



# Hybrid Models with Technology: Is it Effective for Learning in Abnormal Situations?

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## ABSTRAK

Penelitian ini bertujuan untuk menganalisis efektivitas model hybrid. Peneliti akan melihat blended learning dengan problem-based learning dan apakah Sevima EdLink dapat meningkatkan hasil belajar dan kemampuan pemecahan masalah. Penelitian quasi-experimental design digunakan dalam penelitian ini. Pelaksanaan penelitian dengan jumlah populasi mahasiswa semester 4 berjumlah 54 mahasiswa. Mereka mengumpulkan data menggunakan bidang pertanyaan dan ujian. Analisis menggunakan uji-t. Kemudian dilanjutkan dengan uji normalitas, homogenitas, dan hipotesis. Temuan dari penelitian ini adalah pembelajaran dengan model hybrid berjalan dengan baik. Pembelajaran campuran dengan pembelajaran berbasis masalah dan Sevima EdLink berjalan pada komposisi klasifikasi yang masuk akal. Ada pengaruh yang sangat positif dan kontekstual dari menggabungkan pembelajaran campuran dengan pembelajaran berbasis masalah dan Sevima EdLink pada hasil belajar. Ada juga efek yang sangat positif dan kontekstual dari menggabungkan pembelajaran campuran dengan pembelajaran berbasis masalah dan Sevima EdLink pada kemampuan pemecahan masalah. Penelitian juga menunjukkan bahwa menggabungkan pembelajaran campuran dengan pembelajaran berbasis masalah dan Sevima EdLink masuk akal dan sesuai untuk digunakan dalam situasi pembelajaran yang tidak normal.

## ABSTRACT

This study aims to analyze the effectiveness of hybrid model. Researcher will see blended learning with problem-based learning and whether Sevima EdLink can improve learning outcomes and problem-solving capabilities. Research quasi-experimental design are used in this study. Research conduct with total population of 4th-semester students is around 54 students. They are collecting data using question fields and exams. Analysis using t-test. They were followed by normality tests, homogeneity, and hypothesis. The finding of this research are learning with the hybrid model is going well. Blended learning with problem-based learning and Sevima EdLink runs on a reasonable classification composition. There was a very positive and contextual effect of combining blended learning with problem-based learning and Sevima EdLink on learning outcomes. There was also a very positive and contextual effect of combining blended learning with problem-based learning and Sevima EdLink on problem-solving capabilities. Research also shows that combining blended learning with problem-based learning and Sevima EdLink is reasonable and appropriate for use in abnormal learning situations.

## 1. INTRODUCTION

Indonesia is a disaster-prone country at war against Covid-19 (Firth, 2020; Park, 2021). The situation at hand has resulted in Indonesia being in an abnormal situation, especially in education (Hidayat & Wibawa, 2020). The government implements learning from home policy and this situations require strategies to maintain the quality of learning (Arribathi et al., 2021; Hou et al., 2021). Effective learning strategies using online technology allows learning to be done anywhere and anytime (Fatonja et al., 2020; Ramen A Purba, Rofiki, et al., 2020; Ramen A Purba, Sudarso, et al., 2020). However, technology is not enough to maintain the quality of learning. It is proven by students experience is setbacks in almost all courses. Learning outcomes are not achieved as expected, and student thinking skill does not develop (Nugraha et al., 2021; Sukmawati et al., 2020). In the initial observations through communication with several lecturers it reveal that when students are given assignments up to the time specified, the majority of students have not finished their work. Students only explain simple, ineffective, and inefficient solutions.

Observations at the author's college, for the IT Professional Ethics lecture, which focuses on technology ethics, profession, use, and law in the IT field, learning achievement is not satisfied. The student's ability to solve problems does not develop. They are just touching on the immediate context. Several lecturers teach the IT Professional Ethics course. In the Covid-19 pandemic situation, lecturers use technology, but not uniform. They use different technology media such as, WhatsApp, Google Classroom,

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Facebook, and Youtube. It is make the result of learning process is not optimal and caused poor learning outcomes and student capabilities. The main factor that caused this problem are lecturer-centered learning which make student become passive, learning process become less interactive and communicative. Most of learning process run by lecturers deliver materials, send assignments, and set a date for submitting assignments, there are no discussion. Even though discussion is a place to hone students' thinking capabilities. Inappropriate models and technologies will make learning monotonous and result in outcomes that are not as important as expected (Krismadinata et al., 2020; Rahiem, 2021; Suryawan et al., 2021). In line with previous research that state learning outcomes and capabilities will be realized when the right combination of models and technologies are used (Casasayas et al., 2021; Smetana & Bell, 2012; Xia et al., 2021). Accuracy in choosing and using the right combination of models and technology is a solution so that learning outcomes and problem-solving capabilities are expected. Lecture have responsibility to find out and apply a suitable model and technology in learning (Alamri et al., 2021; Caena & Redecker, 2019; Chu et al., 2021; Ramen A Purba, Tamrin, et al., 2020; Shantini et al., 2021).

One kind of learning model which able to solve those problem are blended learning. Blended learning is a learning model that can accommodate the learning process from a short distance (Fadillah et al., 2020; Ramen Antonov Purba, 2021; Shantini et al., 2021). Blended learning presents an active learning situation, where discussion is possible. Blended learning creates interactive, communicative, and dynamic learning situations. Blended learning is learning using technology by comparing direct learning with online learning (Dewi et al., 2018; Seage & Türegün, 2020; Sefriani et al., 2021; Shamsuddin & Kaur, 2020). Blended learning also need support and collaborate with appropriate strategy. Problem-based learning utilizes problems to improve problem-solving capabilities (Arantes do Amaral & Fregni, 2021; Bumblauskas & Vyas, 2021). Problem-based learning also helps students understand that learning and lifestyle affect problem-solving which operates perfectly through target setting, monitoring, and continuous implementation (Arcos-Alonso & Alonso, 2021; Funa & Prudente, 2021; Haslam et al., 2021; Ryan, 2021). This strategy also creates a learning framework that includes students dealing with problems (Silviariza & Handoyo, 2021; Simanjuntak et al., 2021).

On other hand, to support the blended learning there are need learning platform that can helps students communicate and manage time (Darwanto, 2021). Sevima EdLink is suitable learning platform to support blended learning, there are several feature contain such as to real-time attendance, video conferencing and online scheduling (Fatihahsari & Darujati, 2021). With Sevima Edlink, lecture can easily share materials, assign tasks, and administer tests (Nasution, 2021; Rais, 2021; Widiyatmoko, 2021). Internet technology is used in blended learning to integrated learning to promote action (Jalinus, 2021). Previous study have tried to compares blended learning with flipped and Edmodo, the results show that students' learning strengths are growing (Mann et al., 2021; Silalahi, 2021). This combination provides a dynamic learning environment that is not solely dependent on the lecturer. This combination increases students' interest in learning and critical thinking. Because if learning only depends on a problem-based learning methodology without technology, it cannot be achieve learning achievement, it because the learning process is static (Chen et al., 2021; Juandi & Tamur, 2021). There has been not many research on hybrid models combined with technology, especially in the Ethics and IT Profession lectures. The need to bring up a new model that can accommodate learning in unstable situations. The research will combine a hybrid model, namely blended learning with problem-based learning and Sevima EdLink. So the purpose of this study is to analyze the effect of combination of blended learning with problem-based learning and Sevima EdLink in improve learning outcomes and problem-solving capabilities. It will be found whether combining the blended learning model with problem-based learning and Sevima EdLink can be a new practical and efficient learning model used in abnormal learning situations.

## 2. METHODS

The type of research is by using quasi-experimental (Trisiana, 2019). Research procedures with pretest and posttest. There are two groups: the control group learns IT Professional Ethics using WhatsApp, Facebook, and YouTube, while an experimental class uses a hybrid model combining problem-based learning with Sevima EdLink. Research subject is Politeknik Unggul LP3M student. The control and experimental groups each had 27 students. Data collection is done by filling out leaflets and examinations. Descriptive stats and t-test carried out data analysis. Then come normality, homogeneity, and hypothesis tests. The research method used application with the initial stages of doing learning by the existing group divisions. Each group was given treatment. The tests carried out are pretest and posttest for the form of questions and instruments used, as shown in Table 1 and Table 2.

**Table 1.** Overview of Instruments to Maximize Learning Outcomes

Composition	Parameter	Shape of lattice	Grid Grain
Mastering Crime Mode in IT	Expose IT threats	Choose A - E	One - Six
	Describe cyber case	Choose A - E	Seven - Thirteen
	Identify threat	Choose A - E	Fourteen - Twenty
	Tracing the modus	Choose A - E	Twenty One - Twenty Five

**Table 2.** Overview of Instruments to Sharpen Problem Solving Capabilities

Composition	Parameter	Shape of lattice	Grid Grain
Responding to Crime Mode in Information Technology	Analyze IT threats	Fill the question sheet	Number One
	Explore causes and compiling solutions	Fill out the question sheet	Number Two
	Execute results and solutions	Fill out the question sheet	Number Three and Four
	Attention tricks and patterns as solutions	Fill out the question sheet	Number Five

### 3. RESULT AND DISCUSSION

#### Results

Actualization of learning achievement based on the pre-test and post-test results for the control and experimental groups are pre-sented in [Table 3](#).

**Table 3.** Actualization of Learning Outcomes

	Control - Experiment		Control - Experiment	
	pretest	pretest	posttest	posttest
Max	76.00	76.00	84.00	84.00
Min	36.00	44.00	44.00	56.00
Std Dev	9.02	7.57	10.68	6.87
Mean	58.92	58.81	65.69	70.96

The control group pretest score ranges from 36 to 76. The experimental group's lowest score is 44, and its best is 76. The control group posttest score ranges from 44 to 84. The experimental class has the highest score, 85, and the lowest, 56. It indicates the highest score. It is increased for the experimental and control groups. The control group averages 65.69, while the experimental class averages 70.96. The experimental class's average is higher than the control's. The average score interval is separated into five categories: extremely high, very high, comparatively high, and not very high. [Table 4](#) summarizes the results.

**Table 4.** Problem Solving Capability

	Control - Experiment		Control - Experiment	
	pretest	pretest	posttest	posttest
Max	70.00	70.00	80.00	85.00
Min	30.00	30.00	45.00	50.00
Std Dev	8.87	8.82	8.26	8.80
Mean	49.42	49.81	62.88	67.77

Table 4 shows that the smallest control group's pretest value was 30, and the largest was 70. The experimental groups ranged from 30 to 70. The posttest control group had the lowest value at 45 and the highest at 80. Figure 50 was the group's smallest posttest. The highest is 85. The experimental group's pretest score is 49.81. The control group averaged 62.88, and the experimental group 67.77. The experimental group's average value is higher than the control group's, indicating insufficient classification. Normality test parameters is shown in [Table 5](#).

**Table 5.** Normality Test With Pretest Acquisition Parameter

Learning Outcomes		Problem Solving Capability		
Group	Sig	Information	Sig	Information
Control	0.189	Ordinary	0.062	Ordinary
Experiment	0.200	Ordinary	0.200	Ordinary

Table 5 shows that the control group's sig score for learning achievement and problem-solving ability is 0.189 and 0.062, respectively, and that the score is above 0.05, indicating that the control group's pretest parameter is average. The sig score of the experimental group's pretest parameter is 0.096, then 0.200, and if the score is more than 0.05, the control group's pretest parameter acquisition has a standard distribution. Then the posttest parameters were normalized. Table 6 shows the accumulation.

**Table 6.** Normality Test With Posttest Acquisition Parameters

Learning Outcomes		Problem Solving Capability		
Group	Sig	Information	Sig	Information
Control	0.167	Ordinary	0.200	Ordinary
Experiment	0.087	Ordinary	0.156	Ordinary

The posttest parameter of learning attainment and problem-solving ability of the control group had sig scores of 0.167 and 0.200, respectively, exceeding 0.05, and the posttest parameter of the control group was distributed in the normal category. The experimental group's sig parameter posttest scores are 0.087 and 0.156, which is above 0.05. The control group's posttest parameter acquisition parameter's normal distribution can be stated. Then the homogeneity test to determine data similarity. Pre- and post-test scores from the control and experimental groups were combined. Table 7 shows accumulated gains.

**Table 7.** Accumulation of Homogeneity Test Composition

Learning Outcomes		Problem Solving Capability		
Group	Sig	Information	Sig	Information
Control	0.478	Homogen	0.975	Homogen
Experiment	0.071	Homogen	0.751	Homogen

In table 7, the sig results of learning achievement in the pretest category are 0.478, whereas in the post-test category are 0.071. The ability to solve issues has a sig score of 0.975 in the pretest and 0.751 in the post-test. If the sig number of learning achievement or problem-solving capability surpasses 0.05, the accumulation in the pretest and post-test categories comes from a uniform population. The first stage is the t-test. The number of sig acquisitions is 0.038, which is less than 0.05. Ho is rejected. The impact of hybrid models and learning differ significantly on the Ethics and IT Profession course outcomes. Then the t-test 2. The sig increase is 0.042, which is smaller than 0.05 in the sig category. Ho is rejected. There is a significant disparity in power. The experimental and control groups' average learning achievement increased, according to descriptive analysis. The control group improved by 11.5%—an average of 20.66% for the experimental group. The final categorization has an average value of over 70.

## Discussion

The research aims to analyze whether Hybrid Models with Technology Effective For Learning In Abnormal Situations. The experimental group's average learning achievement is higher than the control group's. Averaging more learning outcomes was observed in both the experimental and control groups. The pretest results show the control and experimental groups' initial strength. The experimental group outperformed the control group on the posttest. Students can browse teaching resources and learn as they like using learning media such as statements (Pregowska et al., 2021; Rosmandi et al., 2021; Suswanto et al., 2021). Existing problems urge pupils to use references to solve challenges. The interaction of students and educators in problem-solving situations and the availability of activities and learning media can create a learning atmosphere. Xtrinsic factors affect learning results, then Interactive and communicative learning models empower students to learn independently and attain learning goals (Peimani & Kamalipour, 2021; Yousef & Sumner, 2021). There will be an effective and efficient learning environment when hybrid models and technologies are not used (Henderson et al., 2017; Milenkova & Lendzhova, 2021).

Hybrid Models, combining blended and problem-based learning, and Sevima EdLink, a learning model for the experimental group, assist each other. Blended learning allows teachers to share educational

materials online with no room or time constraints (Aristika & Juandi, 2021; Paine & Fang, 2006). So learning outcomes can be expected. using problem-based learning, other models, and technology will drive students to build and refine their thinking skills and Problem-oriented (Syafri et al., 2021; Tambouris et al., 2014; Zeng et al., 2021). Problem-solving activities are part of problem-based learning. Formulas and combinations are required to solve it. Students' problem-solving skills are guided by blended learning with problem-based learning and Sevima EdLink. Following the learning activities, students are tested on their problem-solving skills. The post-test score was found whether the experimental group's problem-solving skill was higher than the control group's. The experimental group's value increased due to learning activities using blended learning, problem-based learning, and Sevima EdLink. Solve problems, construct solution formulas, execute planned formulas, and inventory prepared formulas and settlement procedures.

The activities used in blended learning with problem-based learning and Sevima EdLink allow students to obtain knowledge contextually and procedurally, motivating them to solve challenges. It stresses problem-solving when individuals use their information obtained, abilities, skills, and understanding to live in abnormal settings. Students can learn to solve problems by recognizing the issues, formulating plans to solve them, executing the plans, and reviewing the results (Carbonell et al., 2013; Mann et al., 2021). Problem-solving skills will improve with models and technologies—anomaly-proof activities (Klegeris & Hurren, 2011; O'Neill & Hung, 2010). Students are challenged to tackle current challenges using problem-based learning and Sevima EdLink in blended learning. Instructions for individual and group investigations are provided. Students are encouraged to improve and submit their ideas and analyze and evaluate the stages of problem-solving (Nurrohma & Adistana, 2021; Singh, 2021). The information insights and capacities students gain from problem-solving phases can help them solve difficulties in various situations. Problem-based learning helps students build problem-solving skills and makes them independent learners (Morgado et al., 2021; Ulinnuha & Rochmad, 2021). Using problem-based learning with Sevima EdLink allows students to overcome issues, and trials in problem-solving can help students handle complicated and dynamic situations. Using models and technologies will facilitate learning (Donnelly, 2010; R A Purba et al., 2019).

#### 4. CONCLUSION

Research shows that blended learning with problem-based learning and Sevima EdLink runs on a reasonable classification composition. There was a very positive and contextual effect of combining blended learning with problem-based learning and Sevima EdLink on learning outcomes. There was also a very positive and contextual effect of combining blended learning with problem-based learning and Sevima EdLink on problem-solving capabilities. Research also shows that combining blended learning with problem-based learning and Sevima EdLink is reasonable and appropriate for use in abnormal learning situations.

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