Jurnal Eduhealth
Volume 16, Number 03 2025 DOI 10.54209/eduhealth.v16i03
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

The Impact of the Covid-19 Pandemic on the Learning Methods of Health Students Majoring in Radiology and Pharmacy

Slamet Utomo[1], Lucky Restyanti Wahyu Utami[2], Rose Malinda Andamari Wahyu Utami[3]
Program Studi Pendidikan Bahasa Inggris, Universitas Muria Kudus, Jl. Lkr. Utara, Kayuapu Kulon, Gondangmanis, Kecamatan Bae, Kabupaten Kudus, Provinsi Jawa Tengah, Indonesia[1], Program Studi Radiologi, Universitas Widya Husada Semarang, Jl. Subali Raya No.12, Krapyak, Kecamatan Semarang Barat, Kota Semarang, Provinsi Jawa Tengah, Indonesia[2], Program Studi Farmasi, Sekolah Tinggi Ilmu Kesehatan Kendal, Jl. Laut No.31, Ngilir, Kecamatan Kendal, Kabupaten Kendal, Provinsi Jawa Tengah, Indonesia[3]

Article Info
Keywords:
Covid-19,
Learning Methods,
Radiology Students,
Pharmacy Students.

ABSTRACT
There have been changes in learning methods in Indonesia due to the Covid-19 pandemic with the implementation of limited face-to-face meetings, including in healthcare institutions. This study aims to determine the impact of the Covid-19 pandemic on the learning methods of healthcare students, especially radiology students at Widya Husada University Semarang and pharmacy students at Kendal College of Health Sciences. The type of research used is quantitative research conducted on radiology students at Widya Husada University Semarang and pharmacy students at Kendal College of Health Sciences who entered lectures in 2020 using an electronic questionnaire. The results of the study obtained regarding the impact of the Covid-19 pandemic on the learning methods used by radiology students at Widya Husada University Semarang are known to be carried out online for theoretical learning with a percentage of 56% and practical learning is carried out in a hybrid manner with a percentage of 55.5%. Meanwhile, the impact of the Covid-19 pandemic on the learning methods of pharmacy students at Kendal College of Health Sciences in theoretical learning is carried out online with a percentage of 44% and practical learning is carried out offline with a percentage of 44.5%. The learning methods used at both institutions are limited face-to-face, while adhering to health protocols as recommended by the government.

Corresponding Author:
Slamet Utomo
Program Studi Pendidikan Bahasa Inggris, Universitas Muria Kudus, Jl. Lkr. Utara, Kayuapu Kulon, Gondangmanis, Kecamatan Bae, Kabupaten Kudus, Provinsi Jawa Tengah, Indonesia
slamet.utomo@umk.ac.id

INTRODUCTION

The sudden and rapid spread of the Covid-19 pandemic has resulted in significant changes to the traditional learning process in the field of education (Lawal et al., 2022). The global scope of the spread of the Covid-19 pandemic has resulted in restrictions on various activities, including in the field of education (Adedoyin & Soykan, 2020; Ahsanuddin et al., 2022). This makes learning activities at the University carried out online (Adedoyin & Soykan, 2020). This online learning process has its own challenges and opportunities for students, lecturers and Universities (Adedoyin & Soykan, 2020; Palmaria & Osmar, 2021).

Jurnal Eduhealth
Volume 16, Number 03 2025 DOI 10.54209/eduhealth.v16i03
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

The implementation of digital education is fraught with several obstacles, such as unstable network bandwidth, inadequate allocation of time for scholarly discourse, the unwillingness of clinical institutions to accommodate student trainees, concerns regarding the caliber of pedagogical delivery, and limitations in reaching virtual instructional platforms (Ofori-Manteaw et al., 2022; Solís-barquero et al., 2020). Apart from that, online learning is considered inefficient and ineffective due to the unpreparedness of existing facilities and infrastructure (Sewang & Aswad, 2021). There are limitations to classroom settings and affective assessment in online learning during the Covid-19 pandemic (Rahmadi, 2021). Online learning can also have negative impacts such as a decline in the quality of education (Safira & Ifadah, 2021).

Restrictions on face-to-face teaching and learning during the Covid-19 pandemic present unique challenges, particularly for universities with health majors. Online learning can impact student motivation, interactions, the environment, learning styles, and disrupt research activities. Meanwhile, Covid-19 safety requirements and procedures apply to student practicums in hospitals (Lawal et al., 2022; Sayed & Zamri, 2022). The importance of training in the use of personal protective equipment before placement in hospital practical activities for students also needs to be considered (Rainford et al., 2021). The use of appropriate personal protective equipment and the implementation of health protocols is one way to control the spread of Covid-19 (Sulistyowati & Utami, 2021; L. R. W. Utami, Sulistyowati, et al., 2023; L. R. W. Utami & Sulistyowati, 2022; R. M. A. W. Utami, Utami, & Utomo, 2024).

Apart from the various challenges faced, the online learning process also has opportunities for developing technological skills and new learning experiences (Utomo, 2021; Wegasari et al., 2021). The development of digital media used in the online learning process can change the teaching and learning system for students at Universities (Witt & Christina, 2018). Online learning models during the Covid-19 pandemic can create more independent learning (Rahmadi, 2021). The use of technology in the online learning process allows learning to be carried out efficiently, practically, mobile, flexible, agile, sustainable, safe and fair to the post-Covid-19 educational environment (Currie et al., 2020; Teo et al., 2020). Apart from that, online learning can have an impact on increasing learning motivation (Arlinda et al., 2022). It is hoped that with this learning process, students can get the best education and after graduating can contribute to the health sector (Teo et al., 2020). It is anticipated that this initiative will deliver superior and high-quality care, thereby adequately addressing patients' fundamental healthcare requirements, fostering heightened patient confidence, and ensuring a significantly elevated degree of patient satisfaction (L. R. W. Utami & Utami, 2025). Apart from that, the implementation of good prime service can also be done by paying attention to appearance, friendliness, attention, attitude, actions, comfort, responsibility, skills, abilities, speed and accuracy of the service provided to me (L. R. W. Utami et al., 2024).

Hybrid learning during the Covid-19 pandemic has been shown to foster active learning with more valid supervision and assessment compared to online learning. However, despite its advantages, hybrid learning also presents challenges for educators, such as time management (Rahmadi, 2021). Meanwhile, based on the results of community service that has been carried out regarding the offline laboratory practical learning process for radiology

Jurnal Eduhealth
Volume 16, Number 03 2025 DOI 10.54209/eduhealth.v16i03
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

students, it is considered to be able to increase knowledge (L. R. W. Utami, 2024; L. R. W. Utami, Utomo, Utami, et al., 2025).

Based on several community service results provided to health students in the radiology and dental nursing departments, which included education, outreach, mentoring, and training, it was found that there was an increase between before and after the intervention. This indicates the influence of the method of providing information or knowledge to students in the community service activities carried out by the service team (Prayoga et al., 2023; L. R. W. Utami, 2024; L. R. W. Utami, Prayoga, et al., 2023; L. R. W. Utami, Utomo, & Utami, 2025; L. R. W. Utami, Utomo, Utami, et al., 2025; R. M. A. W. Utami, Utami, Utomo, et al., 2024).

Based on similar research conducted to analyze the impact of distance learning implementation during the Covid-19 pandemic on performance at the Faculty of Health Sciences, Ibn Khaldun University, Bogor, the results showed that the implementation of distance learning was deemed quite good in all components, including input, process, and output. Evaluation of distance learning needs to be conducted periodically to improve the quality of learning between the implementation and partners (Pertiwi et al., 2022). Meanwhile, other research related to the effectiveness of learning during the Covid-19 pandemic at the Bandung State Polytechnic health institution found that the majority of students understood the distance learning policy, the learning process was not well organized, they did not understand the learning materials provided, had internet access constraints and were unable to improve professional competencies according to the study program targets (Darsono et al., 2020).

Based on the background and results of previous research that have been described above, the author wants to conduct further studies with the ultimate goal of knowing how the impact of the Covid-19 pandemic on the learning methods of health students, especially students majoring in radiology at Widya Husada University Semarang and students majoring in pharmacy at the Kendal College of Health Sciences.

METHODS

The study was conducted using a quantitative research design. The object of this study was the learning methods used at the beginning of the Covid-19 pandemic. The population used in the study was all students who entered in 2020 in the radiology department at Widya Husada University Semarang and the pharmacy department at the Kendal College of Health Sciences. The selection of students who entered in 2020 as a population was based on the fact that they were the first new student cohort to implement learning methods that implemented learning restrictions during the Covid-19 pandemic in Indonesia. The data collection technique was carried out by administering a questionnaire to the research respondents. The questionnaire was a closed-ended questionnaire consisting of questions with limited answer choices. The questionnaire was administered electronically using Google Forms. Data analysis used descriptive statistical analysis using tables to facilitate understanding of the data obtained and allow for conclusions to be drawn.

Jurnal Eduhealth
Volume 16, Number 03 2025 DOI 10.54209/eduhealth.v16i03
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

RESULTS AND DISCUSSION

Based on research data obtained from the results of an electronic questionnaire given to research respondents using Google Forms, the following results were obtained:

Table 1. Gender of Research Respondents

Gender	Percentage
Man	45%
Woman	55%
Total	100%

Based on table 1, it can be seen that the results of the research conducted regarding the gender of the respondents were mostly female with a percentage of 55%.

Table 2. Year of Entry into College of Research Respondents

Year of Entry into College	Percentage
2020	100%
2021	0%
2022	0%
Total	100%

Based on table 2, it can be seen that all study respondents were students who entered the classroom in 2020, representing 100%. Students entering in 2020 were new students who began the learning method with limited face-to-face learning aimed at reducing the spread of Covid-19.

Table 3. Research Respondents' Majors

Department Students	Percentage
Radiology	56%
Pharmacy	44%
Total	100%

Based on table 3, it can be seen that the majority of the research respondents who were health students were students majoring in radiology at Widya Husada University Semarang with a percentage of 56% and the other 44% were students majoring in pharmacy at Kendal College of Health Sciences.

Table 4. Theoretical Learning Methods at the Beginning of the Covid-19 Pandemic

No	Major	Theoretical Learning Methods	Percentage
1	Radiology	Offline	0%
		Online	56%
		Hybrid	0%
2	Pharmacy	Offline	0%
		Online	44%
		Hybrid	0%
Total			100%

Table 4 shows that 56% of the theoretical learning methods provided to radiology students at Widya Husada University Semarang were conducted online. Meanwhile, 44% of

Jurnal Eduhealth
Volume 16, Number 03 2025 DOI 10.54209/eduhealth.v16i03
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

the theoretical learning methods for pharmacy students at Kendal College of Health Sciences during the early stages of the Covid-19 pandemic were conducted online.

The online theoretical learning method provided at the beginning of the Covid-19 pandemic to students majoring in radiology at Widya Husada University Semarang and students majoring in pharmacy at Kendal College of Health Sciences was an effort made by the Institution to comply with the government's appeal to implement a distance learning process to reduce the number of Covid-19 cases in various regions of Indonesia. The theoretical learning method conducted online uses several applications such as Zoom Meeting, Google Meet, Skype, Microsoft Teams and so on. The use of applications in the theoretical learning method is adjusted to the agreement between the lecturer and students, taking into account various aspects such as ease of use and adequate applications.

The online learning method used by health students majoring in radiology at Widya Husada University in Semarang and students majoring in pharmacy at Kendal College of Health Sciences aligns with the results of research conducted among health students at Bandung State Polytechnic, which showed support for online learning during the Covid-19 pandemic. This support was motivated by the awareness of the majority of health students at Bandung State Polytechnic regarding the importance of efforts to stop the spread of Covid-19 through distance learning (Darsono et al., 2020). There are significant results regarding the culture of online learning, including innovation, development and application in the learning process which is an implementation of the philosophy of independent learning, independent campus (Sugiarto, 2020). The use of SWOT analysis in online learning for midwifery students at the Kartini Bali Health Polytechnic can be an input in improving the quality of learning for organizers, students and institutions in supporting the success of online learning during the Covid-19 period (Adnyani & Elvina, 2021). During distance learning, the applications frequently used at the Faculty of Health Sciences, Ibn Khaldun University, Bogor are LMS and Zoom Meeting (Pertiwi et al., 2022).

Table 5. Practical Learning Methods at the Start of the Covid-19 Pandemic

No	Major	Practical Learning Method	Percentage
1	Radiology	Offline	0%
		Online	0%
		Hybrid	55,5%
2	Pharmacy	Offline	44,5%
		Online	0%
		Hybrid	0%
	Total		100%

Table 5 shows that 55.5% of radiology students at Widya Husada University Semarang used a hybrid learning method for practical activities at the start of the Covid-19 pandemic. Meanwhile, 44.5% of pharmacy students at Kendal College of Health Sciences used a hybrid learning method for practical activities at the start of the Covid-19 pandemic.

Practical learning methods, especially for health students, face challenges when conducted online. Therefore, institutions choose to conduct offline or hybrid learning while

Jurnal Eduhealth
Volume 16, Number 03 2025 DOI 10.54209/eduhealth.v16i03
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

still adhering to health protocols and using personal protective equipment according to the needs of each department or study program to suppress the spread of Covid-19 on campus. For students majoring in radiology at Widya Husada University Semarang, the practical learning method is hybrid, where some are conducted offline in the laboratory and others are conducted online. This method involves providing practical modules, videos of practicals during face-to-face sessions using online applications such as Zoom Meeting, Google Meet, Skype, Microsoft Teams, and so on, as well as trying out simulations using tools and materials available at home. Meanwhile, students majoring in pharmacy at the Kendal College of Health Sciences conduct the practical learning method offline in the laboratory.

Implementing health protocols and using appropriate personal protective equipment is a way to suppress the spread of Covid-19 (Sulistyowati & Utami, 2021; L. R. W. Utami, Sulistyowati, et al., 2023; L. R. W. Utami & Sulistyowati, 2022; R. M. A. W. Utami, Utami, & Utomo, 2024). Personal protective equipment that can be used by radiology staff during the Covid-19 pandemic includes work clothes according to regulations, surgical isolation gowns, N95 respirators, eye protection, medical gloves, closed shoes, face shields for interventional examinations, and additional personal protective equipment according to the risk of work activities. Meanwhile, personal protective equipment that can be used by pharmacy staff during the Covid-19 pandemic includes masks and gloves according to the risk of work activities (R. M. A. W. Utami, Utami, & Utomo, 2024). The average knowledge and skills between the conventional method group were greater than those of the hybrid method group. There was an influence of nursing students' cardiopulmonary resuscitation nursing laboratory knowledge on the hybrid method and there was no significant influence of nursing students' cardiopulmonary resuscitation nursing laboratory skills on the use of the hybrid method (Rachmadita et al., 2024). Activities to train clinical skills and biomedical practicum skills can be adapted to the characteristics of each skill. Basic clinical skills are learned through video tutorials. Simpler skills can be practiced using available resources at home, through tutorial discussions. Formative assessment sessions can involve students demonstrating their skills, which will be assessed using assessment forms and then provided with feedback. For the anatomy pathology slide reading skill, students interpret previously uploaded slide photos. However, this cannot be done in the anatomy practicum with cadavers (Findyartini et al., 2020).

CONCLUSION

Semarang with a percentage of 56% and pharmacy students at the Kendal College of Health Sciences with a percentage of 44%. The impact of the covid-19 pandemic on the theoretical learning method carried out by radiology students at Widya Husada University Semarang was carried out online with a percentage of 56%, the theoretical learning method for pharmacy students at the Kendal College of Health Sciences was carried out online with a percentage of 44%, the practical learning method carried out by radiology students at Widya Husada University Semarang was carried out in a hybrid manner with a percentage of 55.5%, and the practical learning method for pharmacy students at the Kendal College of Health Sciences was carried out offline with a percentage of 44.5%. Learning methods, whether

online, offline, or hybrid, have their own advantages and disadvantages. Therefore, the appropriate learning method can be used according to the conditions, needs, policies, and agreements between lecturers, students, institutions, and the government to ensure the quality of education is maintained amidst the pandemic and can continue to build the nation. In addition, students can also hone their knowledge and skills through formal and non-formal education, both provided by institutions and outside institutions. The limitation of learning methods implemented in educational institutions is one effort to control the spread of Covid-19 in Indonesia, especially among the academic community during the Covid-19 pandemic. This limitation of learning methods is also a step by the academic community to follow the recommendations given by the government during the early stages of the Covid-19 pandemic. In addition, during the learning restrictions, the academic community also implemented health protocols such as wearing masks, maintaining distance, using hand sanitizer, and washing hands with soap in the educational institution environment.

REFERENCE

Adedoyin, O. B., & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments*, *0*(0), 1–13. https://doi.org/10.1080/10494820.2020.1813180

Ahsanuddin, Utomo, S., & Utaminingsih, S. (2022). *The Leadership of Principals in The Implementation of Limited Face-To-Face Learning During the Covid-19 Pandemic in Demak Regency*. *1*, 24–28.

Arlinda, R., Wuryandani, W., & Mustadi, A. (2022). The Effect of Limited Face-to-Face Learning in New Normal Era towards Learning Motivation of Elementary School Students. *AL-ISHLAH: Jurnal Pendidikan*, *14*(3), 2963–2972. https://doi.org/10.35445/alishlah.v14i3.1781

Currie, G., Hewis, J., Nelson, T., Chandler, A., Nabasenja, C., Spuur, K., Barry, K., Frame, N., & Kilgour, A. (2020). COVID-19 impact on undergraduate teaching: Medical radiation science teaching team experience. *Journal of Medical Imaging and Radiation Sciences*, *51*(4), 518–527. https://doi.org/10.1016/j.jmir.2020.09.002

Darsono, H., Fitri, A. N., Rahardjo, B., Imanuela, M. Z., & Lasambouw, C. M. (2020). Efektivitas Pembelajaran Jarak Jauh saat Pandemi Covid-19 (Kajian di Politeknik Negeri Bandung). *Prosiding Industrial Research Workshop and National Seminar*, *11*(1), 1235–1240. https://jurnal.polban.ac.id/proceeding/article/view/2190

Lawal, O., Omiyi, D., York, H., & Akudjedu, T. N. (2022). Towards describing the global impact of the COVID-19 pandemic on clinical radiography education: A systematic review. *Journal of Medical Imaging and Radiation Sciences*, *53*(3), 487–497. https://doi.org/10.1016/j.jmir.2022.05.009

Ofori-Manteaw, B. B., Dzidzornu, E., & Akudjedu, T. N. (2022). Impact of the COVID-19 pandemic on clinical radiography education: Perspective of students and educators from a low resource setting. *Journal of Medical Imaging and Radiation Sciences*, *53*(1), 51–57. https://doi.org/10.1016/j.jmir.2021.11.002

Palmaria, C., & Osmar, K. (2021). COVID-19 stories of success: Teaching and learning in a

clinical setting during a pandemic. *Journal of Medical Imaging and Radiation Sciences*, *52*(4), 505–510. https://doi.org/10.1016/j.jmir.2021.06.007

Pertiwi, F. D., Arsyati, A. M., Asnifatima, A., Parinduri, S. K., Jayanti, R., Prastia, T. N., & Nasution, A. (2022). Dampak Implementasi Pembelajaran Jarak Jauh (PJJ) Terhadap Kinerja Di Fakultas Ilmu Kesehatan Universitas Ibn Khaldun Bogor. *Educate : Jurnal Teknologi Pendidikan*, *7*(1), 71–82. https://doi.org/10.32832/educate.v7i1.6246

Prayoga, A. N., Budiwati, T., & Utami, L. R. W. (2023). Edukasi Dan Sosialisasi Pemeriksaan Panoramic Dalam Menunjang Pelayanan Pemeriksaan Gigi Pada Mahasiswa Keperawatan Gigi. *Jurnal Implementasi Pengabdian Masyarakat Kesehatan (JIPMK)*, *5*(1), 23–25. https://jipmk.uwhs.ac.id/index.php/jpm/article/view/98

Rahmadi, T. N. (2021). Penerapan Model Digital Dan Model Hybrid Dalam Pembelajaran Jarak Jauh (PJJ) Selama Pandemi Covid-19. *Jurnal Pendidikan Indonesia (Japendi)*, *2*(10), 1800–1811. https://www.neliti.com/publications/423918/perbandingan-digital-model-dan-hybrid-model-dalam-pembelajaran-jarak-jauh-pjj-se

Rainford, L. A., Zanardo, M., Buissink, C., Decoster, R., Hennessy, W., Knapp, K., Kraus, B., Lanca, L., Lewis, S., Mahlaola, T. B., McEntee, M., O'Leary, D., Precht, H., Starc, T., & McNulty, J. P. (2021). The impact of COVID-19 upon student radiographers and clinical training. *Radiography*, *27*(2), 464–474. https://doi.org/10.1016/j.radi.2020.10.015

Safira, A. R., & Ifadah, A. S. (2021). The Readiness Of Limited Face To Face Learning In The New Normal Era. *JCES (Journal of Character Education Society)*, *4*(3), 643–651.

Sayed, I. S., & Zamri, M. H. (2022). Implications of COVID-19 on the Teaching and Learning of Undergraduate Medical Imaging Students. *Cureus*, *14*(11). https://doi.org/10.7759/cureus.32077

Sewang, A., & Aswad, M. (2021). The Readiness of Learning Processes during the New Normal Era of the Covid-19 Pandemic. *Indonesian Research Journal in Education |IRJE|*, *5*(1), 279–292. https://doi.org/10.22437/irje.v5i1.12822

Solís-barquero, S. M., Valerio, M. P. R., Mcnulty, J. P., & Contreras, P. F. R. (2020). *The impact of COVID-19 upon student radiographers and clinical training in Latin America*. *January*.

Sulistyowati, I., & Utami, L. R. W. (2021). Tingkat Kecemasan Radiografer Dalam Memberikan Pelayanan Radiologi Pada Masa Pandemi Covid-19 Di Rumah Sakit Baitul Hikmah Kendal. *Jurnal Ilmu Dan Teknologi Kesehatan*, *12*(2), 55–61. https://doi.org/10.33666/jitk.v12i2.409

Teo, L. W., Pang, T., Ong, Y. J., & Lai, C. (2020). Coping with COVID-19: Perspectives of Student Radiographers. *Journal of Medical Imaging and Radiation Sciences*, *51*(3), 358–360. https://doi.org/10.1016/j.jmir.2020.05.004

Utami, L. R. W. (2024). Edukasi Processing Film Radiografi Manual Pada Mahasiswa Baru Program Studi Radiologi. *Jurnal Pengabdian Masyarakat Sains Dan Teknologi*, *3*(4), 148–153. https://ftuncen.com/index.php/JPMSAINTEK/article/view/655

Utami, L. R. W., Prayoga, A. N., Silfina, R. O., & Annisa, A. (2023). *PkM Pendampingan Pelayanan Prima Radiologi Pada Calon Radiografer Di Universitas Widya Husada Semarang*. Universitas Widya Husada Semarang.

Utami, L. R. W., Prayoga, A. N., Silfina, R. O., & Annisa, A. (2024). PkM Pendampingan

Pelayanan Prima Radiologi Pada Calon Radiografer Di Universitas Widya Husada Semarang. *Hawa : Jurnal Pemberdayaan Dan Pengabdian Masyarakat*, *2*(2), 64–67. https://hawajppm.yayasanwayanmarwanpulungan.com/index.php/HAWAJPPM/article/view/37

Utami, L. R. W., & Sulistyowati, I. (2022). Transmission Control Of Covid-19 Radiographers In Radiology Installation At Kendal District Hospital. *Jurnal Ilmu Dan Teknologi Kesehatan*, *13*(1), 18–21. https://doi.org/https://doi.org/10.33666/jitk.v13i1.424

Utami, L. R. W., Sulistyowati, I., & Jamil, M. (2023). PkM Pendampingan Remaja Persaudaraan Setia Hati Terate Ranting Tugu Semarang Tentang Efektivitas Vaksin Covid-19 Dilihat Dari KU Dan Hasil Rontgen Thorax. *Jurnal Implementasi Pengabdian Masyarakat Kesehatan (JIPMK)*, *5*(1), 20–22. https://doi.org/https://doi.org/10.33660/jipmk.v5i1.96

Utami, L. R. W., & Utami, R. M. A. W. (2025). Level Of Knowledge And Implementation Of Excellent Service For Health Workers In Kendal Regency Health Facilities. *Jurnal Ilmu Dan Teknologi Kesehatan*, *16*(2), 111–116. https://journal.uwhs.ac.id/index.php/jitk/article/view/669

Utami, L. R. W., Utomo, S., & Utami, R. M. A. W. (2025). Edukasi Penyusunan Penelitian Studi Kasus Pada Mahasiswa Radiologi Tingkat Akhir Universitas Widya Husada Semarang. *Hawa : Jurnal Pemberdayaan Dan Pengabdian Masyarakat*, *3*(2), 73–77. https://hawajppm.yayasanwayanmarwanpulungan.com/index.php/HAWAJPPM/article/view/99

Utami, L. R. W., Utomo, S., Utami, R. M. A. W., & Silfina, R. O. (2025). Pelatihan Penggunaan Processing Film Radiography Automatic. *Hawa : Jurnal Pemberdayaan Dan Pengabdian Masyarakat*, *3*(2), 114–118. https://hawajppm.yayasanwayanmarwanpulungan.com/index.php/HAWAJPPM/article/view/119/80

Utami, R. M. A. W., Utami, L. R. W., & Utomo, S. (2024). The Use Of Personal Protective Equipment By Pharmacists And Radiographers During The COVID-19 Pandemic In Kendal District. *Jurnal Ilmu Dan Teknologi Kesehatan*, *15*(2), 81–86. https://journal.uwhs.ac.id/index.php/jitk/article/view/644

Utami, R. M. A. W., Utami, L. R. W., Utomo, S., & Damayanti, F. (2024). Edukasi Penyakit Tuberkulosis Paru pada Mahasiswa Vokasi Dilihat dari Aspek Pemeriksaan Radiologi dan Pengobatannya. *Muria Jurnal Layanan Masyarakat*, *6*(1), 24–28. https://doi.org/10.24176/mjlm.v6i1.12348

Utomo, S. (2021). The Impact of Online Learning Processes in Primary School During the COVID-19 Pandemic. *KnE Social Sciences*, *2021*, 160–169. https://doi.org/10.18502/kss.v5i7.9331

Wegasari, K., Utomo, S., & Surachmi, S. (2021). Dampak Pandemi Covid-19 Terhadap Proses Pembelajaran Online di SDN Cabean 3 Demak. *Jurnal Penelitian*, *15*(1), 27. https://doi.org/10.21043/jp.v15i1.9109

Witt, C. de, & Christina, G. (2018). Mobile Learning and Higher Education. *The Digital Turn in Higher Education: International Perspectives on Learning and Teaching in a Changing World*, *February*, 61–79. https://doi.org/10.1007/978-3-658-19925-8