



The Use of Hybrid Learning in Improving Academic Achievement

Darul Prayogo^{1,*}

ARTICLE INFO

Article history:

Received 8 Aug 2023;
in revised from 24 Aug 2023;
accepted 14 Oct 2023.

Keywords:

hybrid learning, effectiveness test,
Educational, COVID-19.

ABSTRACT

This research was performed to evaluate the effectiveness of hybrid learning to improve the learning of Material Technology Courses at the Politeknik Ilmu Pelayaran Semarang. The respondents used in this study were six classes with 143 students. The test is carried out with multiple choices in the amount of 54 questions, then validity and reliability tests are carried out. Validity is set with a number of 0.6 while reliability is set at 0.8. The results of the Pretest and Posttest are to determine the effectiveness of the hybrid learning approach to learning material technology courses at the Politeknik Ilmu Pelayaran Semarang. The results of the study can be seen that the posttest score is higher than that of the pretest. Based on the results of the effectiveness test, the N Gain score obtained a figure of 0.821 and is included in the high category. These results show that hybrid learning shows significant results when compared to traditional learning. The COVID-19 pandemic has taught Educational Institutions to be creative in learning and come up with new methods in teaching and learning activities.

© SEECMAR | All rights reserved

1. Introduction.

Pendeavouring is a fairly complicated matter and concerns human survival. Education is inseparable from the life of the family, society as well as the nation and state.

The government has established the law of the Republic of Indonesia of 2003, that countrywide schooling functions to expand abilities and shape a dignified country wide disposition and civilization so one can teach the state's lifestyles, aiming to expand the capacity of college students to turn out to be humans who've religion and piety in God Almighty, have a noble man or woman, wholesome, informed, succesful, innovative, impartial and end up democratic residents and responsible.

Education in Indonesia is expected which will shape the mindset, behavior and character of a real individual. Man as the center of scientific progress, human resource development plays an important role. Development of human resources that are equitable, quality and equitable.

Politeknik Ilmu Pelayaran Semarang is an Educational Institution under the Ministry of Transportation that carries out

vocational education in a boarding school. It is one of the official educational institutions that prepares students to become skilled workers on ships in the field of navigation and machinery. Learning is theoretical and practical, as well as courses according to the field. The school is expected to be able to develop the potential that exists in all students to the maximum, (Maslihah, n.d.).

The educational objectives can be achieved well if high enthusiasm is embedded, to achieve high achievements, as well as for the Teknik program which is one of the study programs at the Politeknik Ilmu Pelayaran Semarang, to achieve practical learning achievements, students are required to have a high spirit of practice as well, so that their achievements are good.

One of the practical courses is the practice of Material Technology. The author wants to know How much knowledge can be absorbed by students about the practical knowledge of Materials Technology. The amount of knowledge will affect the strong enthusiasm of students to excel. Student achievement needs to be supported by high discipline from students in carrying out Material Technology practice, besides that student practice achievement can also be influenced by the state of a good or supportive practice environment, in this case it is a supportive practice place situation, for example, how the floor is stated, ventilation, room size, air circulation, and so on.

¹Politeknik Ilmu Pelayaran Semarang, Indonesia.

*Corresponding author: Darul Prayogo. E-mail Address: darul@pip-semarang.ac.id.

Politeknik Ilmu Pelayaran Semarang has laboratories and simulators to foster positive student perceptions of practical equipment so that it will affect students' enthusiasm for high achievement in the practice of material technology. Because to carry out the practice of material technology, it is necessary to support complete equipment and meet the requirements, considering that the purpose of vocational schools is to train skills or competencies. The completeness of adequate practical tools allows achievements to be achieved, the completeness of adequate practical equipment will facilitate the implementation of practice, make it easier for students to master the practice, and will increase psychomotor abilities to students. after the COVID-19 pandemic hit Indonesia began to shrink, learning was diverted using hybrid learning, which is a combination of conventional and virtual learning, (R.R. Germo, 2022).

According to (Horton, 2011), hybrid learning by utilizing technology can improve the learning experience. In Indonesia, the hybrid learning approach is synonymous with online learning, (Trend 10.1.1.983.1634, n.d.). In order for the experience of a hybrid learning method to be powerful, It should observe the four foremost strategies mentioned, (Ruth Colvin Clark, 2021). In the further, additionally they introduced architectures of blended studying procedures Receptive, directive, and guided discoveries. but, there are fewer article for every character architecture which in turn serves as a gap for more research to be undertaken. To fill in some thrilling portions, (Hrastinski, 2008)- states that there are kinds of blended learning approaches, particularly: asynchronous, (Hyder et al., 2007). In addition, Horton (Horton, 2011),-also-stated-his-various- types-of-blended-learning approaches-which-include:-social-learning-, virtual classroom courses, self-paced courses, learning games and simulations.

Teaching in the country, especially higher education is slowly for a hybrid learning approach. More complicated challenges include mastery of technology, curriculum, motivation, and student behavior, (Acosta, 2016).

The rapid growth of Information, Communication, and Technology (ICT) as an extraordinary medium in transforming education. ICT has been proven to create a paradigm shift in academic coaching strategies and for that reason a hybrid mastering approach has been embraced as a way to offer green and low price great training, (Bhuasiri et al., 2012).- ICT and hybrid mastering approaches were proven to address academic improvement efficaciously as said with the aid of Button, Harrington, and Belan, (Button et al., 2014).

2. Material and Methods.

2.1. Definition of Hybrid Learning.

Hybrid learning according to the author is the combination of online and conventional learning. While according to some experts are as follows.

Hybrid learning is combines of online learning with conventional learning with face to face regularly and effectively. Hybrid learning integrated with learning outside the classroom

with use electronic facilities as tutorials, study groups, or information from the library, (Garnham & Kaleta, n.d.). Hybrid Learning is combining electronic learning with face-to-face learning methods or conventional methods, (Jeffrey et al., 2014).

Hybrid learning combines two or more learning methods and approaches to achieve learning objectives, (Sutisna, 2016). Hybrid Learning is a combination of various learning media (technology, activities, types of events) for learning programs that combine the power of traditional face-to-face learning with electronic learning formats, Bersin (2004). Hybrid learning is a blend of conventional (synchronous) learning with combining internet-based learning, (Massoud et al., n.d.).

2.2. Academic achievement.

According to the author, academic achievement is an achievement of formal education. Academic achievement according to Bloom (in Azwar, 2005) is to reveal a person's success in learning. Academic achievement is all the results that have been achieved (achievement) obtained through the academic learning process, according to the author of the term which can be concluded that all the results that have been obtained through the academic learning process can be used as a measure to find out the extent to which students master the subject matter taught and studied. Academic achievement is the result of learning activities to know to what extent a person masters the subject matter taught as well as express the successes achieved by that person. Factors affecting academic achievement. Wahyuni (in Gunarsa, 2000) explains that academic achievement can be influenced by internal and external factors. Things that are included in internal factors are intellectual ability or intelligence, interests, special talents, motivation to excel, attitudes, physical and mental conditions, academic self-esteem, and independence. Then it was also stated that things are included in external factors, namely the school environment, family, and situational factors, Suryabrata (2002).

2.3. Material Technology.

Material technology is a course in engineering at the Politeknik Ilmu Pelayaran Semarang which is taught to 7th semester students. This course consists of 3 chapters taken from the IMO Model course 7.02 STCW 2010 Amendment. This course is used because the author teaches in this course after students carry out marine practice. This study intends to explore and compare hybrid learning which is then analyzed to see how effective it is for future learning.

This study used a literature study. Peneliti conducted a literature search for the research framework and utilized the educational resources on the campus of the Politeknik Ilmu Pelayaran Semarang. A literature study and evaluation of students in the odd semester of 2021 was carried out. The types of data used are primary data and skunder data, then processed with pre-tests and post-tests to measure how much effectiveness it is.

3. Results and Discussion.

Respondents used in this study were six classes with 143 students. The test is carried out with multiple choices in the amount of 54 questions, then validity and reliability tests are carried out. Validity is set with a number of 0.6 while reliability is set at 0.8. The results of the Pretest and Posttest are to determine the effectiveness of the hybrid learning approach to learning material technology courses at the Politeknik Ilmu Pelayaran Semarang.

To discover the extent of effectiveness of the version that has been applied in this observe, it is able to be calculated with the benefit Index above, that is as follows:

The calculation of the gain index is done to see how much the use of Hybrid Learning has increased. The Gain Test is used to determine the effectiveness of a treatment on the expected results. The Gain index formula is calculated by the formula:

$$\text{Gain Index} = \frac{(\text{Posttest Score} - \text{Pretest Score})}{(\text{Max Score} - \text{Pretest Score})}$$

The N-Gain yield criteria are presented in Table 1.

Table 1: Gain Index Criteria.

| No | Index | Information |
|----|-----------------|-------------|
| 1 | $g \leq 0,3$ | Low |
| 2 | $0,3 > g > 0,7$ | Tall |
| 3 | $g \leq 0,7$ | Keep |

Source: Meltzer (2002).

The criteria used to interpret the value of Gain are: Gain means $\geq 0,7$ high; $0,3 > g > 0,7$ means medium; and Gain means low $\leq 0,3$ (Hake, 1999: 1; Melzer dalam Sulistiyono, 2014).

$$\text{Index Gains} = \frac{(78,9704 - 52,6984)}{(84 - 52)}$$

$$\text{Index Gains} = \frac{(26,272)}{(32)} = 0,821$$

The COVID-19 pandemic was not predicted in advance. In fact, there are various viruses that threaten this world, but never before has it been as deadly as COVID-19 with the ability to transmit the virus which is also very fast. After the COVID-19 pandemic was officially announced by the Indonesian government, not only economic activities stopped, but educational activities were also affected by, (Khan, 2020). The whole world of education is worried and enters into an event full of uncertainty.

A pandemic was the most difficult time not only for students, education staff, educators, but also parents. Sistem which is standard in supervising students and lecturers in carrying out the learning process through distance has not been found, (Purwanto et al., n.d.). Curriculum adjustments have not been fully implemented for distance learning. However, the concept of "Distance Learning" is also interpreted in various ways by many people.

A year after the enactment of Large-Scale Social Restrictions, the government decided to allow the re-implementation of limited face-to-face schools. During the transition period, schools in Indonesia have been allowed again to carry out face-to-face learning activities in schools even with a limited number of students and with strict health protocols after the Covid-19 pandemic that began to decline in Indonesia. This situation is an exciting opportunity for the world of education, especially maritime education. Like the implementation of online learning at the peak of the pandemic, Limited Face-to-Face Learning has perfect guidelines, especially on what strategies and methods need to be used to be able to accommodate various learning possibilities in the midst of this still uncertain pandemic situation. Various schools tried several approaches and one of them was with a Hybrid Learning approach, (Ganovia et al., n.d.).

The Hybrid learning approach is carried out as a solution that accommodates students with limited Distance Learning but have a strong desire to be able to enter school. For students who are worried about the COVID-19 pandemic situation, they are still given the opportunity to continue to be able to take part in learning from home. The idea of this learning approach must be recognized as good, but in its implementation it still needs to be reviewed and has many shortcomings, especially in the effectiveness of learning and the ability of lecturers to adjust their teaching methods.

Face-to-face learning will form teacher-student interactions that develop cognitive, psychomotor and affective potential, (Rahim Mansyur, 2020). Therefore, the existence of limited face-to-face learning opportunities is addressed with high enthusiasm by lecturers, educators, students and parents.

Students' enthusiasm for participating in face-to-face learning tends to fade. For them, offline learning is not an option because they feel comfortable with distance learning. This condition illustrates how students' study habits have changed significantly without realizing it. This learning habit is the impact of online learning. Finally, excessive use of online learning actually causes problems in the learning process, ranging from decreased concentration, difficulty in communication, lack of response when people invite to speak and lack of active students in participating in teaching and learning activities, (Cai et al., 2022).

Hybrid Learning has similarities with the Blended Learning learning method, where through the Hybrid Learning approach we can see efforts to integrate technology in learning activities. With Hybrid Learning, according to (Tian et al., 2020), it is necessary to have active interactions even if it is carried out in a virtual scope. On the other hand, the main idea in Blended Learning is to carry out a combination of various learning strategies ranging from web-based technology, e-learning technology, multimedia utilization, online learning to face-to-face learning at the same time, (Bordoloi et al., 2021)

Hasil analysis of the effectiveness of the use of the Hybrid Learning learning model in upper-level schools which states that this method is declared ineffective, (Guruh Triyono & Arwin Dermawan, 2021). In line with (Hendrayati & Pamungkas, n.d.) where the results of the study showed that the application of the Hybrid Learning method was not suitable to be applied

to lectures in certain courses.

However, Hybrid Learning is one of the sensible choices today, but it takes a great willingness from all parties to be willing to change and adapt again to this new thing. All parties are required to be able to adjust as soon as possible so that the adverse impact of "Learning Loss" experienced by students so far does not further aggravate the situation in the world of education in general, (Wilson et al., 2011). One of our biggest challenges together today is how this can be used by stakeholders to refocus learners' focus on their learning objectives. Educators need to think about and also consider how the technical implementation of learning can accommodate between students who are present at school and who are at home (Mulyadi & Mardiko, 2022).

Conclusions.

This research concludes that, although the Covid-19 pandemic is over, in the world of learning it has meaning and takes the wisdom that the combination of traditional and online learning (hybrid) is more profitable. Students who are not able to join in person can receive lecture materials online without compromising the core of learning. Of course, mechanisms like this can be seen as beneficial or detrimental. It needs a more in-depth, structured and systematic study to formulate policies, regulations and technicalities of using this hybrid method.

By building good collaboration from various parties, it is hoped that Hybrid Learning learning can be even more effective. Although the implementation of Hybrid Learning is far from perfect, this choice is one of the choices of learning methods that we can take today. A policy is needed by the government and schools as key stakeholders on how the future of education will be built after this pandemic.

Hybrid learning can be formed effectively if it involves the active and collaborative role of schools, families, and communities, (Sibuea, 2018). In the family sector, parents accompany, provide moral support, provide motivation, and have active interaction with schools. It became the first pillar of education to shape the character of children.

Acknowledgements.

Researchers thanked friends at the Polytechnic of Sailing Sciences who helped fund the research.

References.

Acosta, M. (2016). *Paradigm Shift In Open Education And E-Learning Resources As Teaching And Learning In Philippines*. Printed in the Indonesia. All Rights Reserved, 4(2). <https://doi.org/10.13140/RG.2.1.4272.8563>.

Azwar, S. (2005). *Tes prestasi dan pengukuran prestasi belajar*. Yogyakarta: Pustaka pelajar.

Bersin, Josh. (2004). *The Blended Learning Book: Best Practices, Proven Methodologies, and Lessons Learned*. San Francisco: Pfeiffer.

Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., & Ciganek, A. P. (2012). Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers and Education*, 58(2), 843–855. <https://doi.org/10.1016/j.compedu.2011.10.010>.

Bordoloi, R., Das, P., & Das, K. (2021). Perception towards online/blended learning at the time of Covid-19 pandemic: an academic analytics in the Indian context. *Asian Association of Open Universities Journal*, 16(1), 41–60. <https://doi.org/10.1108/AAOUJ-09-2020-0079>.

Button, D., Harrington, A., & Belan, I. (2014). E-learning & information communication technology (ICT) in nursing education: A review of the literature. In *Nurse education today* (Vol. 34, Issue 10, pp. 1311–1323). <https://doi.org/10.1016/j.nedt.2013.05.002>.

Cai, Y., Wang, Z., Zhang, W., Kong, W., Jiang, J., Zhao, R., Wang, D., Feng, L., & Ni, G. (2022). Estimation of Heart Rate and Energy Expenditure Using a Smart Bracelet during Different Exercise Intensities: A Reliability and Validity Study. *Sensors*, 22(13), 4661. <https://doi.org/10.3390/s22134661>.

Ganovia, P., Pasca Sarjana, P., Tinggi Ilmu Ekonomi Sultan Agung, S., & Studi Manajemen, P. (n.d.). *Efektivitas Hybrid Learning dalam Proses Pembelajaran untuk Siswa Kelas XI SMA Kalam Kudus Pematangsiantar*.

Garnham, C., & Kaleta, R. (n.d.). *Introduction to Hybrid Courses*. <http://www.uwm.edu/Dept/LTC/hybridcourses.html>.

Gunarsa, S.D. & Gunarsa, Y.S. (2000). *Psikologi remaja*. Jakarta: BPK Gunung Mulia.

Guruh Triyono, M., & Arwin Dermawan, D. (2021). *Analisis Efektivitas Penggunaan Model Pembelajaran Hybrid Learning Di Smk Negeri 2 Surabaya* (Vol. 5).

Hendrayati, H., & Pamungkas, B. (n.d.). *Implementasi Model Hybrid Learning Pada Proses Pembelajaran Mata Kuliah Statistika Ii Di Prodi Manajemen Fpeb Upi*.

Horton, W. 2011. *E-learning by Design*. Retrieved from https://books.google.com.ph/books?hl=en&lr=&id=q a8UU9x-ru_wC&oi=fnd&pg=PT9&dq=e+learning+definitions&ots=UM8JgHhazk&sig=CcmY EuAd43jvprmpVS8IMp6ct8&redir_esc=y#v=onepage&q=e%20learning%20definitions&f=false.

Hrastinski, S. (2008). 4. EQM0848. [http://elearning.fit.hcmup.edu.vn/~longld/References%20for%20TeachingMethod&EduTechnology%20-%20Tai%20lieu%20PPDH%20&%20Cong%20Nghe%20Day%20Hoc/\(Book\)%20-%20Sach%20tham%20khao%20-%20eLearning/e-Learning%20Concepts/Asynchronous%20&%20Synchronous%20e-Learning%20\(Hrastinski-2008\).pdf](http://elearning.fit.hcmup.edu.vn/~longld/References%20for%20TeachingMethod&EduTechnology%20-%20Tai%20lieu%20PPDH%20&%20Cong%20Nghe%20Day%20Hoc/(Book)%20-%20Sach%20tham%20khao%20-%20eLearning/e-Learning%20Concepts/Asynchronous%20&%20Synchronous%20e-Learning%20(Hrastinski-2008).pdf).

Hyder, K., Kwinn, A., Miazga, R., Murray, M., Holcombe, D., Clark, R., Dublin, L., Gottfredson, C., Horton, B., Mosher, B., Parks, E., Pfaus, B., Rosenberg, M., & Rossett, A. (2007). *Synchronous e-Learning The eLearning Guild's Handbook on The eLearning Guild TM Advisory Board The eLearning Guild's Handbook on Synchronous e-Learning i*. www.elearningguild.com.

Jeffrey, L. M., Milne, J., Suddaby, G., & Higgins, A. (2014). Blended learning: How teachers balance the blend of online and classroom components. In *Journal of Information Technology*

Education: Research (Vol. 13). <http://www.jite.org/documents/-Vol13/JITEv13ResearchP121-140Jeffrey0460.pdf>.

Khan, et al, 2020. COVID-19: A Global Challenge with Old History, Epidemiology and Progress So Far, *Molecules*, MDPI.

Maslihah, S. (n.d.). Studi Tentang Hubungan Dukungan Sosial, Penyesuaian Sosial Di Lingkungan Sekolah Dan Prestasi Akademik Siswa Smpit Assyfa Boarding School Subang Jawa Barat.

Massoud, A., Iqbal, U., & Stockley, D. (n.d.). Using Blended Learning to Foster Education in a Contemporary Classroom Evidence-based Teaching and Learning in Health Professions Education View project AI Applications in Civil Engineering View project. <https://www.researchgate.net/publication/25456-0902>.

Mulyadi & Mardiko, 2022 <https://smn.sch.id/blog/hybrid-learning-suatu-solusi-di-tengah-ancaman-dan-tantangan-pendidikan-di-masa-pandemi/>.

Purwanto, A., Pramono, R., Asbari, M., Budi Santoso, P., Mayesti Wijayanti, L., Chi Hyun, C., & Setyowati Putri, R. (n.d.). Universitas Muhammadiyah Enrekang Studi Eksploratif Dampak Pandemi COVID-19 Terhadap Proses Pembelajaran Online di Sekolah Dasar.

Rahim Mansyur, A. (2020). Education and Learning Journal Dampak COVID-19 Terhadap Dinamika Pembelajaran Di Indonesia. 1(2), 113–123. <http://jurnal.fai@umi.ac.id>.

R.R. Germo. (2022). 0.Blended Learning Approach in Improving Studentâ™s Academic Performance in Information Communication, and Technology (ICT). Transnav.

Ruth Colvin Clark, R. E. M. (2021). e-learning and the science of instruction. Book, 3.

Sibuea, T. F. B. (2018). Students' Perceptions On The Use Of Google Classroom To Support Blended Learning For The Pengantar Linguistik Umum Course. *Lingua : Jurnal Ilmiah*, 14(2), 49–63. <https://doi.org/10.35962/lingua.v14i2.45>.

STCW CONF.2-DC-2 - Adoption of the final act and any instruments, resolutions and recommendations resulting from the work of the conference. Draft resolution 2. Adoption of amendment to the seafarers' training, certification and watch-keeping (STCW) Code, 2010.

Suryabrata, Sumadi. (2002). Psikologi Pendidikan. Jakarta: PT. Grafindo Perkasa Rajawali.

Sutisna, A. (2016). Pengembangan Model Pembelajaran Blended Learning pada Pendidikan Kesetaraan Program Paket C dalam Meningkatkan Kemandirian Belajar. In *Jurnal Teknologi Pendidikan* (Vol. 18, Issue 3).

Tian, J., Yuan, X., Xiao, J., Zhong, Q., Yang, C., Liu, B., Cai, Y., Lu, Z., Wang, J., Wang, Y., Liu, S., Cheng, B., Wang, J., Zhang, M., Wang, L., Niu, S., Yao, Z., Deng, X., Zhou, F., ... Wang, Z. (2020). Clinical characteristics and risk factors associated with COVID-19 disease severity in patients with cancer in Wuhan, China: a multicentre, retrospective, cohort study. *The Lancet Oncology*, 21(7), 893–903. [https://doi.org/10.1016/S1470-2045\(20\)30309-0](https://doi.org/10.1016/S1470-2045(20)30309-0).

Wilson, D. W., Lin, X., & Longstreet, P. (2011). Web 2.0: A Definition, Literature Review, and Directions for Future Research. <https://www.researchgate.net/publication/2208928>.