Journal of Applied Studies in Language, Volume 5 Issue 2 (Dec 2021), p. 229—236
p-issn 2598-4101 e-issn 2615-4706 © Politeknik Negeri Bali
http://ojs2.pnb.ac.id/index.php/JASL

Employing e-portfolio based learning in improving self-efficacy of student's speaking ability

I Putu Yoga Laksana[1], Ni Nyoman Yuliantini[2], Ni Ketut Suciani[3], I Putu Yoga Purandina[4], Gary P. Boyce[5]

Politeknik Negeri Bali[1,2,3]
STAH Negeri Mpu Kuturan, Singaraja[4]
Windesheim University of Applied Sciences, Zwolle, The Netherlands[5]
Email: yoga.laksana@pnb.ac.id[1]

Abstract – This research aimed at knowing the effectiveness of online learning design with an e-portfolio approach in increasing self-efficacy in speaking ability. Seventy-seven students were involved in this study. They are in the second semester of a vocational college in Business Administration Department in the academic year 2020/2021. This research is experimental research with implementing paired samples t-test as the measurement tool in knowing the effectiveness of e-portfolio based learning by finding the t score and the sig value before and after the implementation of the teaching method. The result of this study showed that e-portfolio based learning had a significant effect on the student's self-efficacy in their speaking ability. It was indicated by the value of the sig and t result from paired samples t-test analysis which was showed 0.000 as the sig value and -20.551 as the t count. The result of sig value which is below 0.05 and the t-count which is above t-table were clear indicators to argue that e-portfolio significantly impacted the student's self-efficacy in speaking ability. In this case, the variables of self-efficacy in speaking ability were improved significantly by the implementation of e-portfolio based learning. Even the implementation of e-portfolio brings many positive impacts on the students, some limitations lie on this method implementation. The limitation of this method lies in the time execution and the number of students who are taught by the lecturer.

Keywords: e-portfolio, self-efficacy, speaking ability

Journal of Applied Studies in Language, Volume 5 Issue 2 (Dec 2021), p. 229—236
p-issn 2598-4101 e-issn 2615-4706 © Politeknik Negeri Bali
http://ojs.pnb.ac.id/index.php/JASL

1. Introduction

The implementation of a good learning process with the assistance of online media is handled to be followed by an appropriate online-based assessment method to help students achieve their learning goals. According to Guo et al (2020), a constructivist approach that focuses on learners supports learner-centered activities in the classroom and defines education as "Learning by Doing" and is the basis of modern educational methods and techniques, such as problem-solving or project-based methods. Since the main focus is learning by doing, assessing this process requires a different assessment method that considers student's understanding, personal differences, and individual performance when evaluating student's performance. Furthermore, Yastibas and Yastibas (2015) also stated that, unlike the traditional assessment method, the new assessment method must be student-centered. As a result, several new ways, such as an e-portfolio was developed to assess learners. In the field of authentic assessment, portfolio development with the help of technology has turned into an electronic portfolio or e-portfolio to help students improve their quality and achieve their planned learning goals (Lukitasari et al., 2014).

The use of the e-portfolio as an assessment approach is deemed necessary to be applied in online based learning methods. An E-portfolio is believed to be able to improve the soft skills of students, foster critical thinking patterns in solving a problem and help them in independent learning and continuous learning processes. This is also supported by several experts who state that the e-portfolio helps students independently in designing effective learning for themselves and future learning goals related to their careers after graduation (Klenowski et al., 2006); (Gülbahar & Tinmaz, 2006); (Bolliger & Shepherd, 2010); (Huang et al., 2011); (Cepik & Yastibas, 2013); (Nurhayati & Sumbawati, 2014); (Wetcho & Na-Songkhla, 2019); (Babovič et al., 2019).

The application of an e-portfolio into the online learning process, especially in the vocational field which focuses on the development of students through practice and produces professional graduates who are ready to work, is deemed appropriate to be implemented. This is also in line with what some experts say. According to Mobarhan et al (2015) and Ciesielkiewicz (2019), an e-portfolio can be used as a tool for the career development and employability of students before entering the world of work. This is also in line with what was stated by Wakimoto and Lewis (2014) in a study whose participants were graduate students in counseling or psychology programs. The results of his research indicate that students receive the e-portfolio for career development as well as for job search tools. In fact, 86% of respondents stated that they plan to share their e-portfolio with potential employers. So, it can be concluded that the application of the e-portfolio can have a long-term impact on the career development of students in the future, especially for students who carry out learning in the vocational field.

As stated by Bolliger and Shepherd (2010) that the important factors in implementing e-portfolios are communication, motivation, and student connectedness (the relationship between two people). Why this is said to be important because this factor is a determinant in generating a sense of self-confidence from students to be successful in learning. This is in line with Wetcho and Na-Songkhla (2019) that said a well-implemented e-portfolio can increase self-confidence for success (Self-Efficacy) in learning and their future career decisions.

Self-Efficacy is a person's belief in his ability to succeed in certain situations. Self-efficacy plays a major role in how a person achieves his goals, tasks, and challenges (Suharsono, 2014). Moreover, Huang et al., (2011) and Alegra (in Taufik, 2018) also state that individuals who have low self-efficacy will have low achievements as well. Thus, it can be said that the higher a person's self-efficacy in a particular field, the possibility for that individual to get the high achievement is very large.

From the explanation above, a common thread can be drawn that the application of e-portfolio is able to increase the self-efficacy of students which will later lead to a high level of student achievement in all fields that they are engaged in, especially at the Vocational Campus of Bali State Polytechnic (PNB). Concerning the supporting fields that may be the main factor in the success of students at PNB in addition to the main fields they take in each department, the field of foreign language expertise, especially English is a major supporting factor in the success of students competing in the international arena. This is in line with the PNB vision and mission in 2025 where graduates are able to be internationally competitive and professional in their fields. Therefore, an online learning model that is integrated with an e-portfolio to improve students' self-efficacy in speaking/communicating using English is deemed necessary to be implemented. The implementation media of this application design is planned to be carried out on google sites and google classroom.

Considering the research background, this study aimed at knowing the effectiveness of online learning design with an e-portfolio approach in improving the student's self-efficacy in speaking ability

Journal of Applied Studies in Language, Volume 5 Issue 2 (Dec 2021), p. 229—236
p-issn 2598-4101 e-issn 2615-4706 © Politeknik Negeri Bali
http://ojs.pnb.ac.id/index.php/JASL

at international business management study programs at the international business management study program. Moreover, the effect of e-portfolio on student's self-efficacy in speaking ability is never analyzed and taken as a research study in recent years. Hence, from the result of the e-portfolio application done by some researchers previously, today's study believes and hypothesizes that an e-portfolio can improve the student's learning outcome especially on the student's self-efficacy in speaking ability.

2. Method

This research is a descriptive statistical quantitative research with a quasi-experimental research design. Quasi-experiment is the use of methods and procedures to conduct observations in a study that is structured similar to an experiment, but the conditions and experiences of the participants lack control because the study is limited to random assignment, including comparisons or control groups (Privitera & Delzell, 2019). The quasi-experiment used in this study is Quasi-Experiment: One-Group Pretest-Posttest Design which is a quasi-experiment where a group is measured and observed before and after the treatment is given as shown in the following figure (Fraenkel & Wallen, 2012):

The One-Group Pretest-Posttest Design		
O	*X*	*O*
Pretest	Treatment	Posttest

In One-Group Pretest-Posttest Design the dependent variable was measured as a group before (pre-test) and after (post-test) treatment was given. After treatment is given to the group, the scores before and after the treatment are compared. The advantage of this experiment is that we can compare the values before and after treatment on the same participant using the same measuring instrument (Fraenkel & Wallen, 2012). The subjects of this study were the students of International Business Management at State Polytechnic of Bali in d, e, and f class. The total number of students who were included was 77 students.

This research aims at improving student's self-efficacy in speaking ability by employing e-portfolio based learning. Each student was given a pretest and posttest in form of a questionnaire then the results were then compared to conclude the level of the student's self-efficacy in speaking ability. The questionnaire was used as a pre-test in finding student's self-efficacy data in speaking which would later be compared with the results of giving the same questionnaire after receiving treatment from an online learning design with an e-portfolio approach. This questionnaire refers to 3 aspects of self-efficacy which are integrated with 6 aspects of speaking ability.

This research was conducted in one month with 3 topics employed to be the form of speaking tasks. The tasks were administered to the students through google classroom and the students used an e-portfolio template which is provided on google sites to upload their tasks. The process of e-portfolio based learning was applied with procedures explained as follows: (1) Students prepare a draft for the speaking task given on Google Classroom by the lecturer; (2) The students record their performance and upload the video onto their social media or their Youtube account; (3) The students prepare the task description and the filling space for self, peer and lecturer's evaluation in the e-portfolio template on google site; (4) The students upload the link of their video onto the e-portfolio template and fill their self-evaluation toward their speaking task on the space provided by them; (5) The students share the link of their task to one of their friends as peer evaluation and their lecturer as lecturer evaluation. This is done to give feedback to the students regarding their speaking task so that after having feedback from their friend and lecturer there will be correction and improvement before they publish the task link back to google classroom; (6) The students publish their task on google sites and send the link to google classroom to get assessed.

Before the classes were taught by implemented e-portfolio based learning, the students were given a questionnaire as the pre-test to know the level of the students' self-efficacy in speaking ability. Moreover, E-Portfolio-based learning was implemented in 12 meetings with 3 topics given and lastly, the same questionnaire was applied to acknowledge whether there was an improvement or not. The results of pre-test and post-test were analyzed by using a paired-samples t-test to know whether e-portfolio based learning gives significant results or not.

Journal of Applied Studies in Language, Volume 5 Issue 2 (Dec 2021), p. 229—236
p-issn 2598-4101 e-issn 2615-4706 © Politeknik Negeri Bali
http://ojs.pnb.ac.id/index.php/JASL

The instruments of this study were tested for their validity and reliability. A validity test is used to test whether a question/item is valid or not. Valid means that each item presented in the questionnaire has been declared able to reveal with certainty what will be researched (Sugiyono, 2016). The method used is to connect the scores obtained from the questionnaire with the total score of the questions, then compared with the r table or a significance value of 5% ($\alpha = 0.05$), if the value (p) <0.05 or r count> r table then it is considered valid. Furthermore, Sugiyono (2016) also defines a reliability test as a test that shows the extent to which the stability and consistency of the measuring instruments used in the study, provide relatively consistent results if these measurements are repeated. To find out whether the item is reliable or not, it can be tested using Cronbach's Alpha method. If the result is close to 1, internal consistency will be more reliable.

3. Results and Discussion

Validity and Reliability Test Results

a. Validity test
Based on the results of the instrument trials that have been carried out, it is known that the results of statistical calculations in Table 1 show that all items have significant value (<0.05) or (>r table), so that all items are declared valid. The results of the validity test recapitulation can be seen in table 1.

b. Reliability Test
Based on the results of the instrument trials conducted, it is known that the statistical results in table 2 show that all items have an Alpha Cronbach coefficient value of more than 0.70 (Hamdani & Gozhali, 2016) so that all variables are declared reliable. The results of the reliable test recapitulation can be seen in table 2.

Table 1 Validity Test

Questions	R. Calculation	R. Table (n=77)	Explanation
Q1	0.691	0.2213	Valid
Q2	0.726	0.2213	Valid
Q3	0.746	0.2213	Valid
Q4	0.670	0.2213	Valid
Q5	0.727	0.2213	Valid
Q6	0.711	0.2213	Valid
Q7	0.721	0.2213	Valid
Q8	0.773	0.2213	Valid
Q9	0.733	0.2213	Valid
Q10	0.637	0.2213	Valid
Q11	0.745	0.2213	Valid
Q12	0.748	0.2213	Valid
Q13	0.812	0.2213	Valid
Q14	0.751	0.2213	Valid
Q15	0.655	0.2213	Valid
Q16	0.723	0.2213	Valid
Q17	0.756	0.2213	Valid
Q18	0.780	0.2213	Valid
Q19	0.750	0.2213	Valid
Q20	0.791	0.2213	Valid

Source: primary data (2021)

Table 2 Reliability Test

Items	Cronbach's Alpha	Explanation
Self-Efficacy in Speaking ability	0.954	Reliable

Source: primary data (2021)

Paired Samples T-Test

Based on the analysis using the SPSS 21 program to find out whether e-portfolio based learning gives an impact on the self-efficacy in speaking ability of the students, paired samples t-test was used to test the results.

Journal of Applied Studies in Language, Volume 5 Issue 2 (Dec 2021), p. 229—236
p-issn 2598-4101 e-issn 2615-4706 © Politeknik Negeri Bali
http://ojs.pnb.ac.id/index.php/JASL

Table 3 Paired Samples Statistics

Variables		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test	60.32	77	11.403	1.300
	Post Test	77.99	77	5.054	0.576

Source: primary data (2021)

In the output of data processing results obtained for the results of the average value of 77 students before participating in e-portfolio based learning, the average level of student self-efficacy in speaking ability is 60.32. Meanwhile, after participating in e-portfolio based learning, their average increased to 77.99. Standard Deviation is a measure of the spread that shows the standard deviation of the data to its average value. If the standard deviation is small, then it shows that the sample value of the population is clustered around the mean value. Because the value is almost the same as the mean, we can conclude that every member of the sample or population has something in common. In this case, the value of the standard deviation of the Post-test data (5,054) is smaller than the Pre-Test (11,403). A large standard deviation indicates a large difference between members of the population. Therefore, a high standard deviation is considered less good.

Table 4 Paired Samples Correlations

Variables		N	Correlation	Sig.
Pair 1	Pre-test & Post-test	77	0.854	0.000

Source: primary data (2021)

Table 5 Interpretation of the Correlation Coefficient

The correlation coefficient, r (positive/negative)	Interpretation
0,001-0,200	Very weak/Low correlation
0,201-0,400	Weak/Low Correlation
0,401-0,700	Correlation is quite strong/High
0,701-0,900	Strong/High correlation
0,901-1,000	Very strong/High correlation

Source: Guilford J.P, Fundamental Statistics in Psychology and Education (1950)

This analysis is used to determine the strength and weaknesses of the relationship between before and after participating in e-portfolio based learning. Based on the results of the analysis obtained the value of the correlation coefficient (R) is 0.854. Furthermore, based on the high-low relationship, the correlation coefficient (R) of 0.854 lies between 0.701-0.900 which means the correlation is strong/high. The probability value also shows that it is still below 0.05 (The data shows the significant value of the output is 0.000). This means that there is a strong or high positive relationship between before and after participating in e-portfolio based learning.

Table 5 Paired Samples Test

Variables		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Up			
Pair 1	Pre-test - Post-test	-17.662	7.556	0.861	-19.377	-15.947	-20.551	76	0.000

Source: primary data (2021)

Journal of Applied Studies in Language, Volume 5 Issue 2 (Dec 2021), p. 229—236
p-issn 2598-4101 e-issn 2615-4706 © Politeknik Negeri Bali
http://ojs.pnb.ac.id/index.php/JASL

This test is used to determine whether or not there is a difference in the average between two groups of samples that are paired (related). The point here is a sample is experiencing two different treatments, so it is known the effect between before and after participating in e-portfolio based learning. The statistical test steps are as follows:

a. Hypothesis Formulation

H0: it means that there is no significant effect between before participating in e-portfolio based learning and after participating in e-portfolio based learning.

H1: meaning that there is a significant effect between before participating in e-portfolio based learning and after participating in e-portfolio based learning.

b. Decision Making

The basis for decision making is as follows:

1) Based on the comparison of t count and t table

- ✓ If t-count < t-table or -t-count < -t-table then H0 is accepted
- ✓ If t-count > t-table or -t-count > -t-table then H0 is rejected

The Level of Significance was determined using a 95% confidence level or an error rate of 5% (α = 0.05). Where the 95% confidence level and the value of sig. (α) = 0.05, then the value of df (degree of freedom) or degrees of freedom is (n-k) = 77 – 1 = 76. The test is carried out on two sides to determine whether the average of the pre-test results is the same as the post-test or vice versa. Hence, the result can be bigger (+) or smaller (-). This is the reason a two-sided test is used. With a two-tailed test, each side is worth $\frac{\alpha}{2} = \frac{0{,}05}{2}$ = 0.025 to determine the t-table value. The t-table value (0.025.76) is ± 1.991673. The test area can be seen in the following figure:

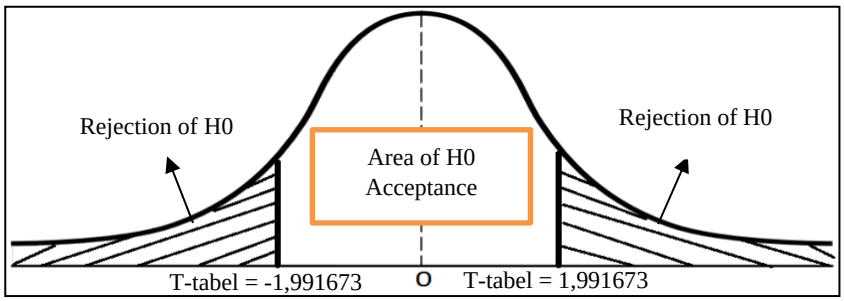

Figure 1 The Test Area

The results of the study using the SPSS statistic 21 program at a 95% confidence level showed that t-count was -20,551 greater than t-table, which was -1.991673. based on the result it can be stated that H0 was rejected, meaning that there was a significant effect between before participating in e-portfolio based learning and after participating in e-portfolio based learning.

2) Based on the probability value

For the side test using a 2-sided test, the test criteria are seen from the sig (α) value where:

- ✓ If the value of sig (α) < 0.05, then H0 is rejected.
- ✓ If the value of sig (α) > 0.05 then H0 is accepted.

Judging from the output above, it is known that the significant level before and after the students get e-portfolio based learning is 0.000 which is below 0.05. Hence, it can be stated that H0 is rejected and H1 is accepted. This means that there is a significant influence between before and after participating in e-portfolio based learning.

From the two decisions described in the finding section, it can be concluded that e-portfolio based learning is effective in increasing the self-efficacy of students' speaking ability. It can be seen with the sig. value of 0.000 and t score of -20.551. These results clearly showed that the employment of e-portfolio based learning in the classroom gave a significant effect in helping the students to enhance their self-efficacy in their speaking abilities. Moreover, the learning steps in implementing e-portfolio based learning are also able to assist the students to get new experience in the learning process.

The implementation of e-portfolios in this study provides opportunities for students to provide feedback, chance to interact with their friends and their lecturer on the assignments they have made. These indicators have a major impact on increasing the students' self-efficacy in doing the assigned tasks. These indicators are also able to provide space to increase the relationship between students and lecturers in communication. This opportunity for students to communicate with their peers and lecturers in completing their assignments has an impact on increasing their motivation and efficacy in achieving

learning competencies, especially in speaking skills. this is also in line with what was conveyed by Bolliger & Shepherd (2010) that the important factors in the implementation of e-portfolio are communication, motivation, and student connectedness (the relationship between two people).

The further indicator besides those mentioned above that helps the students is the interaction between the students and digital platforms used. This interaction can assist the students to enter autonomous learning and help them to construct their effective learning design to achieve a successful goal in their learning and career. It also motivates the students to be more creative and critical. In this study, the students improve their self-efficacy in speaking ability through the assistance of google sites and classroom platforms. These two platforms facilitate the students to be more independent in their learning process. As we recognize the use of google classroom has been acknowledged by many educators and some studies also relate this platform in assisting the students in their learning process. The study from Sukraini and Laksana (2020) was one of the instances that showed the use of google classroom has given an impact on the students learning results. Otherwise, the use of google sites is less taken into a study by the researchers recently. The interactive features, flexibility, accessibility as well as its ability to expose students to social pressure and increase their audience awareness of these digital platforms are the reasons that the students can improve their independence and motivation in learning.

Based on the finding above, it can be seen that e-portfolio based learning could bring a significant impact on the student's soft skills, hard skills, and their career development preparation, especially in international work sectors. This result in line with previous research from Mobarhan et al (2015) & Ciesielkiewicz (2019)stated that E-portfolios can be used as a tool for the career development and employability of students before entering the world of work. This is also in line with what was stated by Wakimoto & Lewis (2014) in a study whose participants were graduate students in counseling or psychology programs. The results of his research indicate that students receive e-portfolios for career development as well as for job search tools. 86% of respondents stated that they plan to share their e-portfolio with potential employers. So, it can be concluded that the application of the e-portfolio can have a long-term impact on the career development of students in the future as well as their soft and hard skills, especially for students who carry out learning in the vocational field. Furthermore, the research from Barrot (2021) which is used Facebook as the platform in implementing e-portfolios also gave a positive impact on the student's writing performance.

The differences between the current study and those previous researches are the use of a new platform and the skills that are improved by this e-portfolio based learning. The platforms used in this study are the combination of two digital platforms which are interrelated in assisting the implementation of this e-portfolio to be succeeded. The use of these platforms in implementing e-portfolio are less taken into researches recently, so this study can give a new reference in further studies alike. Moreover, the previous researches only focus on the impact of e-portfolios on the student's writing performances and career development and there were fewer researches which were conducted on self-efficacy and speaking ability. So, this study gives a new experience and reference of using e-portfolio based learning.

Even there are many strengths of the implementation of e-portfolio on the students learning and career development, the length of time in implementing this method for one topic and the number of students taught by the lecturer are needed taken into consideration for the subject which has many topics to be delivered in one semester. The limitation of this method lies in the time execution and the number of students who are taught by the lectures. The more the students taught the more time that lecturer needs to implement this e-portfolio and the longer time the lecturer needs to accomplish for one topic in the classroom.

4. Conclusion

The conclusion that can be drawn in this study is e-portfolio based learning had a significant effect on the student's self-efficacy in their speaking ability. It was indicated by the value of the sig and t result from paired-samples t-test analysis which was showed 0.000 as the sig value and -20.551 as the t count. The result of sig value which is below 0.05 and the t-count which is above t-table were clear indicators to argue that e-portfolio significantly impacted the student's self-efficacy in speaking ability. In this case, the variables of self-efficacy in speaking ability were improved significantly by the implementation of e-portfolio based learning. Even the implementation of e-portfolio brings many positive impacts on the students, some limitations lie on this method implementation. The limitation of this method lies in the time execution and the number of students who are taught by the lectures. So, it can be suggested for further research to consider this and develop e-portfolios so that it can be treated for a bigger number of

students and can be implemented as one of the main methods in the college subject rather than using a written test as the assessment in the classroom. The researchers of this study also suggest for further research to use more variety of digital platforms in implementing e-portfolio in the classroom.

References

Babovič, M., Fu, R.-H., & Monrouxe, L. V. (2019). Understanding how to enhance efficacy and effectiveness of feedback via e-portfolio: a realist synthesis protocol. *BMJ Open*, *9*(5), e029173.

Barrot, J. S. (2021). Effects of Facebook-based e-portfolio on ESL learners' writing performance. *Language, Culture and Curriculum*, *34*(1), 95–111. https://doi.org/10.1080/07908318.2020.1745822

Bolliger, D. U., & Shepherd, C. E. (2010). Student perceptions of ePortfolio integration in online courses. *Distance Education*, *31*(3), 295–314.

Cepik, S., & Yastibas, A. E. (2013). The use of e-portfolio to improve English speaking skill of Turkish EFL learners. *The Anthropologist*, *16*(1–2), 307–317.

Ciesielkiewicz, M. (2019). The use of e-portfolios in higher education: From the students' perspective. *Issues in Educational Research*, *29*(3), 649–667.

Gülbahar, Y., & Tinmaz, H. (2006). Implementing project-based learning and e-portfolio assessment in an undergraduate course. *Journal of Research on Technology in Education*, *38*(3), 309–327.

Guo, P., Saab, N., Post, L. S., & Admiraal, W. (2020). A review of project-based learning in higher education: Student outcomes and measures. *International Journal of Educational Research*, *102*, 101586.

Hamdani, S., & Gozhali, I. (2016). *Aplikasi Analisis Multivariete dengan Program IBM SPSS 23 (VIII)*. Badan Penerbit Universitas Diponegoro.

Huang, J.J.S., Yang, S.J.H., & Chang, M.C.W. (2011). The effect of ePortfolio satisfaction on students' learning motivation and Internet self-efficacy. *Journal of Educational Technology Development and Exchange (JETDE)*, *4*(1), 10.

J. R. Fraenkel, N. E. Wallen, and H. H. H. (2012). *How to Design And Evaluate Research In Education* (8th ed). Mc Graw Hill. https://saochhengpheng.files.wordpress.com/2017/03/jack_fraenkel_norman_wallen_helen_hyun-how_to_design_and_evaluate_research_in_education_8th_edition_-mcgraw hill_humanities_social_sciences_languages2011.pdf

Klenowski, V., Askew, S., & Carnell, E. (2006). Portfolios for learning, assessment and professional development in higher education. *Assessment & Evaluation in Higher Education*, *31*(3), 267–286.

Lukitasari, M., Susilo, H., Ibrohim, I., & Corebima, A. D. (2014). Lesson study in improving the role of e-portfolio on the metacognitive skill and concept comprehension: a study on cell biology subject in IKIP PGRI Madiun, Indonesia. *American Journal of Educational Research*, *2*(10), 919–924.

Mobarhan, R., Rahman, A. A., & Majidi, M. (2015). Electronic portfolio motivational factors from students' perspective: A qualitative study. *Knowledge Management & E-Learning: An International Journal*, *7*(2), 265–279.

Nurhayati, F. R., & Sumbawati, M. S. (2014). Pengembangan E-Portfolio Sebagai Instrumen Penilaian Siswa Di Smk Negeri 2 Lamongan. *Jurnal Pendidikan Teknik Elektro*, *3*(1).

Privitera, G. J., & Delzell, L. A. (2019). Quasi-experimental and single-case experimental designs. *Research Methods for Education*, 333–370.

Sugiyono, S. (2016). Metode penelitian kuantitatif, kualitatif, dan r & d. *Bandung: Alfabeta*.

Suharsono, Y. (2014). Validitas Dan Reliabilitas Skala Self-Efficacy. *Jurnal Ilmiah Psikologi Terapan*, *2*(1), 144–151.

Sukraini, T. T., & Laksana, I. P. Y. (2020). Penerapan Google Classroom Terhadap Hasil Belajar Pada Matakuliah Statistik Bisnis. *Prosiding Seminar Nasional Terapan Riset Inovatif (SENTRINOV)*, *6*(2), 537–545.

Taufik, L. M. (2018). Academic Self-Efficacy Mahasiswa Calon Guru Sd Dalam Pembelajaran Konsep Dasar IPA Subkonsep Biologi. *BIO EDUCATIO:(The Journal of Science and Biology Education)*, *3*(1).

Wakimoto, D. K., & Lewis, R. E. (2014). Graduate student perceptions of eportfolios: Uses for reflection, development, and assessment. *The Internet and Higher Education*, *21*, 53–58.

Wetcho, S., & Na-Songkhla, J. (2019). The Different Roles of Help-Seeking Personalities in Social Support Group Activity on E-Portfolio for Career Development. *International Journal of Emerging Technologies in Learning*, *14*(2).

Yastibas, A. E., & Yastibas, G. C. (2015). The use of e-portfolio-based assessment to develop students' self-regulated learning in English language teaching. *Procedia-Social and Behavioral Sciences*, *176*, 3–13.