

IMPLEMENTING QUIPPER SCHOOL TO ENHANCE STUDENT SELF-DIRECTED LEARNING IN BIOLOGY AT SMPK CITRA BANGSA MANDIRI KUPANG

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ABSTRACT

This study aims to evaluate the effect of implementing Quipper School on students' learning independence in Biology subjects at SMPK Citra Bangsa Mandiri Kupang. This study uses a quantitative approach with a quasi-experimental design, involving 60 students divided into two groups: an experimental group using Quipper School and a control group using conventional learning methods. The results showed that there was a significant increase in students' learning independence in the experimental group compared to the control group, with the results of the independent t-test showing a p value <0.05 and a large effect size (Cohen's d = 0.84). The results indicate that Quipper School is resourceful as a medium for learning autonomy which enables the provision of access to materials, automatic assessment and real-time feedback features that can encourage students' autonomous studies. While this study still have weakness regarding to the generalization of its findings, it gives an implication for educators and policy makers that integrating educational technology in curriculum increases engagement. Future studies will benefit from including larger, and more diverse samples to support the generalizability of these results.

Keywords : *Quipper School, Learning Independence, E-Learning, Biology Learning*

I. INTRODUCTION

The development of information and communication technology (ICT) has brought significant changes in the world of education, especially in terms of providing interactive and innovative learning media. The Government of the Republic of Indonesia, through Government Regulation Number 19 of 2005 concerning National Education Standards, strictly regulates the importance of utilizing educational facilities and infrastructure, including learning media, to support effective and sustainable teaching and learning processes. Appropriate and innovative learning media are expected to increase student engagement and encourage them to learn independently.

However, despite the encouragement to use technology-based learning media, many teachers still face challenges in its implementation. At SMPK Citra Bangsa Mandiri Kupang, one of the problems faced is the use of learning media that is less varied and less appropriate,

such as Google Classroom, which although efficient, often does not provide sufficient interaction between teachers and students. As a result, student learning independence is less formed, and the learning process is not optimal.

According to Mujab (2011), e-learning is an important innovation in education that can help overcome this problem. E-learning allows the learning process to no longer be limited to conventional media, but can use a more interactive and flexible digital platform. One platform that is currently developing and starting to be widely implemented in schools is Quipper School. Quipper School is an online platform that provides free learning services for teachers and students, which allows teachers to provide assignments and lesson materials and monitor student activity in completing assignments in real-time (Rahmawati, 2015).

Quipper School offers various features that can facilitate more dynamic and measurable learning. Teachers can view student activities in detail through the home page display, choose the appropriate curriculum, and provide assignments that can be adjusted to student needs. This allows teachers to provide fast and specific feedback to students, so that they can encourage students to learn independently and be more responsible for their own learning process.

Based on this background, this study aims to explore the effectiveness of implementing Quipper School learning media in improving student learning independence in Biology subjects in class VIII SMPK Citra Bangsa Mandiri Kupang. By using a quantitative research design, this study is expected to provide a significant contribution to the use of educational technology to improve the quality of learning and student independence.

II. LITERATURE REVIEW

Learning media is an indispensable part in the current education process, moreover they create a more interesting learning environment and stimulate children to work and learn independently. As stated by Arsyad (2011) learning media is a medium used in the teaching and learning process for delivering educational messages. This media help teachers step through a lesson, but also make the students more interested and motivated to study. In accordance with the development of technology, learning media is not only print but has varied from one to others in digital form that are easy accessed and widely used by many people on some online platforms such as e-learning, which provides a more flexible teaching approach so it could be named an interactive way compare to traditional ways.

A. E-Learning in Education.

One of the biggest innovations in education was E-learning. Mujab (2011) said that with e learning, no more limited to learn at a certain place and time meaning students are free to access knowledge outside school hours. Probably the biggest advantage of e-learning is that it enables students to learn according to their own speed or conveniences, which ends up making them a tad more independent and responsible towards learning. E-learning can also provide multiple content options, including video and audio lectures as well as interactive exercises that cater to the unique learning preferences of different students.

In the realm of Indonesian education, e-learning has been applied for several levels starting from Grade 3 to grade 12. The application of e-learning in high school has been very helpful based on research made by Santoso et al. (2023) that showed the academic achievement students are better. This study indicated that students who were involved in e-learning programs, have a mean score of motivations are higher and learning independence relatively better than those who taught using conventional methods only.

B. Quipper School as a Learning Media

One of the e-learning platforms that are used in Indonesia is Quipper School. This platform provides various features that allow teachers to give assignments, study materials, and conduct evaluations online. Rahmawati (2015) also claimed that Quipper School is effectiveness in improving student engagement on the basis of teachers able to give quick feedback while monitoring their students progress from time after times. Quipper School was also designed to facilitate students and they can learn anywhere, any time allowing independence of student learning.

Zahro et al. (2022) revealed that the use of Quipper School in some public senior high schools has been able to increase students learning result both national and school examination, particularly for subjects which require concept comprehension like mathematics and science. Quipper School is also according to media that may stimulate learners self understanding, as it has easy and highly interactive features available in its category reciprocity the other learning resources.

C. Learning Independence.

One of the objectives in an educational process is to learn how to become independent, by this we mean students who are capable of organizing and controlling their learning. According to Zimmerman (2002) learning independence includes the ability to set learning goals, choose the right learning strategies, monitor progress, and reflect on the results achieved. Learning independence is not only important for academic achievement, but also for the development of critical thinking and problem-solving skills.

Previous study has shown that learning independence can be influenced by various factors, including intrinsic motivation, support from teachers, and the use of appropriate learning media. One study of Rahmawati (2015) found that students use Quipper School as well, having higher learning independence compared to those who only learn with conventional media. This is because Quipper School allows students to learn independently, choose materials they want to study and access a wide range of resources on the platform.

III. METHODOLOGY

This study uses a quantitative approach with a quasi-experimental research design. This design was chosen because it allows researchers to evaluate the effect of the implementation

of Quipper School on students' learning independence, although it is not possible to carry out full control over all external variables.

A. Population and Sample.

The population in this study were all VIII grade students of SMPK Citra Bangsa Mandiri Kupang. Samples were collected through the purposive sampling method, i.e. Samples with a known background was selected due to its characteristics relevant to the research objectives of this study Selection of Sample: The sample was chosen from the students in VIIIth standards who had an internet connection, and they were regular to operate Quipper School for learning process as well. A total of 60 students were selected as research samples, which were divided into two groups: the experimental group and the control group, each consisting of 30 students.

B. Research Design.

This study uses a quasi-experimental design with a pre-test post-test control group design model. This design involves two groups: the experimental group that will receive treatment in the form of the implementation of Quipper School as a learning medium, and the control group that will receive learning with conventional methods. Prior to the treatment, a pre-test will be taken by all groups which determines their starting dependence on learning. Following a six-week intervention period both groups will given the same post-test to measure changes in learning independence.

C. Research Instrument.

The main instrument used in this study is a questionnaire designed to measure students' learning independence. The instrument is an adaptation of indicators related to learning independence, taken from Zimmerman's theory (2002) in relation with setting goals and planning behavior according with the academic performance researchers. The questionnaire uses a 5-point Likert scale, where respondents are asked to provide an assessment from "*strongly disagree*" to "*strongly agree*" to the statements submitted.

D. Validity and Reliability of Instrument

Before being used in the main study, the instrument was tested for validity and reliability. To establish the validity, content validity analysis was performed based on expert judgments in education to track whether each item of questionnaire is designed appropriately

and covered the overall concept of learning independence. Finally, construct validity testing was also carried out using the exploratory factor analysis (EFA) technique to ensure that the items were grouped correctly according to the dimensions of learning independence. We have attained high levels of reliability as evidenced by the Cronbach's Alpha coefficient where we obtained a value statistically significant for $\alpha=0.85$ (Cronbach, 1951).

E. Data Collection Procedure.

The data collection process was divided into several steps. The first step was that both groups were given a pre-test to measure the level of learning independence adopted by each student prior to imposing treatment. Second, the experimental group received learning using Quipper School for six weeks, while the control group received learning using conventional methods. During the intervention period, teachers teaching in both groups were monitored to ensure consistency in delivering the material. Third, after the intervention period ended, both groups were given a post-test to measure changes in learning independence.

F. Data Analysis Technique.

Inferential Statistical Analysis prosthetics used to analyze the collected data. First, the normality test was conducted using the Kolmogorov-Smirnov test to ensure that the data were normally distributed. Second, the homogeneity of variance test was conducted using the Levene test to ensure that the variance between the experimental and control groups was homogeneous. Third, to test the hypothesis, an independent t-test was used to compare the post-test scores between the experimental and control groups. Correspondingly, an effect size analysis was used to understand the impact of Quipper School implementation on learning independence.

IV. RESULTS

This study aims to evaluate the effect of the implementation of Quipper School on students' learning independence in Biology subjects in class VIII SMPK Citra Bangsa Mandiri Kupang. The research data were analyzed using various statistical techniques to test the formulated hypotheses.

A. Data Description

The results of the data description show that the average scores of students' learning independence in the experimental and control groups differ significantly after the implementation of Quipper School. Table 1 presents descriptive statistics for the pre-test and post-test scores of students' learning independence in both groups.

Table 1: Data Description of Pre-Test and Post-Test Learning Independence

Group	N	Mean Pre-Test	Std. Dev Pre-Test	Mean Post-Test	Std. Dev Post-Test
experimental	30	58.3	6.21	72.5	5.87
control	30	57.8	5.96	60.4	6.42

From the table above (table 1), it can be seen that the experimental group showed a more significant increase in learning independence compared to the control group. The average post-test score of learning independence in the experimental group was 72.5, while in the control group it was only 60.4.

B. Normality and Homogeneity Test

Before further analysis was carried out, normality and homogeneity tests were carried out to ensure that statistical assumptions were met. The results of the Kolmogorov-Smirnov test showed that the data were normally distributed with a significance value of $p > 0.05$ for all variables. The Levene test also showed that the variance between the experimental and control groups was homogeneous with a significance value of $p > 0.05$.

C. Hypothesis Test Analysis

To test the research hypothesis, an independent t-test was used to compare the post-test scores of learning independence between the experimental and control groups. The results of the t-test are presented in Table 2.

Table 2: Results of Independent T-Test for Post-Test Scores of Learning Independence

Group	Mean Difference	T-value	df	Sig. (2-tailed)
experimenta l vs control	12.1	4.52	58	0.001

The results of the t-test showed that there was a significant difference between the experimental and control groups in the post-test scores of learning independence ($t(58) = 4.52$, $p < 0.05$). This shows that the implementation of Quipper School has a significant effect on increasing students' learning independence.

D. Effect Size Analysis

To determine the extent to which the implementation of Quipper School affects students' learning independence, an effect size analysis was carried out using Cohen's d. The results of the analysis showed a Cohen's d value of 0.84, which indicates that the effect of the implementation of Quipper School on students' learning independence is in the large effect category.

E. Interpretation of Results

The results of this study indicate that the implementation of Quipper School significantly increases students' learning independence in class VIII SMPK Citra Bangsa Mandiri Kupang. This significant increase shows that Quipper School is effective in encouraging students to learn independently, which is in line with the findings of Rahmawati (2015) and Zahro et al. (2022). With the interactive and flexible features offered by Quipper School, students can learn at their own pace, which ultimately increases their responsibility towards the learning process.

V. DISCUSSION

The results of this study indicate that the implementation of Quipper School has a significant influence on improving students' learning independence at SMPK Citra Bangsa Mandiri Kupang. The results of the independent t-test showed a significant difference in the post-test scores of learning independence between the experimental group and the control group, with a p value <0.05 , and a large effect size (Cohen's $d = 0.84$). These findings support the hypothesis that e-learning-based learning media, such as Quipper School, can effectively improve students' learning independence.

A. The Influence of Quipper School on Learning Independence.

The findings of this study are match with earlier research demonstrating that technology in education may promote student engagement and independence of learning. According to Rahmawati (2015), Quipper School also has some interactive features to support student independent learning such as lesson material that can be studied again and an assessment system for instant feedback. These will help students play a role in their learning, define the objectives for it and monitor progress on them — all of which are essential components of self-regulated learning according to Zimmerman (2002).

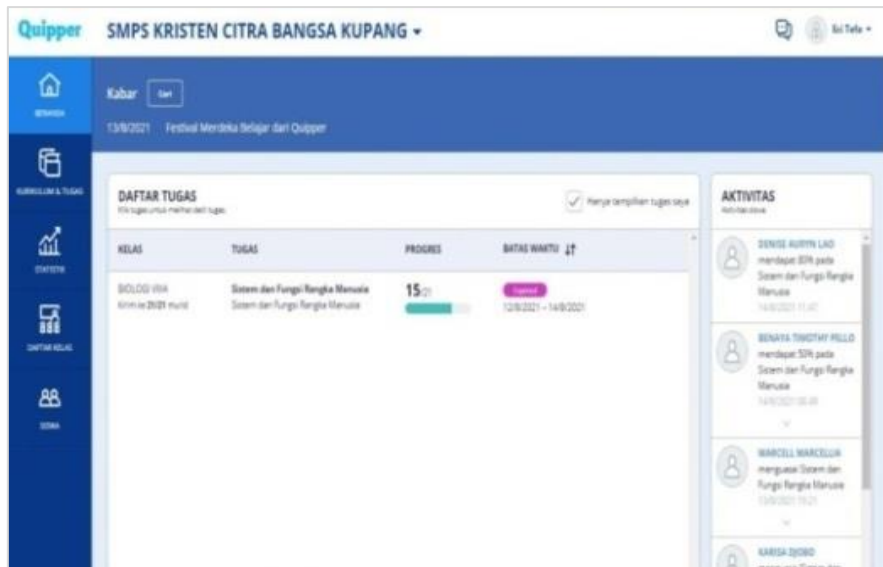
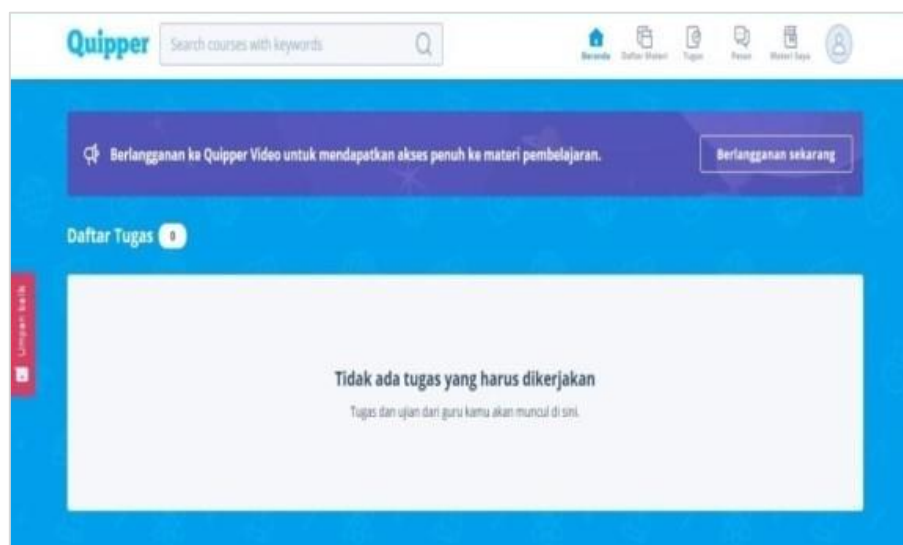


Figure 1: Quipper School Home Page.

You see this homepage on a teacher account in Quipper School where you can find the class menu, assignment menu, progress and activity menus. This homepage allows teachers to follow student activity in more detail, organize tasks and other attributes linking them back to the educational process.

Figure 1 show the main homepage of Quipper School for teachers to handle their learning process. Teachers can access the correct course from this homepage and be able to check up on student progress, assign different assignments & quizzes easier in order to assess learning outcomes. They can be simply managed and handled by the teachers as well, providing complete control over what exercises learning activity a teacher wants to run for their students making them more independent in handling assignments. According to the principle of self-directed learning (Zimmerman, 2002), students should be able to plan monitor and reflect on their own process.

Moreover, the main page of a student portal that is shown in Figure 2 indicates how students can use some features to practice independent learning. They can see learning



materials, which tasks have to be done and the progress they make. This allows students to study at their own pace, choose the material that is applicable according to level and track their course progress independently.

Figure 2: Home Page of Student Portal in Quipper School

This image shows the main page of the student portal in Quipper School, where students can access materials, work on assignments, and follow the learning process online through various available features.

Interactive features such as assignment settings by teachers and access to materials by students allow students to learn in a more flexible way and according to their personal needs. The ability to repeat materials and work on assignments independently increases students' responsibility for their own learning process. This is in line with the findings of Prasetyo and Kuswandi (2020), which show that Quipper School not only improves learning outcomes but also encourages students to be more independent in learning.

B. Educational Implications.

Educators and policy makers alike have a lot to think about given the findings of this research. Application of learning media based on technology is one solution in improving the independence and focus of students to learn, especially considering that teaching in an era full of technological devices. Self-reliance is among the crucial 21st century skills that students must master if they wish to be life-long learners who can manage and drive their own learning process. Hence it is very necessary to train the teacher using this technology so that he can effectively implement E-learning in his session.

In addition, the results of this study also underline the importance of equal access to educational technology. Quipper School should be distributed to all students, but it is also necessary that they have a good internet connection and the digital equipment needed for its implementation. It is crucial in order to prevent the digital divide which may obstruct some students from taking advantage of this learning medium. The government and educational training projects are some of the areas that need collaboration to develop infrastructure as well as for its sustainability once it is in place, so this allows all those students no matter their financial status.

C. Research Limitations and Suggestions for Further Research.

Despite finding this study to have quite pronounced results, there were a few limitations that need to be taken into consideration. Limitations of this study include the use of a quasi-experimental design, which although robust does not provide for full control over extraneous variables. However, results should also be interpreted carefully due to the limited generalizability of this data as only one school with a limited number participated in this study.

Future research should explore these effects in larger, more diverse samples with multiple schools to broaden generalizability. Future research could be provide insights into the long-term implications of learning independence and outcomes by students using Quipper

School. Other future studies could compare the effect of Quipper School to other subjects or in higher education fields. Qualitative research can also be conducted to better understand how students and teachers use Quipper School features in their teaching and learning process.

VI. CONCLUSION

This study aims to determine the effect of implementing Quipper School on learning independence in Biology subjects using a Naturalistic Paradigm Research method at SMPK Citra Bangsa Mandiri Kupang. The results of this research indicated that the use of Quipper School significantly contribute to improve learners learning independence. This evidence suggests that technology-based learning media like Quipper School does not only gives an impact to the students' learning achievements but also can be utilized as a way for supporting student's self directedness.

The implication for the institution of education is manifold. The use of quipper school as a medium for learning has been useful in fostering the independence to learn by one self among students, which is essential in promoting education culutre that help breathe together a generation of independent learners fit enough within this digital era. As a result, schools and educators are anticipated to incorporate educational technology more deeply into their lesson plans as well as appropriately train teachers how to use it. So that the student can become an independent and flexible learner, who has ability to direct and manage his/her learning.

This study demonstrates significant results, albeit with several limitations which should be recognized. This study using a quasi-experimental design was only conducted in one school and may be limited to full control over external variables due to the small household numbers. Hence the current study results can not be generalized in wider scenario. This study suggests that experimental studies with a larger sample size and multiple schools should be conducted. Future research may also examine the impact of students' learning independence and academic results on Quipper School in long run.

In broader perspective, this study is a certain contribution to the understanding of how technology-based learning media; in particular Quipper School can be used as an instrument on increasing students 'learning independence. Given the help and support provided from teachers, schools can place this technology within education in order to aid students towards better grades and prepare them for future general learning. For that reason, policy makers and educators are expected to provide additional related curriculum of the use of technology in education effectively and efficiently.

REFERENCES

- Arsyad, A. (2011). *Media Pembelajaran*. PT Raja Grafindo Persada.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*,

- 16(3), 297–334. <https://doi.org/10.1007/BF02310555>
- Mujab, M. S. (2011). Implementasi Model Pembelajaran Interaktif Berbasis Komputer pada Siswa SMA untuk Menumbuhkan Kemandirian Belajar [Universitas Negeri Semarang]. In *Jurusan Fisika, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Semarang*. <https://lib.unnes.ac.id/10647/1/6569.pdf>
- PeraturanPemerintah. (2005). Peraturan Pemerintah Nomor 19 Tahun 2005 tentang Standar Nasional Pendidikan. In *Sekretariat Negara Indonesia*. <https://peraturan.go.id/files/pp19-2005.pdf>
- Rahmawati, R. (2015). *Keefektifan Penerapan E-Learning Quipper School pada Pembelajaran Akuntansi di SMA Negeri 2 Surakarta*. Universitas Sebelas Maret.
- Santoso, B., Sihaloho, F. J., & Pratama, S. F. (2023). Implementasi E-Learning Dalam Meningkatkan Perfoma Akademik Mahasiswa Ilmu Komunikasi Universitas Negeri Surabaya. *Prosiding Seminar Nasional Ilmu Ilmu Sosial*, 2, 11–23.
- Zahro, A. H., Poerwanto, E. E., Putra, A. B. N. R., & Partono, P. (2022). Pemanfaatan Quipper School Berbasis Blended Learning Terhadap Hasil Belajar pada Kompetensi Menerapkan Cara Perawatan Differential di Kelas X TKR SMK PGRI 3 Malang. *Jurnal Teknik Otomotif: Kajian Keilmuan dan Pengajaran*, 4(1), 59. <https://doi.org/10.17977/um074v4i12020p59-66>
- Zimmerman, B. J. (2002). Becoming a Self-Regulated Learner: An Overview. *Theory Into Practice*, 41(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2