



Utilizing Siakad Web-Based Learning (SWBL) to Promote Creativity Performance for University Students

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ABSTRACT

This study aimed to investigate and explore potential factors influencing the creative performance of using SIAKAD web-based learning (SWBL). This study utilized the effect of SWBL to improve students' creative learning in English Syntactic Structure class. However, SWBL was theoretically researched, and this study's perspective enriched teachers' learning creativity. Therefore, the SWBL has been designed as a learning environment system with planning, learning, evaluation, and reflection based on attributes, processes, and learning contexts. Fifty students participated as participants that were randomly assigned to be the experimental and the control group. This study used quantitative research with a quasi-experimental design. This research method was used to determine which group was effective in helping students improve their academic achievement in English Syntactic Structure. Treatment was provided in the experimental group by conducting English Syntactic Structure on the SWBL while the control group was performing a lecturing learning class. The data were analyzed by using t_{count} and t_{table} . The final data was evaluated using the *Statistical Product and Service Solution* (SPSS 23). The result of this study indicated that the students using the SWBL in the English Syntactic Structure class exhibited significant improvement in creativity performance. The experimental class students who used web-based learning scored 16.111 higher than the control class. Furthermore, the SWBL capabilities of the experimental group demonstrated gradual and continuous improvement. In addition, students' thinking skills and academic achievement in the experimental group are discussed in depth.

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1. Introduction

1.1 Background of Study

The characteristics of policies contained in the regulation of the Minister of Education, Culture, Research and Technology (Permendikbud) Number 53 of 2023 concerning to the quality assurance in higher education which consists of interaction, creativity, integration, scientific, thematic, collaboration, and student-centered based learning (Suter, 223; Mundy, 2023; Sulistyanto, et al., 2022). This consist of formal instruction, manner and procedural of how the quality assurance achieved. As higher education institutions, there are

responsibilities services as producing qualified graduates as stated in Law No 12 Year 12, such as qualified graduates in science and technology, motivated, having strong leadership, and academic performance outcomes (Mundy, 2023; Schnaider, 2023). This infers that every student learns both hard and soft skill completely during their study.

And there are many reasons why students cannot achieve the skills during their study and do not overcome the problem indecently. Globally, problems as: lack of competencies, creativities, collaboration, innovation, leadership are dimension demanded to solve in any learning communities (Ahmaed, 2023; Morris, et al., 2023; Kenayathulla & Yemini, 2023).

This research investigates the characteristics of SWBL as a solution to improve skills students in university. Recently, learning system in Indonesia has adopted web-based learning system in the classes as: SPADA, SIPATEN, *Id Belajar*, and academic Avnet (Degner, et al., 2022; Lin & Zhou, 2022). Students of universities doing their learning, assignments, projects and evaluation in the web-based learning system totally. And the quality assurance that specifically investigates in this research is the utilizing of SIAKAD web-based learning to improve students' academic achievement in syntactic structure class in 2023 academic year (Kenayathulla & Yemini, 2023; D'Agostino, 2023; Froehlich, et al., 2020). The study provides a type of quantitative research using a quasi-experimental design and *Statistical Product and Service Solution* (SPSS 23). This research used two groups; experimental and control group. Then the two groups will be analysed to perform their academic achievement.

1.2 Research Objectives

In accordance with the background of study, the Research Objectives are formulated as follows:

- a) Do students enhance their academic achievement by learning SWBL?
- b) Do students learning in the SWBL show better thinking skills than those who learn in lecturing classroom method?
- c) Do students learning in the SWBL show better academic achievement than those who learn in lecturing classroom method?

2. Literature Review

2.1 Creativity

One of the crucial elements in developing human intellectual potential, interest and self-learning habit is named with learning creativity. The figure of learning creativity is limited within the scope of education (Hu, et al., 2022; Karchner, et al., 2022). The growth in interest is primary supported creative thinking to adjust easily a way out of any problems and obstacles that are considered useful or valuable by integrating the knowledge, skills and experience of diverse professional fields (Amanda, et al., 2022; Su & Yang, 2023; Morris, et al., 2023). Therefore, the paradigm and perspective of creativity is complex and challenging to define in the research fields but in learning-teaching interactions, it is no longer a single element but rather a set of elements which influence factors to define a person's creativity, personality, cognitive ability, thinking style and academic achievement.

Previous studies have analysed person-centred and the influenced factors as variables that contribute to creativity. From a more holistic perspective, many studies on creativity have adopted approached to investigate different aspects of creativity in learning-teaching interactions (Chang et al., 2020; Sihaan, et al., 2021; Shadiev, et al., 2022). Therefore, the generation and manifestation of creativity performance can be captured through online learning management system as SWBL.

The limit and scope of creativity is within the interception of SWBL that positively develops students' capabilities, thinking skills and academic achievement (Hidayah, et al., 2020). SWBL presence enables students to implement their learning strategies flexibility to generate new ideas is necessary. It is concluded that SWBL can be considered as an effective way to promote creative performance (Gupta, et al., 2023; Suter, 2023; Sulistyanto, et al., 2022).

2.2 Web-Based Learning (SWBL)

SIAKAD web-based learning serves learning transition to virtual platforms for teaching (Mesterjon, et al., 2022). This web-based learning systems contain complete menu and instruction for teaching activities (Qibtitah & Fitriyani, 2023; Hartatik & Purnomo, 2022; Sihaan, et al., 2021). SWBL is a system to make transition from teaching in in-person format teaching and learning in online format successfully (safrizal & Afkar, 2023). Worldwide, schools and universities implemented online teaching and learning activities or blended learning as combination of online and traditional teaching activities (Cashman, et al., 2023; Fitria, 2023). Then, public trust educational quality to schools and universities with web-based learning (Adrian, et

al., 2020; safrizal & Afkar, 2023).

The challenges of SWBL system still remain as the inadequate integration of teachers and learners in web-based learning adoption. The high cost of installation and operating of the web-based learning as maintenance cost, cyber-attacks assurance cost and web-based learning training cost (Futterer, et al., 2023; Vieira & Pedro, 2023). These current challenges could exclude rural learners for the access of the web-based learning in rural areas are still in development programs (safrizal & Afkar, 2023).

Then the relationship between SWBL to the elements of academic satisfaction, as background and students; experience and students; collaboration, interaction, autonomy, application, remembering, understanding and analysing perform strong connection (Abbey, et al., 2024; safrizal & Afkar, 2023; Fitria, 2023; Adrian, et al., 2020).

2.3 Self-Directed Learning

Self-directed learning based on SWBL self-awareness play crucial role in achieving academic achievement skills. Learners motivation and creative learning helps learners be innovative, learn new things, try out new ideas, and have new ways of thinking and problem solving. For this reason, the scholars conclude that the self-directed learning based on SWBL and creativity has clear and strong connections (Kaliisa, et al., 2022; Golumbic, et al., 2022; Qibtiyah & Fitriyani, 2023; Fitria, 2023).

Some schools and universities have conducted total online learning environment within the academic format. All teaching-learning activities conducted online. Effectivity and self-directed learning motivation are two reasons that has collaborated to perform creative teaching methods as using web based learning (Song & Bonk, 2016; Chou, 2012; Durnali, 2020).

2.3 Learning Context

Learning context expand the function of learning attributes as well as the learning process. The dimensions as learning attributes and learning process within learning context support learning creativity. Each of the dimension perform learning collaboration to students online learning environment as well as hybrid. Learning attributes achieved effectively by doing learning process based on the online learning context Leow, et al., 2016; Park & Weng, 2020; Shadiev, et al., 2020).

The learning context preferred to analyse is based on online learning environment as SWBL. Then this research collected the data to share the information clearly. Educational media shared on SWBL are working online to transmit knowledge and learning activities to learners. SWBL supports learning context in order to have effective service delivery and teaching-learning activities collaboration (Chou, 2012; Song & Bonk, 2016; Durnali, 2020). The SWBL is paramount and not only as higher education media but also as teaching-learning environment services (Durnali, 2020)

Therefore, the statements to each of the relationships of the background, satisfaction, collaboration, interaction, autonomy and academic achievement are positively supporting the students' academic achievement. The related journal publications showed the strong relationship of the statements to the SWBL. The SWBL performances are shown below:

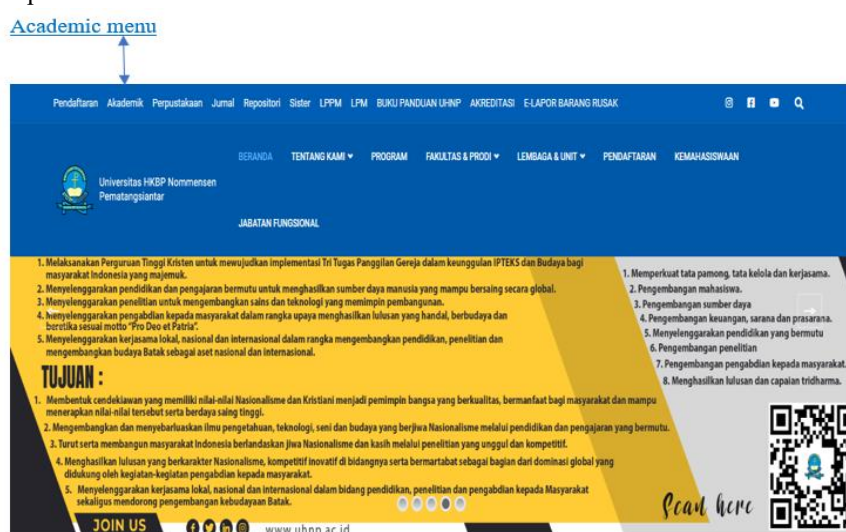


Figure 1. Front Look of the SWBL

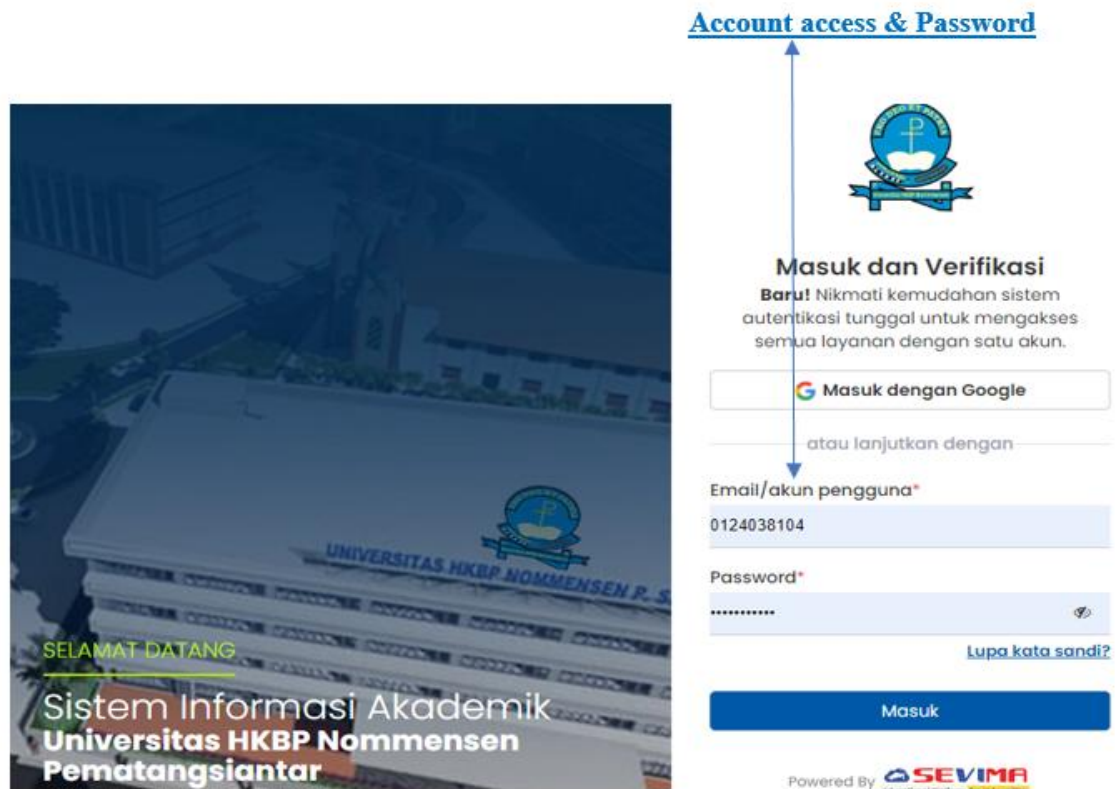


Figure 2. Entry Access to SWBL

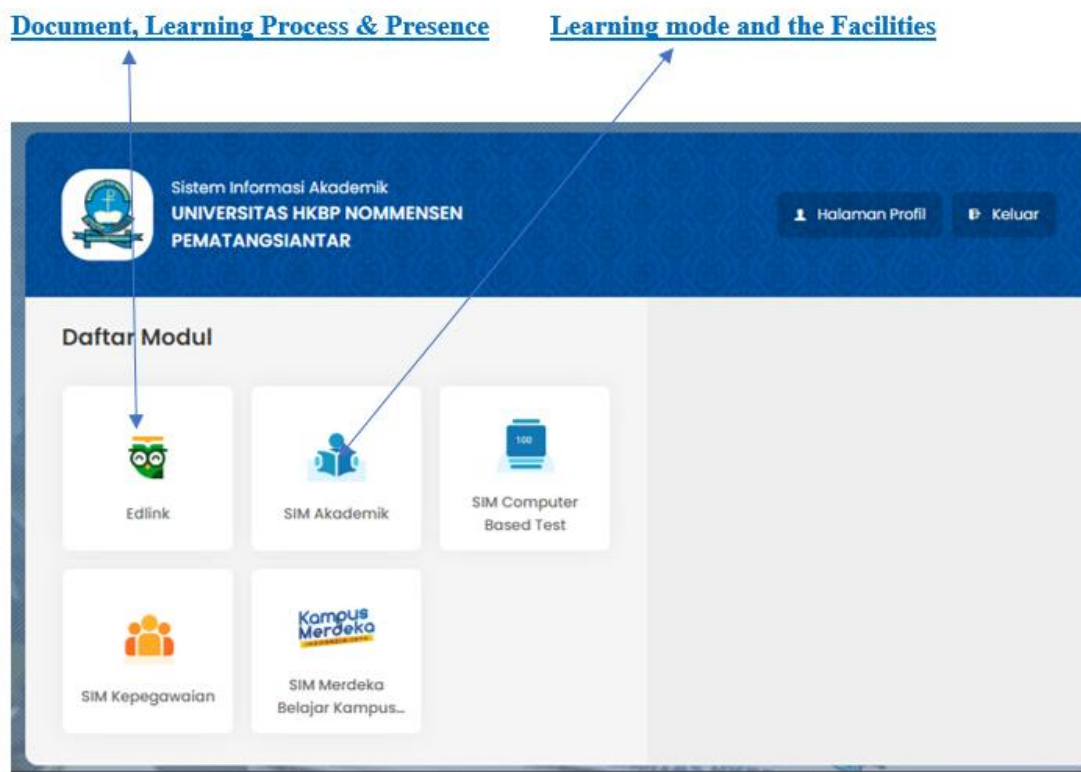


Figure 3. Academic Module

Code of the subject, class names and schedule

Kur	Kode	Mata Kuliah	Prodi / Pengantar	Nama Kelas	Pengajar	Jadwal Mingguan	Kap	Pd	Metode	Nilai Dikursi	PJM	Aksi
2022	PI	Pengantar Pendidikan	SI - Pendidikan Bahasa Inggris	PI-6	MURSIAP MURSIAPUS SARIWAN, S.Pd, M.Pd	Rabu, 10:00 s.d 12:00 p. 400	74	74				
2022	PI	Advanced Grammar	SI - Pendidikan Bahasa Inggris	PI-2	MURSIAP MURSIAPUS SARIWAN, S.Pd, M.Pd	Kamis, 07:00 s.d 09:00 p. 400	40	27				
2020	PI	Parts of Speech	SI - Pendidikan Bahasa Inggris	UPI	MURSIAP MURSIAPUS SARIWAN, S.Pd, M.Pd		5	1				
2022	PI	English Correspondence	SI - Pendidikan Bahasa Inggris	PI-1	MURSIAP MURSIAPUS SARIWAN, S.Pd, M.Pd	Sabtu, 10:00 s.d 12:00 p. 300	30	12				

Figure 4. Class Names

Self-Learning Management, Learning attribute and Learning Context

Kur	Kode	Mata Kuliah	Prodi / Pengantar	Nama Kelas	Pengajar	Jadwal Mingguan	Kap	Pd	Metode	Nilai Dikursi	PJM	Aksi
2022	PI	Pengantar Pendidikan	SI - Pendidikan Bahasa Inggris	PI-6	MURSIAP MURSIAPUS SARIWAN, S.Pd, M.Pd	Rabu, 10:00 s.d 12:00 p. 400	74	74				- Detail Pengajar - Kontrol Kuliah - Jadwal Perkuliahan - Presensi Kelas - Presensi Kedis - Jadwal Ujian - Nilai Perkuliahan - Bekas Kuisioner - SPK & SAP - Tugas Kuliah
2022	PI	Advanced Grammar	SI - Pendidikan Bahasa Inggris	PI-2	MURSIAP MURSIAPUS SARIWAN, S.Pd, M.Pd	Kamis, 07:00 s.d 09:00 p. 400	40	27				
2020	PI	Parts of Speech	SI - Pendidikan Bahasa Inggris	UPI	MURSIAP MURSIAPUS SARIWAN, S.Pd, M.Pd		5	1				
2022	PI	English Correspondence	SI - Pendidikan Bahasa Inggris	PI-1	MURSIAP MURSIAPUS SARIWAN, S.Pd, M.Pd	Sabtu, 10:00 s.d 12:00 p. 300	30	12				

Figure 5. Learning Attribute and Context

Creativity, Live Conference, Quiz and Satisfaction menu



Figure 6. Quiz, Conference, Task and Satisfaction Menu

Syllabus, Lesson Plan, Teaching Material

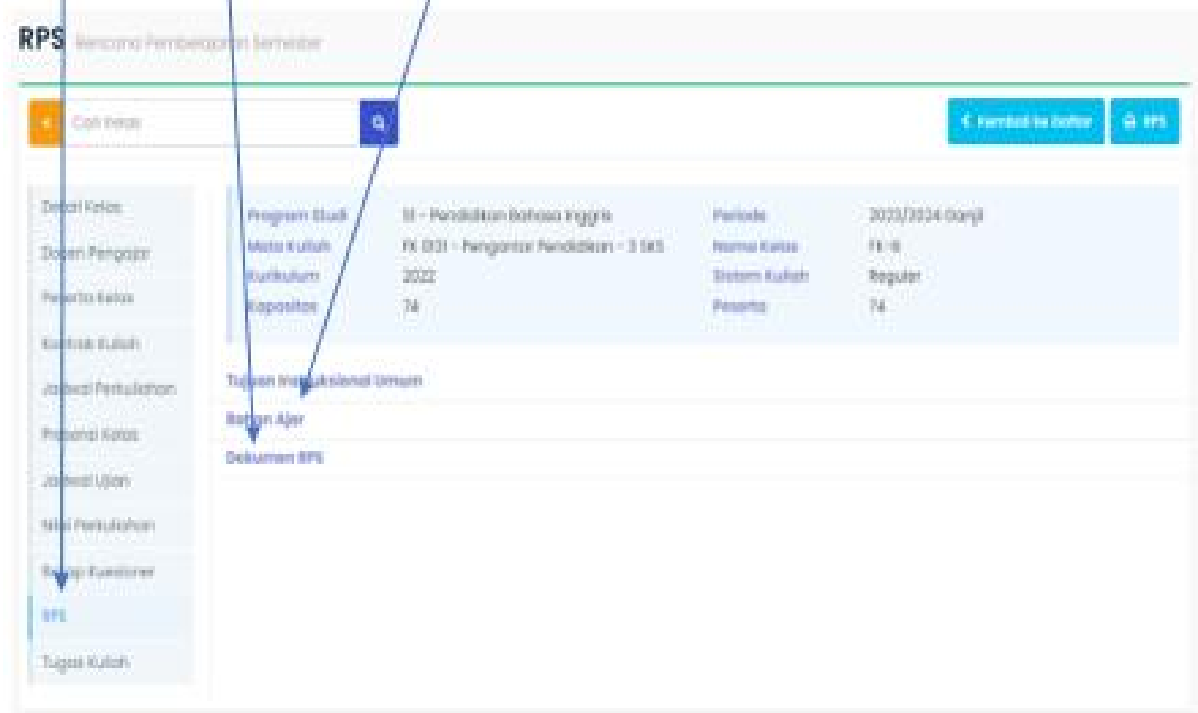


Figure 7. Syllabus, Lesson Plan, Teaching Material

Task Procedures, Schedule & Forms of the Task

Tugas Kuliah

Detail Kelas

Program Studi: SI - Pendidikan Bahasa Inggris

Mata Kuliah: PK 001 - Pengantar Pendidikan - 3 SKS

Kurikulum: 2022

Raportasi: 74

Periode: 2023/2024 Ganjil

Nama Kelas: PK-6

Sistem Kuliah: Reguler

Pemeriksaan: 74

No	Waktu	Judul	Keterangan	Tugas Pertemuan Ke	Awal Pengumpulan	Akhir Pengumpulan	Jumlah Pengumpul	Absen
Data kosong								

Figure 8. Task & Class Project

Scoring and the Aspects

Nilai Perkuliahan

Detail Kelas

Program Studi: SI - Pendidikan Bahasa Inggris

Mata Kuliah: PK 001 - Pengantar Pendidikan - 3 SKS

Kurikulum: 2022

Raportasi: 74

Periode: 2023/2024 Ganjil

Nama Kelas: PK-6

Sistem Kuliah: Reguler

Pemeriksaan: 74

Nilai dapat dilihat oleh Mahasiswa

PANDUAN PENYISIRAN NILAI

Untuk mengetahui skor, nilai sesuai yang diatur di profil akan ada **di sini** kemudian klik "Reset Komposit".

Jika terdapat informasi "Tuning KRS" pada kolom keterangan, maka nilai akan mahasiswa tidak akan dihitung ulang (penghitungan komposit nilai dapat tetap sama dengan nilai akhir)

No	NPM	Nama	Hadir (%)	QUIZ (10.00%)	KETAMPAKAN (20.00%)	UTE (18.00%)	UAS (32.00%)	SKAP (20.00%)	Nilai	Grade	Lulus	Kat
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Figure 9. Scores

3. Method

This research had pretest-posttest control class then semi-empirical design are used. SWBL were as independent variable and student attitudes toward SWBL were as dependent variables. Experimental and control class were be randomly assigned. The research was conducted in English Department students of Teaching Faculty of the University of HKBP Nommensen Pematangsiantar which was located in Jalan Sangnawalu No. 4 Pematangsiantar, North Sumatera – Indonesia. The reason for choosing this classes was the SIAD system applied in English and the students had competences to understand instructions, menu, tasks and information shared on the web. The survey included forty five participants who were distributed into class

with SWBL in their teaching-learning classes as well as lecturing class without SWBL. A quantitative research method applied in this study. The result of the study was analysed by using t_{count} and t_{table} . This study's model depicted variables on how to use SWBL to improve students' academic achievement and satisfaction. The data revealed that students' satisfaction favourably influenced by their background, experience, partnerships, relationships and autonomy. The final data was evaluated by using *Statistical Product and Service Solution* (SPSS 22) Furthermore, the effects of students' application, remembering, understanding, analysing and satisfaction were positively related to their academic achievement. This strong align and the result supported decision makers in the university and other higher education and colleges to manage, evaluate and implement SWBL totally in teaching-learning activities.

The scoring test was based on the identification and scoring of the Department of Education and Culture of Republic of Indonesia (Depdikbud RI) 2013. And to assess the students' learning achievement, the researcher used the criterion evaluation issued by the Department of Education and Culture (Depdikbud, 1994) of Republic of Indonesia. It is mentioned that learning achievement of 65% of the score is qualified success.

4. Findings and Discussion

4.1 Findings

The effect of SWBL to the academic achievement in English Syntactic Structure text in experimental class of University of HKBP Nommensen Pematangsiantar was good and successful. It is declared that SWBL system was suitable as a teaching-learning system to improve student's achievement in English Syntactic Structure and improved their academic achievement. 90 percent of the participants in the experimental class got grade A and 10 percent got grade B. Then in the control class, 30 percent of the participants got grade A and 50 percent of the participants got grade B and 20 percent of the participants got grade C. The data was collected, evaluated and analyzed both from the experimental and control class. The instrument of the data was given in forms of questionnaires, the pre-test and post-test.

The SWBL as a teaching had a significant effect on the student's academic achievement when learning English Syntactic Structure. The students perform high creativity and interest for SWBL could be accessed anywhere and anytime with. From the results of the data analysis t-test is greater than t-table ($6,100 > 1,667$) at a significant level of 0.05 with $df = N2$. This means the test is significant and there is an effect of SWBL on the student's academic achievement and satisfaction.

The goal of this study is to describe the benefit of SWBL to improve students learning creativity. The affection of SWBL is formulated in the forms of questionnaire, pretest and post-test. Each of the form consisted of questions belongs to syntactic structure understanding as well as satisfaction of using SWBL. The questionnaires were sent through Google Form to both of the class. While the tests for the experimental group were served in the SWBL and the test for the control group were served on papers. The researcher analyzed all the data in the form of questionnaire, pre-test and post-test base on the SPPSS 21.

Table 1. Paired Sample Test Results

Paired Samples Test SPSS									
		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	Interval of the				
					Lower				Upper
Pair 1	EX_CLASS CTRL CLAS	13.760	7.265	1.453	10.761	16.759	9.471	24	.000

4.2 Discussion

As the scientific step to find out the effect of utilizing SWBL to the learning participants, the research conducted investigation to two classes as: control class and experimental class. The SWBL applied to the experimental class and lecturing teaching method applied to the control class. Both of the classes were given questionnaires, pre-test and post-test of English Syntactic Structure. The instruction, number and quality of the questions were equally the same given to both of the classes. Then data of the pre-test and post-test from both of the classes were evaluated and analyzed. It the t test was higher than t table, then there was a significant effect of SWBL to the students' academic achievement as well as the satisfaction.

T test $>$ t table using SWBL had a complete learning-teaching menu as interesting media, enjoying teaching method and online class which served creative learning environment. Through SWBL, the experimental class participants performed academic and scientific data that creativity, self-learning management and critical thinking achieved better than control class (Adrian, et al., 2020; Mundy, 2023; Sulistiyanto, et al., 2022; Wen & Walters, 2022).

Then in the control class, students found out difficulties to write down the generic structure of Syntactic Structure text because learning the material through lecturing without interaction. Most of the class learning conducted by giving instruction, and order. Sometimes they learnt from book without having partners to explain the lesson. It proved that the participants in the control class has lower achievement than the experimental class (Hennessy, et al., 2022; Wen & Walters, 2022; Chiang, et al., 2023).

5. Conclusion

The purpose of this study was to investigate and to understand the empirical evidence of the effect of utilizing SWBL to promote creative learning performance in University. The aspects of learning creativities in SWBL performed higher than lecturing class. The participants showed higher learning satisfaction in SWBL, therefore the SWBL function as well the use were practically and theoretically improved the academic achievement and satisfaction of the University students of HKBP Nommensen Pematangsiantar in 2024 academic year. Based on the calculation results, it turns out that $t_{Count} < t_{table}$ at level $\alpha = 0,05$ that is $(6,100 > 1,666)$ therefore H_1 is accepted and H_0 is rejected. Therefore, it can be stated that there is a positive and significant effect on the experimental class. There was a significant influence when the lecturer used SWBL.

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