



Improvement of Teachers' Ability in Creating Modules with Information Technology on Vocational High Schools West Sumatera

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Abstract

The purpose of this analysis was to look at the teacher's ability to improve the teacher's ability to develop online-based teaching materials. The transition period between the pandemic and after requires strategies to ensure that the learning transition continues to provide students with comfort in their learning. The activity drew 30 people, all of whom were members of the West Sumatra Automotive Engineering Subject Teacher Consultation. They are divided into two categories: online and offline. The online module work created by the participants will be analyzed to determine the effectiveness of the learning and the teacher's ability to create online modules. As a result, participants can create effective learning modules. However, it takes longer for the presenters to teach those who are online how to complete the task.

Keywords

Analysis, teacher ability, module, online, project-based learning,

Abstract

This analysis was carried out with the aim of seeing the ability of teachers to improve teachers' ability to develop online-based teaching materials. The transition period between the pandemic and after it requires a strategy so that the learning transition continues to cause comfort for students in learning. The activity involved 30 participants, namely members of the West Sumatra Automotive Engineering Subject Teacher Conference. Where they are divided into 2, namely they are online and offline. To see the effectiveness of learning, the work of online modules made by participants will be analyzed to conclude the teacher's ability to create online modules. As a result, participants can make learning modules well. But for online ones, it takes extra time for the presenter to teach them in completing the task.

Keywords

Analysis, teacher ability, modules, online, project-based learning

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Submitted : October 10, 2024. Accepted : December 06, 2025. Published : December 31, 2025.

INTRODUCTION

Along with the development of technology and the current pandemic, forcing the learning system to switch from offline to online. This requires teachers' ability to manage learning, starting from preparing teaching tools, evaluation, to reflection on online-based learning. The current teacher professional organization is the Subject Teacher Conference (MGMP). Based on observations during July-December 2023 along with the visit of guidance students (PLK automotive engineering), the members of the automotive engineering MGMP numbered ±170



42 people. MGMP regrets that the activities of the West Sumatra automotive engineering MGMP
43 have been vacant for a long time due to the lack of funding, facilities, and the Covid-19 pandemic
44 with a new policy, namely online learning which of course saves time and increases the
45 workload of teachers, especially in preparing teaching tools. So far, the funding for activities
46 has only come from members' contributions for each activity, there is no assistance from the
47 government so that each activity is only attended by 5 or 6 members.

48 Discussions and interviews were also conducted with the chairman of the Padang City
49 MGMP and MGMP members from West Pasaman. The same incident in the city of Padang also
50 occurred in West Pasaman. Once, the implementation of MGMP was tried using online zoom,
51 but most members were constrained by the data package they had, so only a few MGMP
52 members actively commented. The reality is that teachers have difficulty in carrying out
53 learning and providing learning resources, especially during the Covid-19 pandemic. This of
54 course needs special attention, so that the quality of learning can still be improved in any
55 condition considering that the goal of vocational schools is to produce skilled and ready-to-use
56 workers according to the needs of the industry.

57 The purpose of this activity is to provide insights, knowledge and skills about the
58 application of technology in designing digital-based learning processes to support current
59 learning and its applications through digital learning training such as training and assistance in
60 making media LKPD, making evaluations, and reflection on online-based learning. In addition
61 to the preparation of LKPD, students must be involved in learning, so that they are able to instill
62 a lifelong learning attitude. Nowadays, in creating long-life learning for students, it is necessary
63 to bring up a new perspective on teaching patterns. Previous research has mentioned it as a
64 cognitive theory for teacher learning to enhance new professional knowledge [1], critical
65 thinking for teachers who are proficient in managing the classroom [2]. Various views of
66 teachers integrate several teaching models [3-5] and social-constructivist models for teachers
67 to learn in communicating in teaching practice [6].

68 In encouraging a learner, teachers need to design and manage learning by involving
69 students broadly. It further explains [7] the importance of learning that can stimulate cognitive
70 knowledge and psychomotor skills, then problem-solving and teamwork [8]. Responding to
71 these demands [9] it is stated that the learning process that requires students to learn actively
72 is project-based learning. In [10] defines Project Based Learning as a model that organizes
73 project-based learning, through project work learning, students' creativity and motivation
74 increase [11]. Project work can be seen as open-ended contextual activity-based learning, and
75 is part of a learning process that places a strong emphasis on problem-solving [12]. Finally,
76 improving students' cognitive, affective and psychomotor abilities. Based on some of these
77 theories, a lesson is not only oriented to the current learning needs of students, but must be
78 oriented to future life patterns, so that students are able to become lifelong learners. Therefore,
79 the existence of this online-based module training is an effort to equip teachers in preparing
80 learning materials and methods, for the sake of embedding long life learning in students.

81 Investigation includes the process of designing, making decisions, finding problems,
82 solving problems, covering, and building models. During the completion of the project,
83 participants are given autonomy in making their own choices, working under the supervision
84 of the presenter, and being responsible for the results they achieve. Therefore, hand outs, LKS,
85 practical work instructions, are presented in the PjBL module that is made. Then the aspect of
86 realism where the learning process must be able to provide realistic feelings to students,
87 including in choosing topics, tasks and roles in the context of work, work collaboration,
88 products, customers, and product standards.

METODOLOGY

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90 To determine the method of implementation of this service activity, the service team first held
 91 a discussion with the chairman of MGMP Padang City as the host of the activity and the principal of
 92 SMK N 8 Padang was happy to give recommendations for his school as a place to implement and
 93 was ready to accommodate all teachers from MGMP West Sumatra majoring in automotive. Based
 94 on the agreement with the partners, this activity will apply the method of lectures, demonstrations,
 95 exercises in an effort to complete the project, presentation and project discussion. Meanwhile, the
 96 evaluation process is carried out by providing a pretest in the form of a questionnaire about
 97 teachers' knowledge in the field of communication technology-based learning, including online
 98 learning and telling their experiences so far. This was done to get an idea of the solution that would
 99 be provided as a follow-up to the results of observation and discussion with vocational school
 100 teachers majoring in automotive and conducting a post test at the end of the activity. This activity
 101 was attended by 30 participants spread across the province of West Sumatra, with 15 participants
 102 being carried out online and 15 participants being carried out offline. Meanwhile, the materials
 103 presented in this training are introduction to online-based learning, training and assistance of
 104 information technology-based interactive methods, training and assistance of information
 105 technology-based interactive methods, training and assistance in preparing teaching materials
 106 and jobsheets based on project-based learning, Creation of information technology-based
 107 teaching materials and the creation of project-based learning teaching materials, Assistance in
 108 making online-based modules, Training in making online-based questions (kahoot.it), Assistance
 109 in online modules.

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RESULTS AND DISCUSSION

111 This community service activity was carried out using an online and online format with a
 112 total of 30 participants. Where participants from the city of Padang as many as 15 teachers will
 113 come directly to the training site, namely the labor of the Department of Automotive
 114 Engineering, FT UNP, and participants from outside the city of Padang as many as 15
 115 participants will be given material online. The venue for this activity will be held from 13 – 14
 116 and 19 – 20 August 2024, with documentation as seen in figure 1. When conducting training
 117 and mentoring, the focus we do is to solve the problems that we have stated before, namely this
 118 activity is intended so that teachers have adequate insight into technology and information
 119 systems. With this insight, teachers have the ability to predict the methods and steps that will
 120 be taken to apply learning properly. Insight into ICT can stimulate teachers to explore with
 121 technology that can be applied in learning. So far, teachers have had modules from the Ministry
 122 of National Education for face-to-face learning, but teachers do not have online-based media
 123 that is applied in the learning process. In this training and mentoring, teachers will be taught
 124 how to create learning management to improve learning both offline and online. The work of
 125 the participants in this training and mentoring is online-based technology as seen in figure 2.



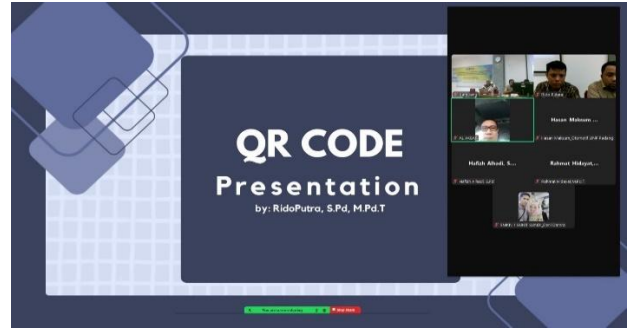
a. The opening was carried out by the chairman and the team



b. Providing search engine optimization materials



c. Providing materials via google drive



d. Providing material about QR codes



e. Provision of materials on AI to support learning



f. Provision of material on digital-based teaching materials



g. Group Photo at the closing of AI material



h. Group photos at closing

Figure 1. Documentation of the implementation of activities

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a. Results of the assignment from participant 1



b. Results of participant 2



c. Results of participants 3

Figure 2. Results that have been achieved by the trainees

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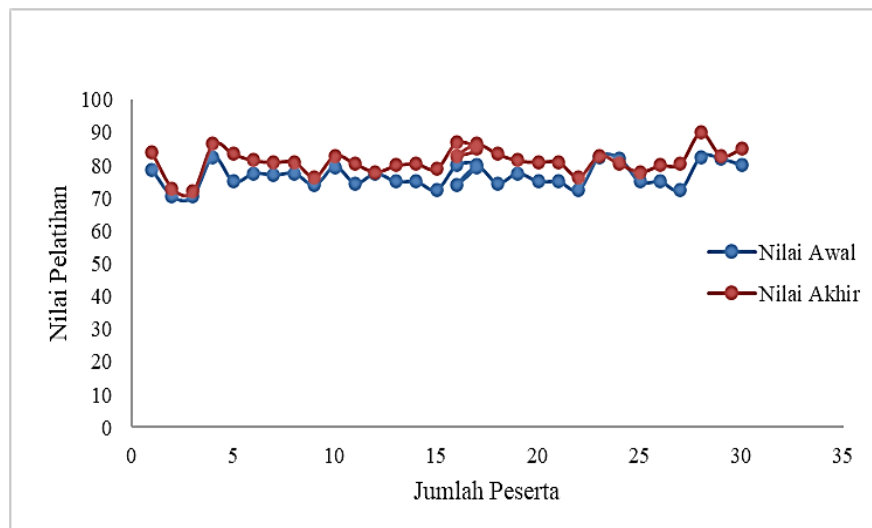


Figure 3. Results of pre- and post-training scores

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131 Meanwhile, the increase in participants' ability to make online-based learning modules has
132 increased as seen in figure 3. In the process of concluding scores, observation of work process
133 parameters and psychomotor skills was carried out by 3 observers, namely the teaching team
134 who taught this course. This is intended so that observations can be carried out carefully and
135 produce accurate psychomotor data. The three observers have equalized their perceptions of
136 the assessment, the things that should be assessed, and the scores. As a result, the scores of the
137 three observers were summed up, then divided by three. So that the score in Table 3 is the
138 average score of the three observers, and is the value of the student's psychomotor domain.
139 Where, participants experienced a fairly good increase with an average increase of 4 or 65%
140 points in creating online-based learning. There was only 1 participant who experienced a slight
141 difficulty because they did not have enough basis for the use of ICT. So that more mentoring is
142 carried out by the team, with the aim that the participants do not give up and can produce
143 products in their learning. This is as suggested by [13] for technical educators two instruments
144 used for psychomotor assessment, since the assessment of the work process includes the
145 selection of tools, introduction, operation of tools, work plans, work procedures, and
146 modification of tools and materials. Then [14] suggests psychomotor analysis using
147 psychomotor skills as security and time use. For the evaluation process, [15, 16] suggest using
148 a likert scale or evaluation score with a clear parameter evaluation. So psychomotor assessment
149 in this service is carried out using the parameters of the work process and the competence of
150 psychomotor skills, while the previous psychomotor assessment grid has been explained to
151 students in the module made. Psychomotor scores were obtained from videos of project
152 completion activities carried out by participants. Then for high order thinking as stated [17], in
153 this training it was obtained that the crucial thing of the work process was carried out in
154 accordance with the analysis procedures in the training

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CONCLUSION

156 From this community service activity, it can be concluded that the ability of MGMP teachers
157 majoring in Automotive Engineering can be improved by implementing a project-based
158 training process. This means that in the training process, there is a gap between delivering
159 material and doing it directly by the participants. In this training, the increase in trainees
160 increased by 65%. The training that has been carried out is weak if it is not supported by
161 computer equipment support in completing the project.

162

163 **Acknowledgement**

164 This service is funded by LPPM UNP through the 2024 campus Intellectual Product Business
165 Development Program (PPUPIK) scheme with a contract number. 2349/UN35.15/PM/2024

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