

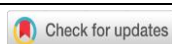


## Study of Perceptions and Obstacles from Postgraduate Education Students About Scientific Publication as a Graduation Requirement

Utama Alan Deta<sup>1</sup>, Husni Mubarak<sup>2</sup>, Yetty Septiani Mustar<sup>3</sup>, Ahmad Wachidul Kohar<sup>4</sup>,  
Muhammad Abdul Ghofur<sup>5</sup>

<sup>1,3,4,5</sup> Universitas Negeri Surabaya, Surabaya, Indonesia

<sup>2</sup> National Taiwan University of Science and Technology, Taipei City, Taiwan



DOI : <https://doi.org/10.53621/ijocer.v1i2.188>

### Sections Info

#### Article history:

Submitted: November 29, 2022

Final Revised: December 15, 2022

Accepted: December 17, 2022

Published: December 31, 2022

#### Keywords:

Obstacle in writing a scientific manuscript

Scientific manuscript

Student perception



### ABSTRACT

The Cooperation, Publication and Internationalization Group was formed as a postgraduate support unit at the Universitas Negeri Surabaya to assist students in the process of producing and publishing scientific publications. In order to provide assistance and facilitation in writing scientific articles for Unesa Postgraduate Education students, it is necessary to analyze the perceptions and obstacles faced by students in writing scientific manuscripts. The purpose of this research is to find out the perceptions and obstacles faced by Postgraduate Education students at Unesa in writing a scientific manuscript as a graduation requirement. The research was carried out qualitatively by using questionnaires, observations, and interviews with the research target of Unesa Postgraduate Education studentst who attended workshops and scientific manuscript assistance by the Cooperation, Publication and Internationalization Group (CPI) in Odd Semester 2022/2023. The data will be analyzed using data triangulation. Based on the results of the analysis, some students feel the need to write scientific manuscripts as a graduation requirement because it is to train student skills, improve quality, and participate in the development of innovation in science and technology. Obstacles faced by students in writing scientific articles include difficulties in determining research topics, using English in writing manuscripts, also in choosing good and reliable journals.

## INTRODUCTION

The skill of communicating research findings in the form of scientific articles is very important to improve the dissemination of research results. Those reporting on research should pay attention to the truthfulness of the subject matter, the character of the intended audience, and questions about clarity, style, structure, precision, and accuracy (Sovacool et al., 2018). These factors, along with the responsibility to the scientific community, make scientific writing a formidable task. It caused many researchers to avoid critical elements of this research, thus hindering the advancement of knowledge and their own scientific careers (Albris et al., 2020; Neff, 2018; Toyao et al., 2020).

The findings and expert opinions show the many difficulties and misconceptions related to writing scientific articles. Liljedahl (2019) finds that the most common misconception is about the purpose of a literature review. It is not only to show that authors have read previous and related research on the phenomena they are interested in but also should be used as a place where authors will continue to narrow down the Phenomena of their interest to their precise research questions. Thus, a literature review is not a random walk through the literature, but a guided literature tour, constructed in such a way as to direct the reader's attention and interest toward the research question. Several other findings, as stated by Potari in Kaiser & Presmeg (2019), show that there are many weak contributions made to knowledge, unclear research questions,

ambiguous theoretical frameworks and research contexts, mistakes in justifying claims of findings, incoherent analysis processes, presentation of research results discussion that is too descriptive and not analytic, and incoherent writing systematics. In abstract writing, Ferris (2013) also found that many abstracts were written in opaque language that did not communicate a summary of findings, statements, or implications properly.

For beginner researchers, such as postgraduate students, who are carrying out research as one of their final assignments at many universities, including in Indonesia. To help them realize their true ability, we need qualitative studies to identify the obstacles to writing good scientific papers. This study can be about the tutorial program in managing scientific articles from research results to publications or investigations of students' difficulties in scientific publications. For example, Ilfiandra et al. (2016) used a mind-mapping approach to help writers develop writing ideas. Meanwhile, Barroga & Mitoma (2019) implemented a university-based editing system for the academic community. This system accommodates consulting and editing activities, uses editing workflows and systematic internal editing processes, provides basic editorial support services as well as electronic archiving and recording systems, editing/submission to journals establishes a filing system for accepted or rejected papers, and provides training for authors. Thus, a consistent effort to understand the factors influencing scientific writing and to develop or apply new training techniques to hone writing skills are important (Graham, 2019; Huerta et al., 2017; Sverdlik et al., 2018; Varier et al., 2017).

As an institution that is committed to maintaining the quality of its graduates, the Surabaya State University postgraduate program issued regulations regarding article requirements that can be used as one of the graduation criteria stipulated in the Circular Letter of the Postgraduate Director of Surabaya State University Number: B/36792/UN38.8/TU.00.02 /2021. It stated that the criteria for an article for Masters degree graduation must meet one of four conditions: 1) an article published in a national journal, at least Sinta 4, 2) an article with accepted status in an international journal, provided that the journal is in the UN language, editors from various countries, authors in one edition consisting of at least two countries, namely a) journal indexed by Copernicus, DOAJ, or WoS, ESCI, MAS, or b) national scientific journal accredited Sinta 1 or 2 in UN Language, articles presented and published in the proceedings of international seminars indexed WoS or Scopus, 3) articles published in international seminar proceedings abroad in collaboration with Unesa, and 4) articles must have been published in indexed journals at Scopus or WOS. Meanwhile, for scientific articles for doctoral degrees, articles must meet the requirements of having been published in reputable international journals (indexed at least Scopus Q4 or Web of Science with an impact factor) (Azizi et al., 2021; Grinev, 2019; Martín-Martín et al., 2018; Troncoso et al., 2022).

To help students meet the criteria, the Cooperation, Publication, and Internationalization Group (CPI) was formed as a postgraduate support unit at the State University of Surabaya which functions to assist students in the process of producing articles and publishing scientific articles in journals or proceedings that have been required. With this authority, the CPI seeks to improve service quality through research whose results can be utilized not only for scientific purposes related to scientific publications but also to assist in implementing postgraduate policies related to the CPI functions. Based on the results of research in the implementation of assistance that has

been carried out by the CPI in 2020, as many as 143 postgraduate students, both Masters (S2) and Doctoral (S3) students in the Unesa postgraduate program. Participants involved in previous CPI research were students who had registered and submitted draft articles that had previously through the manuscript self-assessment as reference material for further academic writing consultations and data collection, which then drafted articles. Then the drafted articles will be submitted to nationally accredited journals and reputable international journals as part of the graduation requirements (Yundra, et al., 2020).

Study of perceptions and obstacles toward graduate students on publication has been studied with a variety of concern. The graduate students in their study were adequately aware of the benefits of conducting research and the need to publish it in a journal. Besides, this research also found that paper rejection for publishing owing to incorrect journal selection for aim and scope was one of the difficulties encountered by participants, rather than the quality or content of the paper, which was consistent with the most prevalent reasons for manuscript rejection reported in the literature. Another important obstacle when publishing articles is that students are often found to have a more limited understanding of the function of the discussion of the research results in their manuscript than their supervisors, and they also had a limited common understanding about the nature and cause of their difficulties writing the discussion of the results (Bitchener & Basturkmen, 2006; Derakhshan & Karimian, 2020).

The writing of a literature review, on the other hand, is also found to cause graduate students difficulties in publication. Graduate students in mostly encountered language issues, particularly in relation to vocabulary and sentence accuracy, which this issue becomes largely essential, especially for those who are unable or find difficulties in accessing English written resources. While those findings have added some important aspects of students' obstacles and perceptions toward publication, some other aspects of perceptions and obstacles need to be surveyed to get a comprehensive view of those two issues. Thus, the purpose of this study was to find out the perceptions and obstacles faced by Postgraduate Education students at Unesa in writing scientific articles as a graduation requirement. By knowing the perceptions and obstacles experienced by students in writing scientific articles, it is hoped that an effective scientific article mentoring model and academic texts will be formed that are in line with the aspirations of Unesa Postgraduate Education students.

## RESEARCH METHOD

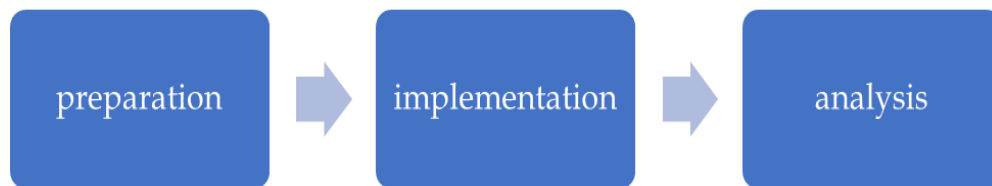
This research is qualitative research to find out the perceptions and constraints experienced by Postgraduate Education students in compiling scientific articles as a graduation requirement. Students' perceptions and obstacles were captured in the form of a questionnaire using Google Forms, in-depth interviews with several students, and observations made by the CPI Team during assistance in making scientific articles.

### Sample / Participants / Group

This research was conducted at the Postgraduate Education Program at Surabaya State University with the target of Masters and Doctoral Education students participating in a series of routine workshops on writing scientific articles organized by the Unesa Postgraduate CPI in Odd Semester 2022/2023.

### Instrument and Procedures

The research procedure carried out in this study includes three stages, which include the preparation, implementation, and analyzing the research results. It is shown in Figure 1 and Table 1.



**Figure 1.** Research flowchart.

**Table 1.** Three stages of research procedure.

Stage	Procedure
Preparation	a. Conducting initial observations of Master's and Doctoral students who have problems writing scientific articles. b. Determine the research object. c. Finding and analyzing relevant studies. d. Develop a research plan. e. Develop research instruments
Implementation	a. Distributing questionnaires b. Make observations regarding the abilities and obstacles of Master and Doctoral students in writing scientific articles. c. Assist in writing scientific articles and in-depth interviews
Analysis	a. Analyzing research data. b. Make a research report.

The methods used to collect data in this study include questionnaires, observations, and interviews. The questionnaire will be used to explore student perceptions and the obstacles experienced in writing scientific articles. The questionnaire was distributed after the Unesa Postgraduate CPI Team conducted a workshop or scientific article training. Observation is carried out with the aim of observing and knowing student perceptions and the obstacles experienced in writing scientific articles. The object of observation is intensive guidance of scientific article writing by the Unesa Postgraduate CPI Team to students. And the interview method is also a process of obtaining information for research purposes by way of debriefing during face to face, both virtual and in-person, between the interviewer and the respondent. In-depth interviews were conducted to find out student perceptions and the obstacles experienced in writing scientific articles. Discussions and interviews were carried out during intensive scientific article mentoring activities by the Unesa Postgraduate CPI Team.

### Data Analysis

Qualitative data analysis techniques are data analysis processes that do not involve or are not in the form of numbers. The data obtained for research using qualitative data analysis techniques are generally subjective. The process of collecting data in qualitative data analysis techniques based on Spradley's Theory was analyzed by data triangulation method with four stages, namely domain analysis, taxonomic analysis, component analysis, and analysis of cultural themes.

1. Domain Analysis; researchers, get an overview of the object or from a social issue that relates to the research topic. An overview can be obtained from the amount of data obtained during the data collection process. Each data will have its own post or domain. It will be a guide in conducting further research.
2. Taxonomic Analysis; researchers need to analyze the grouping of data that has been obtained. At this stage, all domains from the data that have been obtained must be reviewed and re-examined. It is to find out what elements construct the research data domains.
3. Component analysis; This stage aims to determine the specific characteristics of all the elements that construct the research data domain.
4. Analysis of Cultural Themes; The researcher will make relationships between data domains whose specific characteristics are known. The relationship between the data domains is what then becomes the conclusion of all the research data that has been obtained.

## RESULTS AND DISCUSSION

Scientific publications are important for training and deepening knowledge (Suharso, 2021). Regulation of the Minister of Administrative Reform and Bureaucratic Reform Number 17 of 2013 emphasizes that scientific publications at the national and international levels must become an integral part of the Tri Dharma of Higher Education. It require scientific publication obligations in accredited national journals as a graduation requirement from the master's program (Sukardi, 2019). It gets various responses, especially from Postgraduate students. Based on the results of questionnaires and interviews regarding responses to the requirement of scientific publications in Indonesia for Postgraduate students, the majority of respondents agreed that if Postgraduate Education students were required to carry out scientific publications, there would be more publications in Indonesia. Publication requirements for Postgraduate Education students can increase publication motivation, train scientific article writing skills, and are expected to help science and technology innovation in Indonesia (Astuti, 2019). Besides the requirement for students to make scientific publications, students expect support from universities both in terms of assistance, such as coaching clinics, as well as in terms of funding, as for opinion that they do not agree with the existence of this requirement because it is felt to be burdensome for students. So, the students do not need to do scientific publications if the final project has been completed. The master's program at Unesa also requires scientific publications for students in the hope of improving the quality of Unesa Postgraduate graduates.

The requirement of scientific publications for Unesa Postgraduate Education students also received a good response from students because they felt it was useful as a track record of publication activities and to improve the quality of Unesa graduates. Scientific publications can provide new knowledge that can be continuously developed and is evidence of awareness of the problems that exist around and can be accounted for through research (Listiana, 2021). With the requirement to publish, there is a need for adequate facilities from the university, such as guidance on article writing in order to produce articles worthy of publication in national and international journals (Kessler, 2020). As for students who object to the requirement to publish scientific articles with Scopus standards, the obstacle is publication costs are quite high, so students also hope that universities can also provide publication fees.



In conducting scientific publications, a writer must also pay attention to the journal to be submitted. Authors must be good at selecting journals to publish their articles. In addition to choosing journals with topics that are in accordance with the manuscripts that have been made, writers must also be aware of predatory journals. A predatory journal is a journal that does not follow the proper publication management process (Cobey, 2018). From the results of the questionnaire, predatory journals are very detrimental in terms of writers and readers. Articles published in these journals do not follow the rules of good article writing and do not go through a good review process either, so these articles are not suitable as a reference for conducting research (Richtig, 2018). Publication requirements can make students submit to predatory journals due to publication pressure, especially if the author does not have experience in choosing good journals. Therefore, assistance is needed for writers to be able to choose trusted journals.

Scientific publications as a graduation requirement at the Unesa Postgraduate Program are expected to be able to increase the publication quality of student graduates and contribute to innovation in the world of science both domestically and abroad. However, some students find it difficult to prepare scientific publications as a requirement for postgraduate graduation. One of the obstacles in writing articles is when determining the research topic. Some writers still find it difficult to determine what research topics have novelty and benefits. Another obstacle is language. Writing articles in English with appropriate fields is a particular difficulty for writers, and sometimes there are scientific terms that can have different meanings if they are used incorrectly (Sukardi, 2019; Syaharuddin, 2021).

From the results of the questionnaire that had been distributed, students revealed that the selection of journals was difficult. The selection of journals that will be used as publication sites is one of the obstacles due to a lack of knowledge about appropriate and reliable journals (Astuti, 2019). The rise of predatory journals is also a vulnerable thing for writers, especially new writers. Selection of the right journal is very important for the publication process in terms of content suitability and article quality. The difficulties in preparing scientific publications are broadly due to the author's lack of experience in writing articles and scientific publications (Sukardi, 2019). For this reason, it is hoped that the institution can facilitate students during the process of preparing scientific publications as a graduation requirement for Postgraduate education students.

Facilities for students in preparing for scientific publications can include assistance in writing articles for the publication process (Syaharuddin, 2021; Kessler, 2020). The university has scientific publication assistance facilities by the Unesa Postgraduate CPI. From the results of the distributed questionnaire, this facility is very helpful for students in preparing for publication. The lack of student experience regarding scientific publications causes the need for regular assistance in order to produce good articles (Sukardi, 2019). Students also hope that mentoring activities can be carried out more frequently.

In the future, scientific publication assistance facilities by the Unesa Postgraduate CPI are expected to be able to provide training in writing scientific articles, how to scientific publications, and how to select journals. Students expect continuous assistance starting from training in writing scientific articles, such as novelty, methods, and citation methods. Journal selection training is also an important thing so that writers are not wrong in choosing a journal. There are many types of training that can be carried

out which certainly have a positive impact on students, such as Ms. Word and Mendeley training (Setiawan et al., 2019), Mendeley training for writing references (Pahmi et al., 2018), Mendeley training in improving the quality of articles (Kosasi, 2019; Rahmawati et al., 2018), and training on how to citation with APA style (Mardin et al., 2020).

## CONCLUSION

Based on the results and discussion in this study, it can be concluded that the perceptions and obstacles faced by Postgraduate students at Unesa in writing scientific articles as a graduation requirement include the following: Some students feel the need to have the requirement to write scientific articles as a graduation requirement because it is useful for practicing skills in writing articles, improving the quality of graduates, and adding innovation in the field of science and technology. Besides that, there are students who feel there is no need to write articles because it is too burdensome for students even though students have completed their final assignments. The obstacles faced by students are in determining topics, using English, and choosing good and credible journals. These obstacles are expected to be resolved through mentoring activities in the writing and publication of scientific articles.

## ACKNOWLEDGEMENTS

The university's funding partly supports this research through the "Penelitian Dana Pascasarjana Unesa", PNBP 2022 grant, Universitas Negeri Surabaya, Indonesia.

## REFERENCES

- Albris, K., Lauta, K. C., & Raju, E. (2020). Disaster knowledge gaps: Exploring the interface between science and policy for disaster risk reduction in europe. *International Journal of Disaster Risk Science*, 11(1), 1-12. <https://doi.org/10.1007/s13753-020-00250-5>
- Astuti, E., & Isharijadi, I. (2019). Pengenalan open journal system (OJS) untuk publikasi ilmiah mahasiswa. *Jurnal Pengabdian Pada Masyarakat*, 4(4), 409-414. <https://doi.org/10.30653/002.201944.189>
- Azizi, M. R., Atlasi, R., Ziapour, A., Abbas, J., & Naemi, R. (2021). Innovative human resource management strategies during the COVID-19 pandemic: A systematic narrative review approach. *Heliyon*, 7(6), 1-10. <https://doi.org/10.1016/j.heliyon.2021.e07233>
- Barroga, E., & Mitoma, H. (2019). Improving scientific writing skills and publishing capacity by developing university-based editing system and writing programs. *Journal of Korean medical science*, 34(1), 1-8. <https://doi.org/10.3346/jkms.2019.34.e9>
- Bitchener, J., & Basturkmen, H. (2006). Perceptions of the difficulties of postgraduate L2 thesis students writing the discussion section. *Journal of English for Academic Purposes*, 5(1), 4-18. <https://doi.org/10.1016/j.jeap.2005.10.002>
- Cobey, K. D., Lalu, M. M., Skidmore, B., Ahmadzai, N., Grudniewicz, A., & Moher, D. (2018). What is a predatory journal? A scoping review. *F1000Research*, 7, 1-28. <https://doi.org/10.12688/f1000research.15256.2>
- Derakhshan, A., & Karimian Shirejini, R. (2020). An investigation of the iranian EFL learners' perceptions towards the most common writing problems. *Sage Open*, 10(2), 1-11. <https://doi.org/10.1177/2158244020919523>
- Ferris, D. R. (2013). *Response to student writing: Implications for second language students*. Routledge.
- Graham, S. (2019). Changing how writing is taught. *Review of Research in Education*, 43(1), 277-303. <https://doi.org/10.3102/0091732X18821125>

- Grinev, A. V. (2019). The use of scientometric indicators to evaluate publishing activity in modern russia. *Herald of the Russian Academy of Sciences*, 89(5), 451–459. <https://doi.org/10.1134/S1019331619050046>
- Huerta, M., Goodson, P., Beigi, M., & Chlup, D. (2017). Graduate students as academic writers: writing anxiety, self-efficacy and emotional intelligence. *Higher Education Research and Development*, 36(4), 716–729. <https://doi.org/10.1080/07294360.2016.1238881>
- Ilfiandra, I., Suherman, U., Akhmad, S. N., Budiamin, A., & Setiawati, S. (2016). Pelatihan dan pendampingan penulisan karya tulis ilmiah bagi guru SD. *Jurnal Pengabdian Pada Masyarakat*, 1(1), 70-81. <https://doi.org/10.46368/dpkm.v1i2.458>
- Kaiser, G., & Presmeg, N. (2019). *Compendium for early career researchers in mathematics education*. Springer Nature.
- Kessler, M. (2020). Technology-mediated writing: Exploring incoming graduate students' L2 writing strategies with activity theory. *Computers and Composition*, 55, 102542. <http://dx.doi.org/10.1016/j.compcom.2020.102542>
- Kosasi, S. (2019). Pemanfaatan aplikasi mendeley desktop mengelola referensi publikasi karya ilmiah mahasiswa. *SNPMas: Seminar Nasional Pengabdian Pada Masyarakat*, 2019, 64–74.
- Liljedahl, P. (2019). The international journal of science and mathematics education: a beginner's guide to writing for publication. *Compendium for Early Career Researchers in Mathematics Education*, ICME-13, 407-424. [https://doi.org/10.1007/978-3-030-15636-7\\_20](https://doi.org/10.1007/978-3-030-15636-7_20)
- Listiana, Y., Prastiwi, L., & Amrullah, I. (2021). Pendampingan publikasi ilmiah bagi mahasiswa Fkip Universitas Dr Soetomo. *Integritas: Jurnal Pengabdian*, 5(1), 122-134. <http://dx.doi.org/10.36841/integritas.v5i1.877>
- Mardin, H., Baharuddin, B., & Nane, L. (2020). Pelatihan cara menulis sitasi dan daftar pustaka jurnal format apa style menggunakan aplikasi mendeley. *Jurnal Abdidas*, 1(3), 137-143. <https://doi.org/10.31004/abdidas.v1i3.37>
- Martín-Martín, A., Orduna-Malea, E., Thelwall, M., & Delgado López-Cózar, E. (2018). Google scholar, web of science, and scopus: A systematic comparison of citations in 252 subject categories. *Journal of Informetrics*, 12(4), 1160–1177. <https://doi.org/10.1016/j.joi.2018.09.002>
- Neff, M. W. (2018). Publication incentives undermine the utility of science: Ecological research in mexico. *Science and Public Policy*, 45(2), 191–201. <https://doi.org/10.1093/scipol/scx054>
- Pahmi, P., Ardiya, A., Syahfutra, W., Wibowo, A. P., Niah, S., & Febtiningsih, P. (2018). Pelatihan penggunaan mendeley untuk referensi dalam menulis karya ilmiah bagi guru SMA handayani pekanbaru. *Jurnal Pengabdian Untuk Mu negeri*, 2(2), 35-39. <https://doi.org/10.37859/jpumri.v2i2.849>
- Pascasarjana Unesa. (2019). *Surat edaran direktur pascasarjana universitas negeri surabaya nomor: 59704/UN38.8/TU.00.02/2019*. Unesa.
- Rahmawati, C., Meliyana, M., Yuliana, Y., & Zain, H. (2018). Pelatihan software mendeley dalam peningkatan kualitas artikel ilmiah bagi dosen. *Jurnal Pengabdian Kepada Masyarakat*, 8(1), 30-36. <https://doi.org/10.30999/jpkm.v8i1.200>
- Richtig, G., Berger, M., Lange-Asschenfeldt, B., Aberer, W., & Richtig, E. (2018). Problems and challenges of predatory journals. *Journal of the European Academic of Dermatology and Venereology*, 32(9), 1441-1449. <https://doi.org/10.1111/jdv.15039>
- Setiawan, D., Hamzah, H., & Arlenny, A. (2019). Pelatihan ms.word & mendeley untuk penulisan karya ilmiah dosen fakultas teknik Unilak. *Dinamisia: Jurnal Pengabdian Kepada Masyarakat*, 3(1), 172-179. <https://doi.org/10.31849/dinamisia.v3i1.2215>
- Sovacool, B. K., Axsen, J., & Sorrell, S. (2018). Promoting novelty, rigor, and style in energy social science: Towards codes of practice for appropriate methods and research design. *Energy Research and Social Science*, 45, 12–42. <https://doi.org/10.1016/j.erss.2018.07.007>



- Suharso, P., Sukidin, S., & Zulianto, M. (2021). Pendampingan massive open online course (MOOC) dan meeting online platforms dalam upaya meningkatkan kompetensi guru merdeka belajar di SMA negeri suboh. *Jubaedah: Jurnal Pengabdian Danedukasi Sekolah (Indonesian Journal of Community Services and School Education)*, 1(3), 216–220. <https://doi.org/10.46306/jub.v1i3.40>
- Sukardi, S., Burhanuddin, B., & Wardana, L. A. (2019). Pelatihan dan pendampingan swasunting artikel ilmiah untuk mahasiswa magister bidang pendidikan pascasarjana universitas mataram. *Jurnal Pendidikan dan Pengabdian Masyarakat*, 2(1), 995. <https://doi.org/10.29303/jppm.v2i1.995>
- Sverdlik, A., Hall, N. C., McAlpine, L., & Hubbard, K. (2018). The PhD experience: A review of the factors influencing doctoral students' completion, achievement, and well-being. *International Journal of Doctoral Studies*, 13, 361–388. <https://doi.org/10.28945/4113>
- Syahrudin, S., Mandailina, V., Pramita, D., Rahmania, R., Rosada, R. & Negara, H. R. P. (2021). Peningkatan kualitas publikasi mahasiswa dan sitasi karya ilmiah dosen melalui workshop manajemen software Mendeley. *Community Development Journal: Jurnal Pengabdian Masyarakat*, 2(1), 8-13. <https://doi.org/10.31004/cdj.v2i1.1367>
- Toyao, T., Maeno, Z., Takakusagi, S., Kamachi, T., Takigawa, I., & Shimizu, K. I. (2020). Machine learning for catalysis informatics: Recent applications and prospects. *ACS Catalysis*, 10(3), 2260–2297. <https://doi.org/10.1021/acscatal.9b04186>
- Troncoso, E., Ganga-Contreras, F., & Briceño, M. (2022). Incentive policies for scientific publications in the state universities of chile. *Publications*, 10(2), 1–19. <https://doi.org/10.3390/publications10020020>
- Varier, D., Dumke, E. K., Abrams, L. M., Conklin, S. B., Barnes, J. S., & Hoover, N. R. (2017). Potential of one-to-one technologies in the classroom: Teachers and students weigh in. *Educational Technology Research and Development*, 65(4), 967–992. <https://doi.org/10.1007/s11423-017-9509-2>
- Yundra, E., Deta, U. A., Mustar, Y. S., Ghofur, M. A., & Sueb. (2020). Issues on academic writing consultation: alternative online platforms for graduate students. *Proceedings of the International Joint Conference on Science and Engineering (IJCSE 2020)*. 267–272. <https://doi.org/10.2991/aer.k.201124.048>

---

**\*Utama Alan Deta, M.Pd., M.Si. (Corresponding Author)**

Department of Physics,  
Universitas Negeri Surabaya,  
Jl. Ketintang, Surabaya, East Java, 60231, Indonesia  
Email: [utamadeta@unesa.ac.id](mailto:utamadeta@unesa.ac.id)

**Husni Mubarak, S.Pd., M.Sc.**

Graduate Institute of Digital Learning and Education,  
National Taiwan University of Science and Technology,  
No. 43, Section 4, Keelung Rd, Da'an District, Taipei City, 106, Taiwan  
Email: [husnimubarak254@gmail.com](mailto:husnimubarak254@gmail.com)

**Yetty Septiani Mustar, M.Kes.**

Sport Science Study Program,  
Universitas Negeri Surabaya,  
Jl. Lidah Wetan, Surabaya, East Java, 60213, Indonesia  
Email: [yettymustar@unesa.ac.id](mailto:yettymustar@unesa.ac.id)

**Ahmad Wachidul Kohar, M.Pd.**

Department of Mathematics,  
Universitas Negeri Surabaya,  
Jl. Ketintang, Surabaya, East Java, 60231, Indonesia  
Email: [ahmadkohar@unesa.ac.id](mailto:ahmadkohar@unesa.ac.id)

---

**Muhammad Abdul Ghofur, M.Pd.**

Economy Education Study Program,

Universitas Negeri Surabaya,

Jl. Ketintang, Surabaya, East Java, 60231, Indonesia

Email: [muhammadghofur@unesa.ac.id](mailto:muhammadghofur@unesa.ac.id)

---