



Developing EFL Students' 21st Century Skills Through Flipped Learning and Field Study

Hadiyanto^(✉), Nunung Fajaryani, Bunga Ayu Wulandari, Duti Volya, and Fadlaini

Universitas Jambi, Jambi, Indonesia

hadiyanto@unja.ac.id

Abstract. The study investigates the effectiveness of flipped and field learning to promote EFL students' 21st-century skills. The pre-experimental design was applied to examine the effect of flipped and field learning. Twenty-two students participated in this pre-experimental research. Pre-test, while-test, and post-test were administered through self-assessment in the classroom. Descriptive findings reveal the increase in students' 21st-century skills and sub-skills, consisting of communication, IT, numeracy, learning, problem-solving, and teamwork skills, from pre to while test, while to post-test and pre to post-test. Furthermore, paired sample t-test proves that combining flipped learning and field study significantly affects students' 21st-century skills improvement. The students' scores significantly increase from pre-to-while-test, pre-to-post-test, and while-to-post-test. In conclusion, flipped learning and field study develops students' 21st-century skills effectively. The study recommends combining flipped learning and field study in other courses to discover its collective effectiveness.

Keywords: Flipped learning · field study · 21st-century skills · EFL learning strategies · cooperative learning

1 Introduction

The learning approach has developed significantly along with the rapid digital technology advancement in the 21st century. Teachers can apply digital technology to organize and enhance student learning activities with various strategies and methods. One of the learning strategies that can be used in digital learning is flipped or inverted classes which are often also categorized as the blended learning model (Sever et al., 2019). Additionally, the learning activities at the university level should be able to develop students' 21st-century skills, scientific knowledge, and research skills. The learning is also expected to construct students' optimistic attitudes and views about using technology to develop their skills and capacity.

Flipped learning offers learning autonomy for students to learn from various resources, starting with their knowledge of a single course topic. The learning can be started by spending time exploring new ideas and gaining insight. Furthermore, students can manage their learning through online learning platforms and be involved in group discussions. Thus, students should play an active role in communication, group work,

critical thinking, problem-solving, finding resources, and using digital IT to build their 21st-century skills, major knowledge, and technical skills.

Some evidence from related research reveals that blended learning effectively enhances students' 21st-century skills (Hadiyanto, 2018; Jokinen, 2013). However, most of the research does not investigate specifically the application of flipped learning and field study in improving students' 21st century skills. A study that applied a field-based learning approach through flipped learning found that student course knowledge and skills significantly improved (Butt, 2014). In the same vein, many studies in the literature report the positive effects of flipped learning practices on student achievement, 21st-century skills, and attitudes Akgün and Atici (2017). Meanwhile, field study is defined as a learning strategy directly carried out by students in the field, workplace, or internship site. This learning strategy effectively provides students with a learning experience that improves their collaboration, communication, and critical thinking skills (Kandamby, 2019). In short, integrating flipped learning and field study is assumed to maximize students' 21st-century skills, subject knowledge, and skills. This study investigates the effectiveness of flipped learning and field study on students' 21st-century improvement.

1.1 Flipped Learning and Field Study

In conventional blended learning strategies, generally, teachers introduce structured material and the topics of a lesson before starting students' learning activities in the classroom and virtual room. Student face-to-face and online activities are set up after the students have basic knowledge of the course topic and material. Flipped learning is a variety of blended learning that emerged after the massive use of digital technology and classroom learning models. Flipped learning has several benefits, including allowing students to develop their own learning autonomy and being independent, adaptable, and explorative (Ocak, 2011). An example of flipped learning is a blended learning strategy, transferring content outside the classroom environment and supporting interaction and practice in the classroom (Cristen et al. 2013). In addition, flipped learning is a reverse learning model that starts from a student completing learning activities, while learning activities in large classes are extended to a private learning environment so that students gain theoretical knowledge individually or in groups in a dynamic and interactive learning platform under the guidance of lecturers (Baker, 2000).

Field study is an independent or in-group field-based learning where students analyze, conduct, and build knowledge and skills from the field (Kandamby, 2018). Therefore, the combination of flipped learning and field study in learning activities is assumed to improve students' soft skills, character, knowledge, and skills related to the content more effectively (Hadiyanto et al., 2021, Sever, 2019). This learning starts with each individual working on a topic, followed by group discussions until the students reach an agreement. Teachers facilitate the students to be more focused and guide them to stay on the right track to achieve the learning objective. Learning activities are conducted in both outdoor classes and online classes. In this learning, students must interact, help each other and use all available resources to understand their task.

In the field study, students complete their projects in a group and learn from factual and practical resources to comprehensively understand the course material. The

teacher's role is to advise and guide the students to effectively communicate, discuss, work together, and divide group members. Each group member must take on their respective roles and responsibilities. Learning will be visible in the field study since there is more interaction and discussion, along with the application of critical thinking and character values. Furthermore, the teachers must have clear directions and targets for learning outcomes (Hadiyanto et al., 2021).

1.2 21st Century Skills

21st-century skills are equivalent to soft skills, generic skills, professional competence, and life skills. These skills have been classified as essential by the government and industry (Hadiyanto, 2021; Aspiring Mind, 2016). The 21st Century skills being investigated in the current study are the ability of students to apply communication, IT skills, numeracy skills, learning, problem-solving skills, and teamwork to obtain the learning goal (Dikti, 2020).

Communication skills involve the ability to identify, access, organize and communicate knowledge in written and oral English, as well as good listening skills and awareness (Hadiyanto et al., 2018; Mekala et al., 2020). *Numeracy skills* subsist students' ability to read, select, use, interpret, and apply numerical, graphical, spatial statistical, and other related skills as tools in their learning (Hadiyanto et al., 2018; Khan, 2018). In this current study, *IT Skills* refer to the student's ability to use digital technology to support and achieve their learning goals (Hadiyanto et al., 2018; Mekala et al., 2018). Meanwhile, *learning skills* represent students' ability to be actively involved in different learning activities in and outside the conventional and online classroom (Hadiyanto et al., 2018; Fandino, 2016). *Problem-solving skills* are the ability to tackle problems systematically, whether in conventional or online learning (Hadiyanto et al., 2018; Dikti, 2020). *Teamwork skills* do not only represent the ability to complete a task but also the ability to communicate effectively, contribute ideas, and listen to others. One of the aims of team works is to obtain a sound and robust decision or conclusion in completing group work (Hadiyanto et al., 2018; Dikti, 2020).

2 Research Method

This study used a pre-experimental research design. In other words, this research was only conducted in one class experiment with no control class. Twenty-two students taking a research methodology course in the current semester were involved as research participants. Among the 22 students, three students were male, and 19 were female students. Thirteen of the students attended eight classes, and nine of them attended nine courses. In terms of CGPA, eight students obtained 3.51 to 3.75 GPA, 11 students attained 3.25 to 3.5, and three students got 3.00 to 3.25.

The self-assessment instrument was adapted and updated from the authentic assessment of the core competencies model (Hadiyanto et al., 2018). Data were collected through three tests, namely, pre, while, and post-test. There were six variables being measured in this study, including communication, IT digital, numeracy, learning, problem-solving, and teamwork skills.

As Pallant (2011) and Hair et al. (2009) suggested, a Cronbach alpha coefficient of .60 was considered acceptable since our construct consists of 10 items and below. Meanwhile, a Corrected item-total correlation at 0.30 is acceptable. In the present study, the consistency of the 21st-century skills test instrument obtained a Cronbach alpha coefficient of .761, with a corrected item-total correlation of 0.30 and an α level of more than .60. In short, the instruments were reliable and valid for measuring the students' 21st-century skills.

3 Data Analysis

Descriptive analysis was used to report the mean score of 21st-century skills achievement between the two classes. It was also used to compare the nature of differences across pre, while, and post-tests. The student's responses to a questionnaire using a 1–5 Likert scale were further analyzed using paired sample t-tests. This analysis was used to identify differences in students' scores across pre, while, and post-tests. As Pallant (2011) suggested that paired sample t-test is appropriate to compare two tests at one time. A significant value (p) at 0.05 to 0.1 was used to interpret the substantial difference between the two comparative scores.

4 Findings

The descriptive comparison results showed that the mean scores from the while-test and post-test were higher than the pre-test, as presented in Table 1. All components of 21st-century skills yielded higher mean scores at while and post-test than pre-test. The identical post-test also produced a higher mean score of all elements of 21st-century skills than the while-test. However, paired sample t-tests should be conducted to investigate different statistical values across the test results.

4.1 Results of Paired Sample t-test

Paired sample t-test was conducted to compare the student's scores from the pre and while test, pre and post-test, and while and post-test. Table 2 shows the significant

Table 1. Research Finding

Variable	Pre-Test		While Test		Post Test	
	6.55	0.86	7.14	1.21	8.50	1.54
Communication Skills	6.82	0.73	7.32	0.57	8.32	0.84
IT Skills	6.32	0.57	6.73	0.98	7.91	1.27
Numeracy	6.59	0.73	7.32	1.04	8.91	1.48
Learning	6.59	0.80	7.27	1.12	8.77	1.51
Working with others	6.59	0.59	7.14	1.08	8.64	1.53
Overall 21 st -century skills	6.58	0.46	7.15	0.60	8.52	0.81

Table 2. Results of Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PRE & WHILE Test	22	.965	.000
Pair 2	PRE & POST Test	22	.955	.000
Pair 3	WHILE & POST Test	22	.975	.000

		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	PRE – WHILE	-.575	.197	.042	-13.682	21	.000
Pair 2	PRE – POST	-1.93	.39355	.08391	-23.114	21	.000
Pair 3	WHILE – POST	-1.36	.26042	.05552	-24.560	21	.000

paired correlation across all two variables ($p = .05$). The result showed that students' 21st-century skills increase significantly from pre-test to while test ($p < .05$), pre to post-test ($p < .05$) and while to post-test ($p < .05$).

5 Discussion

Descriptive findings reveal that the combination of flipped learning and field study improves each component of students' 21st-century skills. Flipped learning facilitates students to explore digital resources, online discussions, and individual learning activities before coming to the classroom and listening to the teacher's explanation. Moreover, the student' 21st-century skills increase more significantly after they go to field study to practice and experience their knowledge and skills. In short, the descriptive findings reflect the success of the combination of flipped and field learning.

Further analysis with paired sample t-test statistically proves the student's 21st-century skills improvement from pre to while-test and while to post-test. The improvement occurs consistently for all students. The flipped learning and field study aided the students in applying their communication, IT, numeracy, problem-solving, learning, and teamwork skills during the learning process. The practices of those skills are carried out intensively in online and outdoor activities. The students also applied written, audio-visual, and video resources to acquire knowledge and skills in related learning topics. Finally, the findings implied that the flipped learning and field study strategy effectively developed students' 21st-century skills.

This research mainly contributes to the field of teaching and learning for developing students' 21st-century skills. The findings are also expected to inspire other teachers to be more creative in combining teaching and learning techniques to boost students learning activities and obtain learning objectives. Lastly, this research also attempts to prolong the evidence for prospective researchers, along with master's and Ph.D. students to develop the research idea from a different angle and more tangible investigation.

6 Limitations of the Study

The scope of this study is in the area of students' activities in flipped learning and field learning, as well as their effect on students' 21st skills. This study was not touching subject knowledge and skills achievement. This study was conducted with a pre-experimental design, so the impact of flipped learning and field study research was only investigated in one class without a control group. Therefore, the comparison with conventional learning strategy was not obtained.

7 Conclusion

The study concludes that a combination of flipped and field learning improves students' 21st-century skills, including communication, IT, numeracy, learning, problem-solving, and team working skills. Teachers should design innovative student learning activities to allow students to practice the subskills of 21st-century skills. Implementing the integration of flipped learning and field study in all courses can result in the highest level of students' 21st-century skills. Further research is expected to investigate more variables and search for practical flipped learning and field learning usage in developing students' 21st-century skills, course content knowledge, and skills. Finally, this study recommends teachers to apply flipped learning and field study in course learning design, particularly in developing students' 21st-century skills.

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