THE EFFECT OF BLENDED LEARNING ON EFL STUDENTS' PERFORMANCE IN RESEARCH METHODOLOGY AND PRACTICE OF 21ST CENTURY SKILLS

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ABSTRACT

This study aims to determine the effect of blended learning methods on EFL students' performance in research methodology and their practice of 21st century skills. A quasi-experimental design was used for the study. The sample included two groups of 25 students divided into a control group for conventional learning and an experimental group for blended learning. A test and take-home essay of short research proposal writing was used to measure the students' performance in research methodology, while their practice of 21st century skills was measured via a self-report questionnaire. The results showed that the blended learning method significantly influenced their performance in both areas. The experimental class showed a significantly higher performance in research methodology and 21st century skills than the control. The study outcome expatiates on the value of the implementation of blended learning in enhancing research methodology performance and modern skills practice in the classroom.

Keywords: *Soft skills, online Learning, English learning, 21st century skills, covid 19 pandemic.*

INTRODUCTION

Blended learning, which integrates face-to-face and online classes, has been applied in higher education worldwide for over 10 years. Positive issues related to the application of online learning, such as teaching strategies; students' interests, motivations, and attitudes; and learning effectiveness, efficiency, and quality had been discussed widely (Khan et al., 2012; Wuryaningsih et al., 2019). Furthermore, some studies showed that online learning effectively supports and potentially replaces face-to-face classes. Online classes offered via elearning effectively enhance learning capacity while face-to-face classes allow students to interact physically, emotionally, and expressively. Many researchers stated that blended learning is an opportunity for students to engage more, update resources, communicate, discuss, share, and use other additional applications in presenting their assignments online. However, some teachers are not interested in online learning because they believe online students fail to participate in classroom activities, deliver course content, communicate with others, and engage in various academic functions, thereby affecting their acquisition of knowledge and skills so that students do not acquire adequate knowledge and skills through online learning. This negative attitude cannot be

countered by theory alone but needs evidence provided by research.

Blended learning is an extension of the physical and online learning approaches where the teachers facilitate students to engage in activities that fulfill their educational objectives. Online learning software include Edmodo, Moodle, Easyclass, and others with features that support students in communicating, sharing information and learning resources, working in groups, submitting assignments, and performing other learning activities. Online learning helps the conventional classroom to adequately fulfill the educational requirements of students. In blended learning, students are allowed to initiate interaction, learn from others, enhance their own learning outcomes, improve their intellectual capacity, and develop their knowledge and skills. Teachers also have the ability to manage and control an online class in a much easier and more flexible manner (Broadbent, 2017). Furthermore, through blended learning the students are expected to optimally explore and acquire course knowledge and practice 21st century soft skills such as communication, IT, numeracy, Learning, problem-solving, and teamwork. Hard skills are equally acquired through the online learning process.

We hypothesized that applying blended learning enhances the performance of students in research methodology as well as their acquisition of 21st century skills (Hadiyanto, 2019a; Schober et al., 2008). This experimental research involved applying blended learning to obtain evidence and further prove the hypothesis.

LITERATURE REVIEW

Blended Learning, Students Course Performance, and the Practice of 21st Century Skills

Blended learning is a combination of a face-to-face and an online class designed according to pedagogical principles (Bryan & Volchenkova, 2016; Ellis et al., 2008; Kara, 2016). It is an extension of elearning models where a student-centered approach is applied in the transmission of knowledge. Combining online and face-to-face lessons enables students to continue learning via a virtual class. It also gives students flexibility in terms of time and place for interacting, communicating, working in groups, discussing, and sharing resources (Fischer & Hanze, 2019; Glowa & Goodell, 2016).

Blended Learning not only provides more options for students, but it also has other benefits, such as improving access to learning materials and enhancing the quality of learning. Various academic activities such as lecturing, group and individual projects, presentations, resource sharing, and free discussions can be applied in a combination of face-to-face classroom and online learning (Khan et al., 2012).

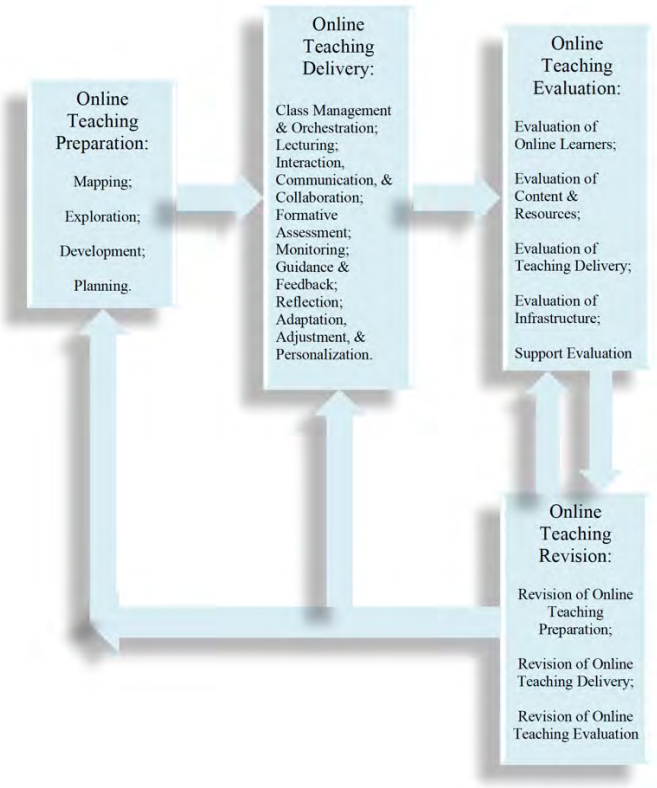
Blended learning activities provide an explicit focus on course content that improves students' academic performance and encourages 21st century skills, including soft and hard skills. These are both improved when students interact through various activities inside the classroom and outside through online learning (Singh & Singh, 2017; Witherspoon, 2011). Delialioğlu, (2012) and Schober et al. (2008) also stated that blended learning gives the opportunity and enables the environment for students to communicate actively with other students, which ultimately leads to communication, teamwork, problem-solving, and learning hard skills.

As a part of blended learning, online learning allows the students to connect with classroom activities at any time in any place (Nathan & Rajamanoharane, 2016). Singh and Singh (2017) reiterated that it allows students to work together and report back or present to the class as a whole, thereby encouraging student-to-student interaction. Furthermore, teachers are able to provide clear directions and realistic goals for group and individual assignments. Their roles include designing blended activities for face-to-face and online learning and giving directions and instruction to enable students to acquire 21st century skills through academic activities within and outside the classroom. Hadiyanto (2019b) and Shulamit and Yossi (2011) stated that these activities can be managed through online learning to boost their 21st century skills. Students interact, read, question, and discuss the resources provided by the teacher. A class member can upload multiple resources to share with all class members to learn, compare, analyze, and extract the necessary information from them.

Figure 1 shows the conceptual framework of blended learning applied in this research. It points out the three main phases: (a) course design, (b) teaching and learning activities involving the integration of face-to-face and online learning, and (c)

learning outcomes (Delialioğlu, 2012; Hadiyanto, 2019c; Kara, 2016).

Figure 1. A Conceptual Framework of Blended Learning



Edmodo as a Tool for Online Learning

We used Edmodo during blended learning classes (the experiment class), and it is a highly relevant elearning platform used by teachers worldwide. The interface is very intuitive and allows for easy navigation. It also allows the integration of a wide variety of resources as well as links to genuine sources. The features provided by Edmodo support blended learning activities such as creating small groups to enable students to discuss and work cooperatively and collaboratively (Hadiyanto, 2019a; Lin et al., 2016; Singh & Singh, 2017). Alternatively, Edmodo supports teacher-student and student-student interactions while facilitating activities that enhance their learning 21st century skills (Kara, 2016; Witherspoon, 2011). Using it as a medium of online learning will give a wide opportunity for students to improve their academic performance. Edmodo also allows teachers to add learning resources and features such as links, video presentations, and other supporting applications. Solangi et al. (2018) stated that teachers can optimize these features of elearning through organizing small discussions, posting and playing video files, and providing links to online resources. The role of teachers is important in facilitating students to be more investigative and interactive through elearning. Creative and innovative learning designs are also applied in online learning activities.

21st Century Skills

The term "21st century skills" is currently used by researchers, academicians, educators, and professionals to refer to the essential skills that are useful to employees in the workplace and therefore have to be acquired by university graduates before entering the job market. The interchangeable terms for "21st century skills" used in several countries today include key skills; core competencies; adaptive, soft, generic, global, life, core, and interpersonal skills; etc. The components of each are closely associated with the other, such as communication, IT, critical thinking, analytics, learning, intrapersonal relationship, subject skills, etc., (Bialik et al., 2015; Hadiyanto, 2019b; ILO, 2014; Lippman et al., 2015; Ontario Public Services, 2016; Partnership for 21st Century Skills, 2008; Person et al., 2009). In short, 21st century skills mainly consist of course knowledge and soft skills. According to the analysis of the present study, these skills are defined as the soft and hard skills required for the global job market that have to be acquired by students through learning activities at the university level (Bialik et al., 2015; Ontario Public Services, 2016; Partnership for 21st Century Skills, 2008).

Soft skills are the practical activities applied to generate and develop hard skills in the student learning context and former student working context. They include communication, IT, numeracy, problem-solving skills, and working with others (Akyıldız & Çelik, 2020; Hadiyanto, 2019a; Marando, 2012; Washer, 2007; Zalizan & Azman, 2005). Furthermore, in this study, soft skills further include how-to skills, problem solving, and teamwork in learning activities (Hadiyanto, 2019b).

Hard skills deal with specific knowledge and subject content and the technical skills of a student's major (Marando, 2012; Washer, 2007; Wilson-Ahlstrom et al., 2014). In the context of this study "hard skills" are defined as the practice of specific knowledge through methods partly or fully blended with soft skills. Specifically, they relate to

the knowledge of research methodology and the skills practiced by students through blended learning activities (Hadiyanto, 2019c; Marando, 2012; Ristekdikti, 2015; Washer, 2007; Wilson-Ahlstrom et al., 2014).

Improving the 21st Century Skills of Students Through Blended Learning Activities

Student-centered learning approaches widely recognize that blended learning is a strategy for implementing academic activities in face-to-face and online learning (Bryan and Volchenkova, 2016). This is an innovative method applied to deliver course content to students in order to obtain a measurable learning outcome. Not only does it develop their academic performance, but it also improves communication, critical thinking, problem-solving, numeracy, teamwork, and IT skills during the learning process and activities. Teachers can observe and guide students while they engage, communicate, discuss, and work as a team to fulfill learning objectives. (Partnership for 21st Century Skills, 2008), Wilson-Ahlstrom et al. (2014) observed that the development of 21st century soft and hard skills occurred during the learning process. Appropriate teaching and learning methods create an opportunity for students to practice soft skills by which they eventually gain hard skills. Students are expected to possess observable 21st century skills and measurable academic performance as discussed previously.

Teaching scenarios have to be specialized for active learning activities such as interacting, exploring, surfing the internet, using applications, sharing, suggesting, responding, discussing, presenting, writing reports, and working as a team. These scenarios allow students to practice their 21st century skills. The role of the teacher involves guiding and facilitating the students to actively engage in learning and develop their own skills and capacities. Student engagement through learning strategies and methods will enhance the practice of soft skills and, consequently, the acquisition of hard skills and the fulfillment of course objectives (Dunne et al., 2000; Hadiyanto, 2019a).

The 21st century skills in the present study are not a means for measuring students' performance. This study characterizes the learning activities within a course context and then compares them between the conventional and blended learning classes. The hypothesis behind the comparison is that blended learning promotes a student-centered approach in both face-to-face classes and online learning, while conventional learning involves the physical classroom only. The indicators of skill practice were developed carefully and tested repeatedly by Hadiyanto et al. (2018) and applied in this study to gather data from the students.

METHODOLOGY

This is an experimental research study that aims to determine the effect of the blended learning method on students' research methodology performance, and to ascertain the difference between students in a conventional and a blended learning class in terms of 21st century skills practice. Ninety-six students enrolled in the research methodology course, and 50 of the students were divided into two groups according to their respective CGPA equivalence, with 25 participants in the control class and 25 in the experimental class. There were three students with CGPA 3.75 and above in each group, eight students between 3.50 and 3.74, 11 students between 3.00 and 3.49, and three students at 2.99 and below. The students' research methodology performance and 21st century skills practice were the major variables tested. For further data analysis, both variables were divided into subvariables.

Instruments and Their Reliability

Table 1 illustrates the design of the study.

X^1=Test of Research Methodology

X^2=Take-home essay of short research proposal writing

Table 1. Classroom Experimental Design of Blended Learning

Class	Preassessment (Dependent Variables)	Experimentation- (Independent Variables)	Postassessment (Dependent Variables)
Control	X^1	Y^1	X^1
	X^2		X^2
			X^3
Experiment	X^1	Y^2	X^1
	X^2		X^2
			X^3

X^3=Self-Evaluation questionnaire of 21st century skills practice

Y^1=Control Group (Conventional)

Y^2=Experimental Group (Blended Learning)

This study used three instruments: (a) a research methodology test, (b) a take-home essay of short research proposal writing and (c) a self-evaluation questionnaire of 21st century skills practice. The research methodology test and take-home essay were applied to assess the students' performance. Both assessments were taken before and after experimentation. The research methodology test was subdivided into three categories of questions: (a) matching, with a maximum score of 10 for 10 questions, (b) multiple choice, with a maximum score of 40 for 40 questions, and (c) essay, with a maximum score of 50 that consisted of five questions. Furthermore, the take-home essay of short research proposal writing was expected to include, minimally, the following elements:

- A description of the study problem occurring in a practice setting and rationale of the study.
- A preliminary literature review (6–8 articles) analyzing existing information that will help the researcher understand the problem.
- A description of the research methods, such as qualitative, quantitative, single-case designs, action, and outcome-based research.
- A description of information that the research potentially provides.
- A description and analysis of ethical and culturally relevant strategies for interpreting and reporting the results of research.

A scoring rubric was used by two assessors to judge the score of an element. Each element is scored from 1 to 20. Inter-rater reliability was used to test the degree of consistency and agreement between both assessors. Cohen (1960) and Hair et al. (2006) suggested that both the homogeneity and consensus values between assessors has to be 70% and above. In this study, the overall pre-take-home essay of short proposal writing yielded Cronbach alpha consensus of 92% and intraclass correlation or homogeneity in terms of single and average measures above 80%. Meanwhile, the overall postwriting take-home essay of short proposal yielded a Cronbach alpha of 86% and intraclass correlation (homogeneity) in single measures and average measures above 75%. This means that the reliability or consistency of judgment between both raters is at a very good level.

The self-evaluation questionnaire was used to assess the students' 21st century skills practice. It was distributed to students after the experiment and consisted of indicators of skills practiced by the students from before and after experimentation. Students in both face-to-face and blended learning classes were required to rate the level for each skill indicator practiced during the learning process. Each component of soft and hard skills was described by some statements. The Likert scale interval from 1 (*very poor*) to 5 (*very good*) was applied in judging their 21st century skills practice during the teaching and learning process. The questionnaire was a

Table 2. The Reliability of Self-evaluation Questionnaire

The 21st Century Skills Practices	Number of Items	Corrected item-total correlation	Cronbach Alpha
Communication	9	.328–.592	.757
IT	6	.323–.406	.643
Numeracy	8	.314–.673	.758
Learning	11	.335–.598	.813
Problem-Solving	7	.414–.529	.745
Teamwork	8	.305–.681	.708
SOFT SKILLS	41	–	.903
Knowledge of Research Acquisition	5	.378–.545	.684
Skills of Research Methodology Practices	5	.325–.401	.695
Hard Skills Practices	10	–	.747
Overall 21st Century Skills	59	–	.920

Table 3. Independent t-test Result Between Control and Experiment Group in Pretest

Pretest	Group	N	Mean	Mean Different	*t*	Sig.
Matching (Max. Score 10)	Control	25	4.84	.280	1.091	.281
	Experiment	25	4.56			
Multiple choice (Max. Score 40)	Control	25	19.20	.560	.938	.353
	Experiment	25	18.64			
Essay Questions (Max. Score (50)	Control	25	17.48	−.320	−.367	.715
	Experiment	25	17.80			
Total Pretest	Control	25	41.52	.520	.332	.741
	Experiment	25	41.00			

piloted study with 50 randomized respondents to obtain consistency and correct item-total correlation. Pallant (2011) and Hair et al. (2006) suggested that a Cronbach alpha coefficient of 60% for a construct consisting of 10 items and fewer, while 70% was recommended for a construct consisting of more than 10 items. A corrected item-total correlation at 30% is acceptable. The results of the consistency analysis had a Cronbach alpha coefficient of 72% and corrected item-total correlation at 30% and above, with all subcomponents of soft and hard skills obtaining α level more than 60% and corrected item-total correlation more than 30% (Pallant, 2011). The specification of the questionnaire and the reliability is shown in Table 2.

An observer took observations during blended learning activities in both the physical classroom and online. The focus of the observation was the teaching method and task, the main online tool used, the online activities of the students, and the knowledge gained and skills practiced.

Data Analysis

The independent *t*-test was applied in data analysis to determine the differences between the control and experimental classes on the students' performance in research methodology and 21st century skills practice. Pallant (2011) suggested that this test is appropriate for comparing two groups with a sample size below 30. A significant value at 0.05 to 0.1 was used to ascertain the differences between the scores.

RESULTS

Comparison of Students' Research Methodology Performance before Experimentation

A pretest was conducted to ascertain the equality of the students' research methodology performance between the control and experiment before experimentation. There was a significant improvement due to the combination of the research methodology test and the take-home essay of short research proposal writing. These were the two types of assessment conducted before and after experimentation to determine the effect of blended learning on students' course performance.

Pretest of Research Methodology

Three parts of the test were given to students: matching, multiple choice, and essay questions. An equal pretest score was observed between the control and experiment class in the matching section (t = 1,091, sig. = .281 > .05), multiple choice (t = .938, sig. = .353 > .05), and essay questions (t = −.367, sig. = .715 > .05), and the overall score of research methodology (t = −.332, sig. = .741 > .05). This implies that an equal competence was obtained between the two groups prior to experimentation. The results are shown in Table 3.

Pre-take-home Essay of a Short Research Proposal Writing

A take-home essay of short research proposal writing was given to the control and experiment groups before experimentation. Afterwards, an independent sample *t*-test was performed to investigate the equivalence between the control and experimental groups in terms of students' ability in research methodology. The results in Table 4 showed that there is an equivalence between the overall score of both groups regarding the take-home essay of short research proposal writing (mean different = −2.150, t = .974 and sig. = 335 < 05). An equivalence is also obtained between

Table 4. Independent Sample t-test Conducted to Control and Experiment Group toward Pre-take-home Essay of Short Research Proposal Writing.

Pre-A short research proposal writing (Take-home essays)	Group	N	Mean	Mean Different	t	Sig.
Description of the study problem occurring in a practice setting and rationale for the study.	Control	25	12.10	-.450	-.692	.492
	Experiment	25	12.55			
A preliminary literature review (6–8 articles) analyzing existing information that will help the researcher to understand the problem.	Control	25	12.00	.100	.160	.874
	Experiment	25	11.90			
A description of the research methods, such as qualitative, quantitative, single-case designs, action, and outcome-based research.	Control	25	11,60	-.100	-.161	.873
	Experiment	25	11.70			
A description of information that the research potentially provides.	Control	25	11.00	-.700	-1.22	.227
	Experiment	25	11.70			
A description and analysis of ethical and culturally relevant strategies for interpreting and reporting the results of research.	Control	25	11.35	-1.00	-1.80	.078
	Experiment	25	12.35			
Overall	Control		58.05	-2.15000	-.974	.335
	Experiment		60.20			

groups in the following elements:

- A description of the study problem occurring in a practice setting and a rationale for the needs of the study (mean different = −.450, *t* = −.692, and sig. = .492 > 05).
- A preliminary literature review of 6–8 articles analyzing existing information that will help the researcher to understand the problem (mean different = −.100, t = −.691, and sig. = .874 < 05).
- A description of the research methods such as qualitative, quantitative, single-case designs, action, and outcome-based research (mean different = −.100, t = −.161, and sig. = .873 < 05).
- A description of information that the research potentially provides (mean different = −.700, t = −1.223, and sig. = −.223 < 05).
- A description and analysis of ethical and culturally relevant strategies for interpreting and reporting the results of research (mean different = −1.00, t = −1.800, and sig. = .078 < 05).

These results implied that there was an equivalence between the control and experimental groups in the pre-take-home essay of short research

Table 5. The Independent t-test Result Between Control and Experiment Groups at Posttest

Post Test	Group	N	Mean	Mean Different	t	Sig.
Matching (Max. Score 10)	Control		8.52	-.440	-1,08	.285
	Experiment		8.96			
Multiple Choices (Max. Score 40)	Control		32.0	-2.24	-2.20	.032
	Experiment		34.2			
Essay Questions (Max. Score 50)	Control		32.8	-3.88	-2.26	.028
	Experiment		36.7			
Total Posttest	Control		73.3	-6.560	-2.21	.031
	Experiment		79.9			

proposal writing.

Comparison of Students' Research Methodology Performance after Experimentation Posttest of Research Methodology

An independent sample *t*-test was conducted to determine the statistical differences between the control and experiment groups towards the posttest research methodology. As shown in Table 5, there was a significant difference in the overall scores when compared with the posttest in both groups ($t = -2.21$, sig. = .031 < .05). This significant difference was also observed in its subcategories of multiple-choice ($t = -2.26$, sig. = .032 < .05) and essay questions ($t = -2.20$, sig. = .032 < .05). The experiment group yielded a higher mean score in the overall test, particularly in its subcategories of multiple-choice and essay questions. However, there was no significant difference between groups in the matching category.

Post-take-home Essay of a Short Research Proposal Writing

Table 6 shows a significant difference in the overall posttest score on take-home essay of short research proposal writing between the control and the experimental groups (mean difference = −8.400, $t = -7.606$, and sig. = .000 < 05). Significant differences were also observed between groups on the description of the problem occurring in a practice setting and the rationale of the study (mean difference = −1.65, t = —3.914, and sig. = .000 < 05), a preliminary literature review (6–8 articles) analyzing existing information that will help the researcher to understand the problem (mean difference = −2.40, $t = -4.642$, and sig. = .000 < .05), a description of the research methods such as qualitative, quantitative, single-case designs, action, and outcome-based research (mean difference = −.100, $t = -.161$, and sig. = .873 < 05), a description of information that the research potentially provides (mean difference = −.850, $t = -2.798$, and sig. = −.007 < 05), and a description and analysis of ethical and culturally relevant strategies for interpreting and reporting the results of research

Table 6. Independent Sample t-test Conducted to Control Group and Experiment Group toward Post-take-home Essay of Short Research Proposal Writing

Post-take-home essay of short research proposal writing	Group	N	Mean	Mean Different	*t*	Sig.
Description of the study problem occurring in a practice setting and rationale for the study.	Control	25	15.60	-1.65	-3.914	.000
	Experiment	25	17.25			
A preliminary literature review (6–8 articles) analyzing existing information that will help the researcher to understand the problem.	Control	25	15.25	-2.40	-4.642	.000
	Experiment	25	17.65			
A description of the research methods, such as qualitative, quantitative, single-case designs, action, and outcome-based research.	Control	25	15.30	-1.30	-3.194	.002
	Experiment	25	16.60			
A description of information that the research potentially provides.	Control	25	15.00	-.850	-2.798	.007
	Experiment	25	15.85			
A description and analysis of ethical and culturally relevant strategies for interpreting and reporting the results of research.	Control	25	15.05	-2.20	-5.047	.000
	Experiment	25	17.25			
Overall	Control	25	76.20	-8.400	-7.606	.000
	Experiment	25	84.60			

Significant at 0.05 to 0.1

Table 7. Independent Sample t-Test Between Control and Experiment Group Toward Soft Skills practice

Soft Skills	Group	N	Mean	Mean Different	*t*	Sig.
Communication	Control	25	3.64	-.434	-4.59	.000
	Experiment	25	4.08			
IT practice	Control	25	3.59	-.320	-2.73	.000
	Experiment	25	3.91			
Numeracy	Control	25	3.42	-.520	-5.70	.000
	Experiment	25	3.94			
Learning	Control	25	3.90	-.272	-2.22	.031
	Experiment	25	4.17			
Problem Solving	Control	25	3.87	-.377	-3.22	.002
	Experiment	25	4.25			
Teamwork	Control	25	3.91	-.250	-2.63	.011
	Experiment	25	4.16			
Soft Skills	Control	25	3.80	-.351	-4.98	.012
	Experiment	25	4.16			

and/or program evaluation studies (mean difference = −2.20, $t = -5.047$ and sig. = .00 < 05). These results showed that blended learning significantly increases students' competency in take-home essays of short proposal writing.

Differences in Students' Perception toward the Practice of 21st Century Skills between Conventional Classroom and Blended Learning

Table 7 shows the result of an independent *t*-test conducted to determine the mean score of 21st-century skills practice, which consist of soft and hard skills. A significant difference was observed between the control and experimental groups in the overall level of soft skills practice (mean difference = −.351, $t = -4.98$, sig. = .012 < .05). Looking at each component of soft skills, significant differences were also observed in both groups, specifically communication (mean difference = −.434, $t = -4.59$, sig. = .000 < .05), IT practice (mean difference = −3.20, $t = -2.73$, sig. = .000 < .05), numeracy (mean difference = −.520, $t = -5.70$, sig. = .000 < .05), learning (mean difference = −.272, $t = -2.22$, sig. = .031 < .05), problem solving (mean difference = −.377, $t = -3.22$, sig. = .002 < .05), and teamwork (mean difference = −.250, $t = -2.63$, sig. = .011 < .05). The experimental group had a higher mean score in soft skills practice and its components than the control group. These results imply that blended learning gives more opportunities to students to practice their soft skills in the methodology course.

Table 8 shows a significant difference in the overall hard skills practice between the control and experiment groups (mean difference = −.312, $t = -2.78$, sig. = .008 < .05). Significant differences were also observed between the control

Table 8. Independent Sample t-Test Conducted in the Control and Experiment Groups on the Practice of Hard Skills

Hard Skills Practices	Group	N	Mean	Mean Different	*t*	Sig.
Knowledge and Practice of Research Methodology	Control	25	3.98	-.312	-2.78	.008
	Experiment	25	4.29			
Specific Skills of Research Methodology practice	Control	25	4.14	-.355	-5.04	.000
	Experiment	25	4.32			
Overall Research Methodology practice	Control	25	4.06	-.272	-2.99	.000
	Experiment	25	4.31			

Table 9. Independent Sample t-Test on the 21st Century Skills Practice Conducted on the Control and Experiment Groups After Evaluation

The 21st Century Skills	N	Mean	Mean Difference	t	Sig.
Control	25	3.86	.0704	−5.04	.000
Experiment	25	4.13			

and experimental groups in knowledge and practice of research methodology (mean difference = −.184, t = −1.83, sig. = .073 < .05) and specific skills of research methodology practices (mean difference = −.248, t = −2.73, sig. = .009 < .05). The experimental group practiced hard skills and their components more intensively than the control group. Therefore, blended learning allows students to practice and acquire research methodology knowledge and skills much better than the conventional methods.

Table 9 shows the statistical comparison of overall students' 21st century skills between the control and experimental groups. A significant difference was observed in both 21st century skills practice (mean difference = .0704, t = —5.04, sig. = .000 < .05). The experimental group yielded a higher mean score in skills practice than the control group. Therefore, blended learning significantly enhances the 21st century skills in students

Table 10. Observation Summary of Blended Learning Activities

Topic of discussion	Delivery method and task	Main online tool used	Students' online activities	What do the students practice and gain?
The notion of social science research, type and current issues of research in language teaching and learning.	Lecturing in the classroom. Online discussion in the group.	eLearning wall Reply button Messages Assignment	Discussing, asking a question, sharing ideas and resources.	Soft Skills Communication, IT, teamwork. Learning Hard Skills knowledge of social research, and awareness about interesting issues of research in ELT
Research background, current issues related to the need for the study, Research problems and objectives	Video resources posting. Online discussion in group. Group project report. Classroom presentation. Individual report.	Video eLearning Wall Reply button Assignment Online submission	Watching and commenting on video resources.	Soft Skills Communication. IT. Working with others, problem-solving, learning. Numeracy Hard Skills Knowing how to find key issues for a research background. Practice writing a research background,
Writing a literature review, finding relevant theory and related research, types of sources of literature, writing in APA Style.	E-resource sharing. Free online discussion. Group classroom discussion and presentation. Individual report.	Group Wall and Reply Button	Online searching, resources sharing. Reading resources. Commenting	Soft Skills Communication. IT. Working with others, problem-solving, learning. Hard Skills Knowing relevant theories of their research topic. Practice writing literature reviews. Sharing content knowledge of the topic.
A description of the research methods, such as qualitative, quantitative, single-case designs, action, and outcome-based research;	Work in groups in and outside the classroom (Offline). Group online presentation.	Elearning Wall and Reply Button.	Online questioning and answering.	Soft Skills Communication. IT. Teamwork, problem-solving, learning skills. Hard Skills Knowing the appropriate research method for a study. Selecting a research method for a proposal.
Writing a short research proposal.	Teachers direction in classroom. Individual online presentation.	Elearning Wall Assignment Online submission	-	Softs Skills. IT, problem-solving and learning skills. Hard Skills Applying knowledge of research methodology.

better than conventional methods.

Observation Summary of Blended Learning Activates in the Experimental Classroom

Table 10 shows the results of the observation in the experimental classroom group. Five main topics of methodology course content were taught by the teachers in the blended learning class as well as the control class. The teachers employed the following learning methods in face-to-face classes: lectures, classroom group discussions, group projects, and presentations in both blended and conventional learning (control class). The following learning methods were applied for online learners in the blended learning class: wall postings, resource sharing, free discussions, individual posting and presentations, and group discussions. The main elearning tools used in transmitting knowledge were the elearning wall, reply button, group wall, messages, assignments, and online submission. Students were made to participate through topic discussions, asking questions, sharing ideas and resources, presentations through video, observing, commenting on videos, online searching, and resource sharing. Furthermore, the sequences involved in blended learning enabled the students to practice and therefore enhance both their soft and hard skills.

DISCUSSION

This study investigated the effect of blended learning activities on students' performance in research methodology and their practice of 21st century skills. Blended learning was implemented in the experimental class to determine these effects. The study contributes to the area of blended learning implementation. It also contributes to the nature, concept, and method of implementing blended learning in different types of education.

The study showed that blended learning activities are more effective for enhancing students' methodology course performance and 21st century skills practice than the conventional face-to-face classroom. Their performance in this study was used as a measurable dependent variable. Students' performance in both test and take-home essays showed statistically significant improvement. An improved score was observed for blended learning students in both test and take-home essays in research methodology. A significant difference was also found in the multiple-choice and essay questions categories. However, the matching test category showed no difference between the conventional and blended learning classes. The results also showed that students in the blended learning class showed higher performance in the take-home-essay of short research proposal writing. Specifically, blended learning resulted in a higher performance for a description of the study problem occurring in a practice setting and rationale for the study; a preliminary literature review (6–8 articles) analyzing existing information that will help the researcher to understand the problem; a description of the research methods, such as qualitative, quantitative, single-case designs, action research and outcome-based research; a description of information that the research potentially provides; and a description and analysis of ethical and culturally relevant strategies for interpreting and reporting the results.

Students in the blended learning class participated in the lessons without being physically present in the class. Their eagerness to learn was continually channeled towards elearning. They participated by posting, asking questions, responding, and following class updates. Ma, et al., (2019) revealed that blended learning yields more opportunities for students to experience and interact flexibly in an online classroom after receiving general knowledge of topic discussions in the physical classroom. These methods significantly develop students' content knowledge and obtain better results. Online learning activities such as group and individual discussions, online presentations, and sharing resources, significantly enhanced students' performance in research methodology. This is reflected by the score of the blended learners, which showed a higher posttest and post-take-home essay scores than the conventional classroom students. The findings are in line with a study conducted by Broadbent (2017) that concluded that blended learning significantly improved students' academic performance, and one by Hadiyanto et al. (2021) that revealed that blended classes show higher GPA achievement than the conventional category.

In connection with 21st century skills practice, the integral aspects of blended learning involve communication, the use of IT, arranging work to meet a deadline, learning from others, updating resources, solving problems, and working in groups. These soft-skill practices, taught through blended learning,

enable students to gain course knowledge and skills while significantly improving their academic performance (Fischer & Hanze, 2019; Glowa & Goodell, 2016; Hadiyanto et al., 2018). Furthermore, the results showed that the students' 21st century soft skills in the blended learning class, such as communication, IT, numeracy, learning, problem solving, and teamwork, were more improved than in the conventional class. Students were able to build and enhance their individual course knowledge and hard skills as well. Learning activities in the classroom were saved to an online platform to prevent students losing the information they obtained during classroom learning. Through the practice of skills and knowledge of research methodology, various blended learning activities lead students to attain their learning goals.

The results also imply that the students' 21st century skills may be developed not only in the conventional classroom but through online learning as well. Academic activities online provide wider flexibility for students to think critically, contribute, and share ideas in a course topic discussion. As a result, the students have more chances to practice and enhance their 21st century skills, both soft and hard skills, while improving their academic performance (Hadiyanto, 2019c; Hadiyanto et al., 2021; Singh & Singh, 2017). Students showed higher participation in online learning activities after conventional classroom learning. They maintain and develop their capacity by discussing, communicating, searching, sharing, questioning, answering, suggesting, and responding. This agrees with Nathan & Rajamanoharane (2016) that online learning supplements and supports students in gaining more knowledge and soft skills while improving their attitude towards learning.

Contribution of the Research

The research contributes to the theoretical and practical sides of blended learning strategies. For a practical contribution, it provides new information that increases teachers' advantages when using online learning strategies while inviting other teachers to apply them in more creative ways to fulfill course objectives. It also helps teachers choose the appropriate content delivery method to enable students to acquire better academic performance and 21st century skills. The study results also show educators that different learning methods improve students' performances in different ways and enhance their practice of 21st century skills. For instance, a group discussion helps to improve students' communication and teamwork skills. Particularly, it enables the teachers to practice blended learning, thereby allowing the students to practice soft and hard skills related to the subject. Teacher innovation and creativity in combining learning methods such as group discussion, individual learning, and group and individual presentations and projects, is another important factor for success in using a blended learning strategy that significantly impacts students' learning outcome.

From the theoretical perspective, this research adds more value to the available literature on blended learning usage in different education contexts. The practice of 21st century skills during the learning processes is an argument for blended learning usage. In the past, blended learning has contributed to the area of teaching and learning, and this research gives more information on the theory and innovative concept of its implementation. Furthermore, this study showed that blended learning enhances student academic performance and improves their propensity to use IT applications, work together, search for solutions to problems, discover better ways to learn, and present and share information and resources. Therefore, blended learning's methods enable students to practice and develop their 21st century skills through learning activities. A hypothesis can be created from this notion: The use of blended learning by more teachers ensures an improvement in the academic performance and skills of students. However, further studies have to include a wider population and multiple classes for the development of experimental research on blended learning in this context of the study. Mixed qualitative and quantitative methods are needed to ascertain the effectiveness of blended learning activities and ways of improving the 21st century skills of students based on the current research definition.

As part of a larger research push, these results have been forwarded to the policymakers of our university. Only a few universities worldwide provide extracurricular training to equip students with 21st century skills. The practice of these skills through blended learning activities will be helpful in reducing the number of unskilled graduates. Furthermore, it gives students the advantage of

acquiring skills while in school and rendered as unnecessary spending more funds to acquire basic skills after graduation. This is why policymakers in the university suggest that teachers have to be trained in the strategic and effective use of blended learning strategy in the classroom.

Implication and Limitation

These results disagree with the assumption that online learning fails to help students catch up with their classroom functions, gain adequate knowledge, and engage in academic activities. Previously, many educators and teachers stated that academic activities, skills, and knowledge cannot be enhanced through online learning. However, some researchers have attempted to ascertain the extent of teacher competence in designing and implementing blended learning activities, as many online learning platforms presently have adequate features that support various learning activities that equally develop students' 21st century skills. To address this issue, teachers should be trained in designing and implementing online learning activities that engage and expose students to 21st century skills while learning (Shulamit & Yossi, 2011). However, making teaching and learning fully online decreases the effectiveness of the educational process. Aside from exposing students to modern-day skills, the choice of blended learning is an appropriate solution to problems of time constraints and unavailability of physical space at campuses and schools. However, online teaching without face-to-face learning neglects the objective of actual learning, which includes emotion, behavior, body language, and sense or feeling. Therefore, face-to-face and online learning complement each other (Ellis et al., 2008; Nathan & Rajamanoharane, 2016).

CONCLUSION

Blended learning was implemented in the experiment class to investigate its effect on students' course performance and their practice of 21st century skills, specifically in a Research Methodology course, by diving the class into conventional and blended learning classes. This implementation yielded a significant improvement in students' performance in the blended learning class, and their practice of 21st century skills, when compared to the conventional class. Therefore, this study is expected to contribute to the scope of blended learning research and inspire other teachers to use it to fulfill the objective of learning. As more universities worldwide are enacting policies to move to fully online learning due to the COVID-19 pandemic, further research has to focus on seeking and designing blended learning to meet pedagogical principles, and be more interactive and effective, particularly in the foreign language teaching context.

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