogical e-book. The materials contained in this media are concepts and principles of the new paradigm in learning which are one of the materials in the pedagogy subject. This E-book packed in the form of a .exe file extension or in the form of an application. The E-book Validity Test was obtained from sheet fulfilment by the validity with 0.9 category valid results. From the results of the validation, it also obtained some suggestions and comments, followed by a revision of e-book among other things, improvements to the menu customize icon. The practicality test of the e-book was done by filling the questionnaire practicalities by the lecturer of pedagogy subject and the students of mechanical engineering education consisting of 19 students. The test results practicalities obtained the average results of the student's practicality was 85% with a practical category. The practicality done by the teachers obtained 87% with a practical category. The effectiveness test of the interactive learning multimedia was done by looking at classical learning mastery after using this media. This classical learning mastery was based on the student learning outcomes through the posttest of 19 students of mechanical engineering education. The results showed that the posttest classical completeness was 89.65% with an effective category.

IV. CONCLUSION

Based on the results of the research, it can be concluded that this development research produced a valid, practical, and effective e-book. The details of the Interactive learning Multimedia development results can be seen as follows.

1. The validation of the use of interactive learning multimedia obtained from three validators that have been developed was 0.9 with a valid category. Thus, the e-book developed was valid to use it in the learning process.
2. The level practicalities of e-book practicality which obtained from the e-book for the students were 85% in the practical category and the teachers were 87% in the practical category. Thus, the developed interactive learning multimedia was already practical to use it in the learning process.
3. The effectiveness of the use of the interactive learning multimedia derived from classical completeness level students was 89.65% that the developed interactive learning multimedia was effective to use in the learning process.

REFERENCES

- [1] Murat Ataizi & Mustafa Donmez. *Book Review: 21st Century Skills -Learning for Life in Our Times*: journal.Turkey: Anadolu University Contemporary Educational Technology, 5 (3), 272-274. 2014.
- [2] Maya Bialik dan Charles Fadel. *CCR (Center for Curriculum Redesign) Skill for the 21st Century: what should students learns*. 2015.
- [3] Trilling, Bernie dan Fadel, Charles. *21 Century Skills: Learning for Life in Our Times*, John Wiley & Sons. Sun Fransisco CA. 2009.
- [4] Nurhadi, Didik dan Lyau. *A retrospective on educational policies and their implementation in the vocational teacher education provision*. Malang: UNM. 2017.
- [5] Ledward, B.C., dan D. Hirata. *An Overview of 21 st Century skill A Summary and case* : Honolulu: Kamehameha Schools-Research & Evaluation. Journal. 567. 96813. 2011.

- [6] Majid, Abdul. *Lesson Plan Developing Competency Standards Guru*. Bandung: PT Remaja Rosdakarya. 2013.
- [7] Jalinus, Nizwardi. *Media and Learning Resources*. Jakarta: Kencana. 2016.
- [8] Dillon, Lobo. *21st Century Competencies and ICT Integration in the Classroom: Preparing Students for Careers in the Current and Future Employment Market*. Department of Curriculum, Teaching and Learning Ontario Institute for Studies in Education. University of Toronto, pp. 1-98. 2016.
- [9] Sugiyono. *Educational Research Methods Quantitative, qualitative approach, dan R&D*. Bandung: Alfabeta. 2015.
- [10] Robert Maribe Branch. *Instructional Design: The ADDIE Approach*. University Of Georgia. USA. 2009.
- [11] S. Syahril, N. Jalinus, R. A. Nabawi, and Y. Arbi, "The Create Skills of Vocational Students to Design a Product: Comparison Project Based Learning Versus Cooperative Learning-Project Based Learning," *Adv. Soc. Sci. Educ. Humanit. Res.*, vol. 299, no. 5th UPI International Conference on Technical and Vocational Education and Training (ICTVET 2018) The, pp. 316–320, 2019.