International Journal of Multidisciplinary Research and Growth Evaluation.

Improving Drawing Competence Using Autocad Software for Students of SMK Plus Khoiriyah Hasyim Tebuireng Jombang, Indonesia

Agus Wiyono [1*], Soeparno [2], Nurul Makhmudiyah [3], Abdiyah Armuji [4], Nur Luthfiatus Solikah[5]
[1-5] Department of Urban and Regional Planning, Faculty Engineering Universitas Negeri Surabaya, Indonesia

* Corresponding Author: **Agus Wiyono**

Article Info

ISSN (online): 2582-7138
Volume: 06
Issue: 03
May-June 2025
Received: 14-04-2025
Accepted: 15-05-2025
Page No: 1462-1464

Abstract
This study focuses on enhancing students' drawing competencies through AutoCAD training at SMK Negeri 1 Baureno Bojonegoro and SMK Plus Khoiriyah Hasyim Tebuireng Jombang. The high cost of original AutoCAD software and limited familiarity among vocational students pose significant challenges. To address this, a community service initiative by Surabaya State University (Unesa) provides training using AutoCAD software, aiming to improve both student competencies and teacher professional development. The training employs direct instruction and cooperative group learning models, supplemented by project-based activities and email follow-ups. This initiative also responds to the Directorate of Vocational High Schools' Competency Competition (LKS) requirements, which now mandate AutoCAD proficiency. The program seeks to bridge the gap between manual drawing skills and digital competencies, ensuring students meet industry demands in Building Information Modeling (BIM).

Keywords: Autocad Training, Vocational Education, Drawing Competence, Building Information Modeling (BIM), Teacher Professional Development

1. Introduction

SMK Negeri 1 Baureno Bojonegoro has a building drawing subject with educational subjects and drawing practice using Autocad. It is important to improve the competence of manual drawing student to have drawing competence using the Autocad application. Drawing using a computer is divided into 2D (two-dimensional) drawing and advanced 3D (three-dimensional) drawing. 3D drawing is a product of the appearance of a design drawing, this drawing will show the beauty and at the same time show the shape of a building realistically because it can be rendered like a natural drawing. Likewise, the Autocad application is a drawing application based on Building Information Modeling (BIM). The benefit of the BIM application is reducing construction time because it can obtain the room area and building volume. The problem with drawing using the Autocad application is that the original software is expensive, so it is difficult for Vocational High Schools to buy the software, especially since studentand students are not yet familiar with using the Autocad application.

2. Problem

As a solution, in an effort to increase the drawing competence of studentat Vocational High Schools, Autocad software from the PKM Team is used. In order to increase competence which is an implementation of self-development for teachers. So at SMK Plus Khoiriyah Hasyim Tebuireng Jombang and Surabaya State University are working together to hold training on the use of the advanced Autocad application, the results of which will be used for learning at SMK Plus Khoiriyah Hasyim Tebuireng Jombang and at the same time as increasing teacher competency. Training methods include discussions, questions and answers and project work both in groups and independently and learning uses direct and group models and continuity will use communication via email. The problem with drawing using the Autocad application is that the original software is expensive and the Autocad application is still only used in the Vocational High School environment, so there are still many studentat Vocational High Schools who still use the AutoCad application in their lessons.

Therefore, it is one of the considerations why SMK Plus Khoiriyah Hasyim Tebuireng Jombang is a training place for drawing teachers. Due to the demands of the times and technological developments which require drawing studentto increase their competence, especially in the use of applications that develop according to needs. This problem also arose when the Directorate of Vocational High Schools created a School Competency Competition (LKS) Program at the Middle level both at national and regional levels using the Autocad application, which previously still used the Autocad application. This first happened this year, there were very few registrants for the Student Competency Competition at both regional and national levels. This is a consideration for the Unesa Community Service Team providing training to Vocational High School (SMK) studenton drawing using the Autocad application.

3. Methods and Discussion

In order to improve professional competence which is the implementation of self-development for teachers, Surabaya State University in collaboration with SMK Plus Khoiriyah Hasyim Tebuireng Jombang held training on the use of *software Autocad* the results of which will be used for learning at Vocational Schools in an effort to increase the competence of studentat SMK Plus Khoiriyah Hasyim Tebuireng Jombang as well as for learning for students in the Building Modeling and Information Design (DPIB) skills competency. Based on these problems, we, the PKM Team, will provide increased drawing competency using the Autocad computer application to studentat SMK Plus Khoiriyah Hasyim Tebuireng Jombang.

The method used for this activity is training which will be carried out at SMK Plus Khoiriyah Hasyim Tebuireng Jombang including;

- The learning model is direct learning (*Direct Instruction*) and group (*cooperative*).
- Each *chapter* (Chapter) is designed for question and answer discussions and group/independent assignments.
- Evaluation will be carried out on every training day. Continuing discussions and questions and answers will be held via email (distance learning).

The results of this PKM activity are the work of the training participants which can be seen as below:

1. The training participants which were previously targeted at only 20 student turned out to be 23 participants in practice
2. Drawing learning modules are arranged using the Autocad application, each participant (teacher) gets a Autocad module book.
3. Increasing professional competence for studentand providing competency certificates.
4. Participants (teachers) can draw and teach using the Autocad application
5. Increased cooperation between SMK Plus Khoiriyah Hasyim Tebuireng Jombang and Surabaya State University will be enhanced in other activities.

Fig 1: Training Opening

Fig 2: Photo with the training participants

Fig 3: Training activities

4. Rreferences

1. Baedhowi. Strategi peningkatan kualitas dan kompetensi guru [Internet]. 2008 [cited 2012 Mar 23]. Available from: http://www.scribd.com/doc/58439711/Dirjen-PMPTK-Strategi-Peningkatan-Mutu-Guru
2. Bradley E, Conner C, Geoff S. Developing student developing school. London: David Fulton Publisher; 1998.
3. Brito A. Autocad 3D: architecture, buildings, and scenery. Birmingham: Packt Publishing; 2008.
4. Brown BL. Vocational teacher professional development. Practice Application. 2000;11.
5. Depdiknas. Peraturan Pemerintah Nomor 19 Tahun 2005 tentang Standar Nasional Pendidikan. Jakarta: Depdiknas; 2005.
6. Depdiknas. Undang-Undang Republik Indonesia Nomor 14 Tahun 2005 tentang Guru dan Dosen. Jakarta: Depdiknas; 2005.
7. Hess R. Autocad foundations: the essential guide to learning Autocad 2.6. Burlington: Elsevier; 2010.
8. NRC. National science education standards. Washington: National Academic Press; 1996.
9. Rektor Unesa. Laporan kinerja tahun 2012 Universitas Negeri Surabaya: disampaikan pada rapat senat terbuka Universitas Negeri Surabaya dalam rangka dies natalis ke-48 tanggal 27 Maret 2012. Surabaya: Universitas Negeri Surabaya; 2012.