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DEVELOPMENT OF SELF-REGULATED LEARNING IN THE PROJECT-BASED HYBRID LEARNING MODEL TO IMPROVE SELF-REGULATED LEARNING

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Abstrak

Pada kurikulum merdeka belajar kampus merdeka saat ini pembelajaran pada Perguruan Tinggi telah bergeser berbasis digitalisasi internet. SPADA yang akan dikembangkan merupakan aplikasi yang dimiliki oleh Universitas Wijaya Putra yang beralamatkan pada spada.uwp.ac.id. Perpaduan antara *project based learning* yang menerapkan *hybrid learning*. Rumusan masalah, bagaimanakah kelayakan pengembangan model *project based hybrid learning* berbasis aplikasi SPADA untuk pembelajaran mahasiswa?; dan bagaimanakah model *project based hybrid learning* berbasis aplikasi SPADA dapat meningkatkan kemampuan *self regulated learning* mahasiswa?. Tujuan dari penelitian ini adalah: Menghasilkan kelayakan pengembangan model *project based hybrid learning* berbasis aplikasi SPADA terhadap pembelajaran mahasiswa dan Menjelaskan model *project based hybrid learning* berbasis SPADA dalam meningkatkan kemampuan *self regulated learning* mahasiswa. Metode penelitian menggunakan pendekatan eksperiman dengan pretest dan postest. Berdasarkan hasil penelitian yang dilakukan dapat disimpulkan bahwa model *project based hybrid learning* berbasis aplikasi SPADA untuk meningkatkan kemampuan *self regulated learning* mahasiswa Universitas Wijaya Putra sangatlah efektif. Hal tersebut dikarenakan pada kemampuan *self regulated learning* untuk indikator penetapan tujuan mengalami peningkatan 0,98, untuk indikator penetapan lingkungan mengalami peningkatan 0,90, untuk indikator strategi tugas mengalami peningkatan 1,06, untuk indikator manajemen waktu mengalami peningkatan 1,32, untuk indikator bantuan mencari mengalami peningkatan 1,81, dan untuk indikator evaluasi diri mengalami peningkatan 1,14. Implikasi temuan penelitian ini memperkuat bahwa pengetahuan dan keterampilan kemampuan *self regulated learning* sangatlah diperlukan untuk mendukung model dan proses pendidikan yang semakin mendisrupsi cara-cara tradisional dengan mengetahui pemilihan sumber belajar secara digital dan dapat mendorong adanya upaya untuk meningkatkan kemampuan pada kemampuan *self regulated learning*.

Kata Kunci: Pembelajaran Hibrida Berbasis Proyek; Pembelajaran yang Diatur Sendiri; SPADA.

Abstract

In the current independent learning curriculum of the independent campus, learning in Higher Education has shifted to being based on internet digitalization. SPADA, which will be developed, is an application owned by Wijaya Putra University, which is located at spada.uwp.ac.id. The combination of project-based learning that implements hybrid learning. The problem formulation is formulated: How is the feasibility of developing a project-based hybrid learning model based on the SPADA application for student learning? How can the project-based hybrid learning model based on the SPADA application improve students' self-regulated learning abilities? This study aims To produce the feasibility of developing a project-based hybrid learning model based on the SPADA application for student learning and To explain the project-based hybrid learning model based on SPADA in improving students' self-regulated learning abilities. The research method uses an experimental approach with pretest and posttest. Based on the research results, the project-based hybrid learning model based on the SPADA application to improve the self-regulated learning abilities of Wijaya Putra University students is very effective. This is because the self-regulated learning ability for the goal-setting indicator has increased by 0.98, the environment setting indicator has increased by 0.90, the task strategy indicator has increased by 1.06, the time management indicator has increased by 1.32, the help-seeking indicator has increased by 1.81, and for the self-evaluation indicator has increased by 1.14. The implications of the findings in this study reinforce that knowledge and skills in self-regulated learning abilities are very much needed to support educational models and processes that are increasingly disrupting traditional methods

by knowing the selection of digital learning resources and can encourage efforts to improve abilities in self-regulated learning abilities.

Keywords: *Project-Based Hybrid Learning; Self-Regulated Learning; SPADA.*

1. INTRODUCTION

Improving the quality of education in Indonesia is always done by improving education following the changes and developments in life that are currently occurring. In the current industrial era, 4.0, which is marked by advances in information technology that have penetrated the world of education, lecturers are required to implement learning through technology.

In the current independent learning curriculum and independent campus, higher education has shifted to being based on internet digitalization. The internet is a result of civilization and should be used by students to form positive activities. Students must have the skills to select and sort information because of the increasing challenges of information technology and new communication styles. Education plays an important role in welcoming the era of society 5.0. because it aims to create a society that is intelligent, has character, and is humane.

The current online learning system has changed learning resources from print to digital; the learning process can be done anywhere and anytime. Two methods of implementing learning are used in the current online learning system: blended and hybrid (Astuti & Sari, 2020). The method implementing learning using blended learning is a learning method that combines online learning processes using synchronous methods using teleconferencing applications, while the asynchronous method is online learning using digital learning resources and indirect assignments; digital learning resources and assignments can be in the form of video, audio, and digital text. The hybrid learning method is learning that combines online and offline learning activities at the same time.

SPADA (Online Learning System) is an online learning system developed as part of KemndikbudRistek's independent learning initiative. SPADA was developed using an approach and paradigm from an open learning environment. In principle, SPADA emphasizes two things: direct and indirect learning systems. The direct learning system requires direct interaction between lecturers and students, such as through the Online Learning Program (Priyambudi & Murdani, 2020).

In SPADA, there is a video conference so that lecturers and students can interact online and offline digitally. Digital learning resources in the virtual class application can be text, images, articles, videos, audio, or a combination of various media. Learning resources from other sites can be added to digital learning resources as a form of enrichment of materials or learning supplements that can support the achievement of learning objectives. Lecturers should prepare semester learning plans, lecture contracts, and digital learning resources in the SPADA application.

Learning in the Industrial Revolution 4.0 era is carried out through the online learning system (SPADA). Many people know SPADA as e-learning, which is one of the popular interactive media for virtual education. SPADA is important because of the development and progress of current technology, as well as students' needs for speed of access, optimization of time, convenience, and supporting facilities.

The SPADA that will be developed is an application owned by Wijaya Putra University, located at https://spada.uwp.ac.id is a learning management system accessed via the web and mobile, making it easier for lecturers and students to use learning through SPADA. The development of SPADA to be used using hybrid learning, which Some students can access through class and some students can access from various places at the same time; here is the

appearance of SPADA that will be developed in hybrid learning to improve students' self-regulated learning as seen in Figure 1 below.

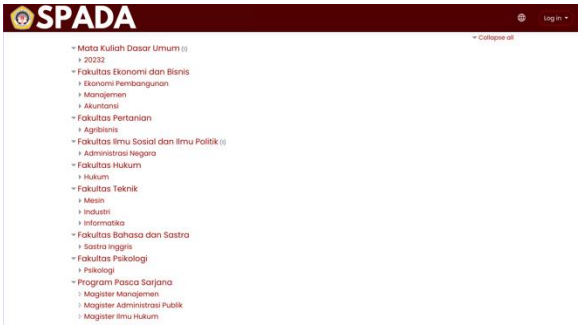

Figure 1. SPADA

The project-based hybrid learning model is more effective in developing scientific skills, more enjoyable, encourages motivation, and acquires theoretical concepts through project-based assignments, where students are directly involved in learning and experiments with real problems (Martín et al., 2021). It is a breakthrough in developing high-level thinking skills for engagement in learning.

The combination of project-based learning that implements hybrid learning is learning in a joint time between online and offline. The project-based hybrid learning model overcomes the problem of using a long time in project learning, which often takes a long time to complete a project on one topic. The following displays the project-based hybrid learning model lecture in the English course at Wijaya Putra University, as seen in Figure 2.

Figure 2. Learning Process

Project-based learning is an educational methodology that emphasizes active student involvement and learning through real-world projects. In Project-based learning, students engage in active exploration and inquiry-based learning, gaining information and skills in a collaborative setting. Unlike conventional classroom learning that tends to present material passively, Project-based learning encourages students to participate actively in their learning process (Al-Kamzari & Alias, 2024). In the project-based learning approach, the function of the lecturer is described in various ways, including as a conductor, trainer, or facilitator, and creating educational materials for Project-based learning strategies by implementing various learning strategies.

The application of the Project-based learning approach has a real impact on students' critical thinking skills in English courses; for example, the Project-based learning paradigm affects students' critical thinking skills on topics related to speaking (Ardiansah, 2023). Given the explanation above, the author states that the Project-based learning model is a learning model that emphasizes that students should be able to explore information and gain knowledge about learning English by working on a project where

students will produce speaking skills in English courses.

Differentiated learning can be done in various ways, including using self-regulated learning in students. Self-regulated learning is the ability of students to regulate their learning process. This ability includes setting goals, planning, implementing, and evaluating the learning process (Supriyono et al., 2020). Students with high self-regulated learning abilities tend to be more successful in their learning process (Zain & Lindinau, 2022).

Self-regulated learning helps students organize many activities in their lives; self-regulated learning is important for students because it combines academic demands with demands in the work environment, so it often becomes a more complex challenge. This condition requires students to be able to have efficient time management, be able to continue to increase productivity in the academic field, be able to manage stress management, be able to improve the quality of life by maintaining a balance between academics and social life, develop multitasking skills, develop careers, and increase adaptability to various challenges.

Previous research has shown that an intelligent learning environment can support students in the self-regulated learning process (Gambo & Shakir, 2021). This learning process means that students become active and reflective of their learning process, which requires both their will and skills to succeed. The skills needed to have self-regulated learning are cognitive, metacognitive, and motivational components. Cognitive ability refers to conscious mental activity and includes thinking, reasoning, understanding, learning, and remembering. Metacognitive ability is the awareness of one's awareness or the process used to plan, monitor, and assess one's understanding and performance. Motivational ability is a self-perception that is competent, efficacious, and autonomous (Khiat & Vogel, 2022).

Implementing the independent curriculum reflects the spirit of self-regulated learning, which has the flexibility to determine learning methods and motivations where lecturers play a role in encouraging and developing independent learning to acquire competence and align knowledge and skills. Student-centered learning is characterized by independently regulated learning, influencing increased self-confidence in exploring, identifying, and practicing using various student learning styles. Self-regulated learning is the ability of individuals to manage and control themselves to condition their learning situations to achieve their own learning goals (Amiruddin et al., 2023).

The formulation of the problem in this study is: How is the feasibility of developing a project-based hybrid learning model based on the SPADA application for student learning? How can the project-based hybrid learning model based on the SPADA application improve students' self-regulated learning abilities? This study aims To produce the feasibility of developing a project-based hybrid learning model based on the SPADA application for student learning and To explain the project-based hybrid learning model based on SPADA in improving students' self-regulated learning abilities.

2. METHOD

The research method uses an experimental approach with one group pretest and posttest. Before the treatment, the research subjects were given a pretest first, and at the end of the learning, the subjects were given a posttest. In other words, experimental research examines the effectiveness of the project-based hybrid learning model based on online learning programs in improving students' self-regulated learning abilities. Fifty-three students are taking English courses in the even semester of the 2023/2024 academic year at Wijaya Putra University. The data analysis

technique used in this study is the Wilcoxon signed rank test (Frey, 2023), comparing the average pretest with the posttest. The approach uses the ADDIE Analysis, Development, Implementation, and Evaluation design (Molenda, 2003). The stages of the research activity flow are as follows:

Figure 3. Research Stage

Analysis Stage: 1) Analyze the level of students' self-regulated learning by filling out the pretest; 2) Analyze the needs of lecturers related to obstacles in implementing SPADA-based learning by observing the level of students' self-regulated learning through observation, interviews, and document collection; 3) Analyze the needs of students to find out the obstacles in implementing SPADA-based learning by observing the level of self-regulated learning through observation, interviews, and document collection. Design Stage: 1) The research team designed lecture activities. After obtaining the initial data analysis, a learning model was designed by formulating learning objectives in the RPS. The following is a picture of the synchronous mode and the SPADA interface that will be used.

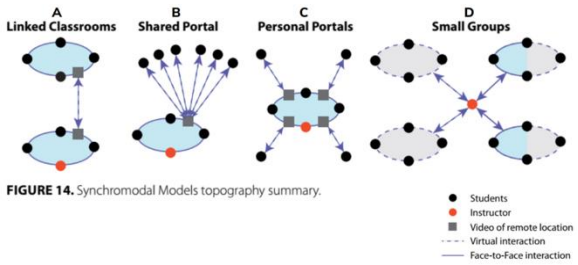

Figure 4. Method Hybrid Learning

Development stage: 1) Project-based hybrid learning model as a digital learning model, namely creating and installing hybrid classes, preparing SPADA, preparing digital materials for lecturers on SPADA, creating SOPs and user manuals, taking into account the level of student self-regulated learning that has been measured by pretest. Implementation Stage: Everything that has been developed, from analysis to development, is then utilized in learning English courses in the even semester of the 2023/20242023/2024 academic year, with 53 students registered for the English course.

Evaluation Stage: To see whether it is effective, especially in improving student self-regulated learning, by providing a posttest and then analyzing the pretest and posttest data to see the effectiveness of implementing the SPADA-based hybrid learning project-based model using the SPSS program. Revisions are made to improve or perfect and assess the improvement of student self-regulated learning.

Data collection was conducted qualitatively through observation, interviews, and document studies conducted with the Head of Study Program (KPS) related to the general description of student self-regulated learning as well as criticism and suggestions on its implementation, while quantitative data was in the form of analysis of pretest and posttest results of self-regulated learning measuring instruments using the OSQL (Online Self-Regulated Learning Questionnaire) measuring instrument which was conducted online. After collecting the data, several items were recoded and reversed according to the instrument instructions, consisting of 24 items arranged in 6 subscales. These items use one of three response scales. The answer items use a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly

agree) and data processing using SPSS software. The following is the research instrument below:

Table 1. Self-Regulated Learning Scale Research Instrument Grid

Aspect SRL	Item	Amount
Goal Setting	1, 2, 3, 4, 5	5 items
Environment Setting	6, 7, 8, 9, 10	5 items
Task Strategy	11, 12, 13	3 items
Time Management	14, 15, 16	3 items
Help Finding	17, 18, 19, 20	4 items
Self Evaluation	21, 22, 23, 24	4 items

3. RESULTS AND DISCUSSION

Based on the results of previous research conducted by (Suhandiah et al., 2022), it is necessary to encourage the development of online-based collaborative models to provide a sustainable experience for students. Using digital learning applications is considered successful if it can increase students' learning independence. Digital learning centers more on students, so they are responsible and allow students to be more independent in their learning process (Yakubu & Dasuki, 2018). Based on the researcher's observations during the lecture process at Wijaya Putra University, especially in English courses, lecturers give lectures to students based on the existing lecture contract guidelines and have been included in the SPADA application so that students are motivated to receive lecture materials given by lecturers.

Students who are not ready with digital learning applications in the form of the SPADA application, because they are not used to studying independently, are used to delaying time, have analytical thinking that is not yet independent, and is constrained by internet costs and other infrastructure. Lecturers must be able to use a hybrid learning model using the SPADA application to prepare materials, discuss, ask questions, and prepare questions according to the syllabus used.

The success of learning is based on the students' own will. It is undoubtedly supported by learning media that can support the learning process without ignoring the role of lecturers in teaching, whose role is vital in the learning process. One of the right media for this is using a digital learning application called the SPADA application. The hybrid learning model is effective in learning carried out by students (Dwijonagoro & Suparno, 2019). The SPADA application is a digital learning media used to communicate ideas or concepts selected from those widely available using existing information and communication technology equipment (Setyowati et al., 2022). The implementation of the project-based hybrid learning model using the SPADA application has a significant impact on the student's self-regulated learning process because the SPADA application, including one that presents several interactive menus) video conference, 2) various types of material files; 3) assignments; 4) chat; 5) messages; 6) discussion forums; and 7) repository. The following are the initial displays and menus on the SPADA application at https://spada.uwp.ac.id.

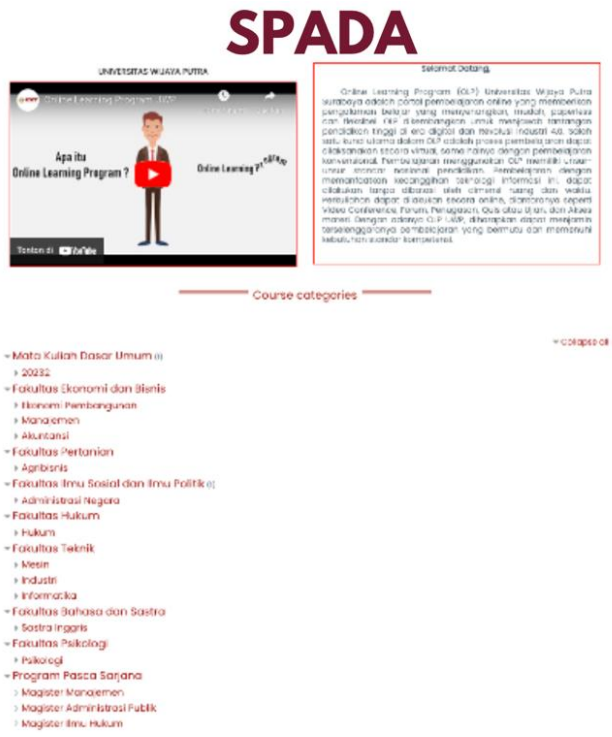

Figure 5. Dashboard SPADA

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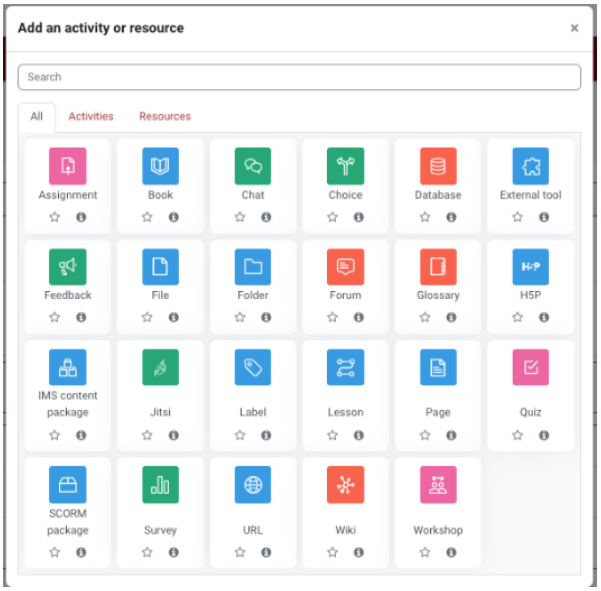

Figure 6. Menu SPADA

Before carrying out research activities, lecturers and students were given training and assistance in using the SPADA application, after which a guidebook was distributed on how to use the SPADA application. The implementation of research activities was carried out from meeting 1 to meeting 14 in the English course so that at the 13th meeting, the process of collecting research data in the form of an average score was obtained by distributing questionnaires to respondents as many as 53 Wijaya Putra University students who had carried out the project-based hybrid learning model based on the SPADA application in the English course to determine students' self-regulated learning abilities.

DISCUSSION

The use of digital learning media applications is possible if it can increase student learning independence; digital learning is more student-centered so that they are responsible and allow students to be more independent in their learning process (Wityastuti et al., 2022). Based on the researcher's observations during the lecture process at Wijaya Putra University, especially in English courses, lecturers give lectures to students based on the existing lecture contract guidelines and have been included in the SPADA application so that students are motivated to receive lecture materials given by lecturers. Students who are not ready with digital learning media in the form of the SPADA application because they are not used to studying independently, are used to delaying time, have an analysis of thinking that is not yet independent, and are constrained by internet costs and other infrastructure. Lecturers must be able to use digital learning media in the form of the SPADA application to prepare materials, discuss, ask questions, and prepare questions according to the syllabus used. The success of learning is based on the students' own will. It is undoubtedly supported by learning media that can support the learning process without ignoring the role of lecturers in teaching, whose role is vital in the learning process. One of the proper forms of media for this is the SPADA application's digital learning media.

Along with technology development, many digital learning media have been developed to present digital materials in learning by utilizing information and communication technology and developing teaching materials. In the learning process, students are expected to be able to communicate ideas or concepts put forward by others and realize them through digital media to master the technique of communicating ideas or concepts. The SPADA application is a digital learning media used to communicate ideas or concepts selected from those widely available using existing information and communication technology equipment.

Based on the results of previous research conducted by (Suhandiah et al., 2022), it is necessary to encourage the development of online-based collaborative models to provide continuous student experiences. Using digital learning applications is considered successful if it can increase student learning independence. Digital learning centers more on students, so they are responsible and allow students to be more

independent in their learning *(Yakubu & Dasuki, 2018)*.

The use of digital learning media applications has a significant impact on the process of self-regulated learning abilities in students because the SPADA application, including one that presents several interactive menus) video conference, 2) various types of material files, 3) assignments, 4) chat, 5) messages, 6) discussion forums, and 7) repository. The following is the initial display and menus on the virtual class application at https://spada.uwp.ac.id.

Before conducting the research, lecturers and students were given training and assistance in using the SPADA application, after which a guidebook was distributed on how to use the SPADA application. The implementation of research activities was carried out from meeting 1 to meeting 14 in the Learning and Teaching course; at the 13th meeting, the process of collecting research data in the form of an average score was obtained by distributing questionnaires to 53 respondents who were students of Wijaya Putra University who had used the SPADA application for learning the project-based hybrid learning model in the English course to determine students' self-regulated learning abilities. Based on the results obtained on students' self-regulated learning abilities for the goal setting indicator, the pretest calculation results before being given treatment were 21.62, while the average posttest value after being given treatment increased by 22.60, so it can be said that there was an increase in the average posttest value of students by 0.98. So, the project-based hybrid learning model using the SPADA application is very effective in improving the self-regulated learning abilities of Wijaya Putra University students in terms of goal setting. One of the current digital era phenomena impacts the way students set scientific goals to complete college assignments; the results are seen in Table 2 below.

Table 2. Goal Setting Indicator Results

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	21,62	53	2,712	,373
	Postest	22,60	53	2,051	,282

Based on the results obtained on students' self-regulated learning abilities for the environmental determination indicator, the pretest calculation results before being given treatment were 17.25, while the average posttest value after being given treatment increased by 18.15, so it can be said that there was an increase in the average posttest value of students by 0.9. So, the project-based hybrid learning model using the SPADA application is very effective in improving the self-regulated learning abilities of Wijaya Putra University students in the aspect of environmental determination; the results are seen in Table 3 below.

Table 3. Environmental Determination Indicator Results

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	17,25	53	2,235	,307
	Postest	18,15	53	1,598	,220

Based on the results obtained on students' self-regulated learning abilities for the task strategy indicator, the results of the pretest calculation before being given treatment were 12.36, while the average posttest value after being given treatment increased by 13.42, so it can be said that there was an increase in the average posttest value of students by 1.06. So, the project-based hybrid learning model using the SPADA application effectively improves the self-regulated learning abilities of Wijaya Putra University students in

the task strategy aspect; the results are seen in Table 4 below.

Table 4. Task Strategy Indicator Results

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	12,36	53	1,952	,268
	Postest	13,42	53	1,064	,146

Based on the results obtained on students' self-regulated learning abilities for the time management indicator, the results of the pretest calculation before being given treatment were 12.28, while the average posttest value after being given treatment increased by 13.60, so it can be said that there was an increase in the average posttest value of students by 1.32. So, the project-based hybrid learning model using the SPADA application is very effective in improving the self-regulated learning abilities of Wijaya Putra University students in terms of time management; the results are seen in Table 5 below.

Table 5. Time Management Indicator Results

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	12,28	53	1,905	,262
	Postest	13,60	53	1,149	,158

Based on the results obtained on students' self-regulated learning abilities for the indicator of assistance in finding the results of the pretest calculation before being given treatment was 16.36 while the average posttest value after being given treatment increased by 18.17 so that it can be said that there was an increase in the average value of the students' posttest of 1.81. The project-based hybrid learning model using the SPADA application effectively improves the self-regulated learning abilities of Wijaya Putra University students. The assistance in finding the results is seen in Table 6 below.

Table 6. Help Indicator Results Search

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	16,36	53	2,753	,378
	Postest	18,17	53	1,729	,238

Based on the results obtained on students' self-regulated learning abilities for self-evaluation indicators, the pretest calculation results before being given treatment were 16.75, while the average posttest value after being given treatment increased by 17.89, so it can be said that the average posttest value of students increased by 1.14. So, the project-based hybrid learning model using the SPADA application effectively improves the self-regulated learning abilities of Wijaya Putra University students in terms of self-evaluation; the results are seen in Table 7 below.

Table 7. Self-Evaluation Indicator Results

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	16,75	53	2,286	,314
	Postest	17,89	53	1,601	,220

The use of digital learning media for students is highly dependent on the ease of practical and efficient internet access. Hence, mobility is relatively high for some people, especially students. The level of information and scientific reference needs of students is increasingly high and diverse, so students need several reference references to support the completion of study assignments on campus. One of the current digital era phenomena is how students obtain sources of information and scientific references to complete student assignments (Priyambudi & Murdani, 2020).

The implications of the findings in this study again reinforce that knowledge and skills of self-

regulated learning abilities are currently very much needed to support educational models and processes that are increasingly disrupting traditional methods; critical thinking by educational goals has increased awareness of the importance of self-regulated learning abilities to be able to access various information, issues, and challenges and educational problems digitally, even to identify and know the selection of learning sources digitally. It can encourage efforts to improve abilities in self-regulated learning abilities.

4. CONCLUSION

Based on the research results, the project-based hybrid learning model based on the SPADA application to improve the self-regulated learning abilities of Wijaya Putra University students is very effective. This is because the self-regulated learning ability for the goal setting indicator has increased by 0.98, the environment setting indicator has increased by 0.90, the task strategy indicator has increased by 1.06, the time management indicator has increased by 1.32, for the help finding indicator has increased by 1.81, and for the self-evaluation indicator has increased by 1.14. Students are responsible for their learning outcomes because they have to plan, implement, and evaluate their projects. The project-based hybrid learning model using the well-designed SPADA application can increase students' learning motivation because they see the relevance of the learning material to real life. Implementing the project-based hybrid learning model that is not based on the characteristics of students can affect the study results, so it is necessary to conduct a trial of the research instrument.

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