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Scientific Writing Guidance for Elementary School Teacher Education Students through Synchronous and Asynchronous

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Abstract
This research aims to explore the process of guidance in writing scientific articles through synchronous and asynchronous models for students as a result of field studies on children with special needs. The research was conducted through a pre-experimental design with one-shot case studies. One hundred fourteen elementary school teacher candidates at a state campus in Purwakarta Regency were involved in this study by filling out a questionnaire. Data were analyzed through survey data analysis. The synchronous model of the guidance uses the Zoom application, while the asynchronous model uses tutorials via YouTube developed by the researchers and Google Classroom. The development of scientific article writing through synchronous and asynchronous models is considered effective in increasing the ability and confidence of prospective elementary school teachers in writing scientific papers as a starting point for elementary school teaching students to understand and make good and correct scientific works. 88.9% of respondents consider the delivery of synchronous and asynchronous material easy to understand. In addition, students can understand the material in more detail and not be left behind on essential points that must be learned in writing scientific papers according to the difficulties faced by elementary school teacher education students. So the author recommends that lecturers and experts combine synchronous and asynchronous models in their lecture practice by making various scientific article writing guidelines and minimizing the shortcomings of both through exploring various methods and digital platforms to provide guidance and access to various sources to learn good scientific writing.
Keywords: *scientific articles, a synchronous, asynchronous, student at elementary school teacher*

Bimbingan Menulis Ilmiah untuk Mahasiswa Pendidikan Guru Sekolah Dasar melalui Sinkron dan Asinkron

Abstrak
Tujuan dari penelitian ini adalah untuk mengeksplorasi proses bimbingan menulis artikel ilmiah melalui model synchronous dan asynchronous bagi siswa sebagai hasil studi lapangan pada anak berkebutuhan khusus. Penelitian ini dilakukan melalui desain pra-eksperimen dengan one-shot case studies. 114 calon guru SD di kampus negeri di Kabupaten Purwakarta dilibatkan dalam penelitian ini dengan mengisi kuesioner. Bimbingan dengan model sinkron menggunakan aplikasi Zoom, sedangkan model asinkron menggunakan tutorial melalui YouTube yang dikembangkan oleh peneliti sendiri dan Google Classroom. Pembinaan penulisan artikel ilmiah melalui model synchronous dan asynchronous dinilai efektif dalam meningkatkan kemampuan dan kepercayaan diri calon guru SD dalam menulis artikel ilmiah sebagai titik awal bagi mahassiwa guru sekolah dasar untuk memahami serta membuat karya ilmiah yang baik dan benar karena 88,9% responden menganggap penyampaian materi secara sinkron dan asinkron mudah dipahami. Selain itu para mahasiswa dapat memahami materi lebih detail dan tidak tertinggal atas poin-poin penting yang harus dipelajari dalam menulis karya ilmiah sesuai dengan kesulitan yang dihadapi oleh mahasiswa pendidikan guru sekolah dasar. Maka penulis merekomendasikan agar para dosen dan ahli untuk menggabungkan model sinkron dan asinkron dalam praktek perkuliahannya dengan membuat panduan penulisan artikel ilmiah yang bervariasi dan meminimalkan kekurangan keduanya melalui mengeksplorasi berbagai metode dan platform digital untuk memberikan panduan dan mengakses berbagai sumber untuk mempelajari penulisan ilmiah yang baik.

Kata Kunci: Artikel Ilmiah, Sinkron, Asinkron, Mahasiswa Guru Sekolah dasar

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INTRODUCTION

Students are required to produce innovations that can be useful for nation-building. Innovation is born from open-mindedness, tolerance for other people's opinions, and always looking for new things without stopping (Setiawan et al., 2020). Thus, innovation can be born through the research process to find something new. Of course, conducting research cannot be separated from writing scientific papers that publish the innovations created by these students. Scientific writing is writing that is made based on the nature of science and is based on the results of observations, reviews, and research in specific fields, compiled according to certain methods with good writing systematics. The contents can be justified (Fiona et al., 2016). Scientific writing activities can produce various writings, one of which are scientific articles (Sugiarti et al., 2021) published in journals or seminars so that student innovations can be disseminated or known by others.

Writing essays and journaling can assess and expand knowledge of the learning content given to students, and this type of writing activity effectively improves the learning content area (Hebert et al., 2013). In addition, good communication skills in scientific writing can result in meaningful discussions that can lead to stronger scientific discoveries (Krishnan, 2018). According to studies, scientific writing may communicate new and essential findings and enhance new students' capacity to generate and interpret scientific writings that will aid them when they start their major field of study (Smith et al., 2012), indirectly increasing creativity (Nurlaila, 2018), positively impact a wide range of related skills, including communication skills, scientific content knowledge, critical thinking, and problem-solving (Tonissen et al., 2014).

The benefits of the Importance of scientific writing are unfortunately not yet well felt. The literature has widely reported that undergraduate students have difficulty writing scientific reports (Freeman & Lynd-Balta, 2010). Their low scientific writing ability is due to their low participation in the Campus Press organization (Suprihatin et al., 2021), who do not understand the steps of writing a scientific report (Maasawet et al., 2018). Observations from 2020 to 2022 on undergraduate students at a state campus in West Java show that only 26 out of 300 actively participate in the student community for research and scientific studies. The low writing ability of students due to these various factors needs effort to be overcome by the lecturers. Apart from lectures usually carried out in class with academic writing courses and research methods, this is not considered sufficient to improve the writing skills of new students, mainly due to limited time. Therefore, usually, to improve their writing skills, students sometimes attend scientific writing training either in seminars or workshops held on-campus or off-campus organizations. By participating in the scientific writing training, it is hoped that their scientific writing skills will increase.

Some studies say that meaningful scientific writing guidance for students will make them actively involved (Tonissen et al., 2014). Writing guidance can support student assignments, both as academics and community members (Gereda, 2014). Several scientific writing training for students have shown various impacts. The meta-analysis method face-to-face in the proposal seminar course effectively improves undergraduate students' scientific writing competence in Language and Literature Education (Rahmawati et al., 2019). The training turned student assignments into journal articles that were carried out face-to-face. After going through 3 training sessions, students began to understand some essential things in writing papers. Especially in terms of 1) reference search, 2) article anatomy, 3) citation techniques, and 4) utilizing Google scholar on the citation feature (Taqiyuddin et al., 2021). Experimental research related to scientific writing workshops conducted face-to-face with the Kirkpatrick model on medical students showed that the results of the four levels of the Kirkpatrick

model showed that all participants were satisfied with the workshop, and participation in this workshop had a positive effect on participants' knowledge of writing articles (Ghasemi et al., 2020).

However, it was found that inadequate scientific writing training could discourage established students and researchers from writing (Fernández et al., 2018). The cause can come from delivering the presenters or implementing the training, making it difficult for participants to understand the material in scientific writing. Plus, currently still in the COVID-19 pandemic, online training is the only solution to carrying out these activities. However, it turns out that online training also requires a particular strategy that makes it easy for participants to understand the material optimally.

The synchronous model via Zoom and the asynchronous model via YouTube and Google Classroom is an alternatives that can help elementary school teacher candidates understand and compile scientific papers well. Participants can follow up and discuss with their lecturer via Zoom with synchronous training. A blended synchronous learning model can help make lessons more effective (Ho, 2017). In addition, some of the material is delivered asynchronously through YouTube and Google Classroom to streamline the delivery of material that is quite dense so that participants can access it flexibly anytime, anywhere. The asynchronous learning model can increase cognitive participation resulting in more time for students to process learning material and reflect on it (Vidhiasi et al., 2021). The combination of synchronous and asynchronous learning models can be adapted under certain conditions, providing suitable conditions for developing an interactive web-based learning environment (Anastasiades, 2005). Thus, it is hoped that synchronous and asynchronous models will make it easier for prospective elementary school students to understand the material.

Based on the previous explanation, the problem in this research is how the implementation of synchronous and asynchronous guidance for the students of elementary school teacher candidates in writing scientific papers as a form of practice reports on solving problems of children with special needs and student responses after synchronous and asynchronous guidance? Thus, the study aims to explore and develop the implementation of synchronous and asynchronous models of scientific writing guidance for aspiring elementary school teacher students due to field practice activities for children with their particular needs and responses.

METHOD

This research was conducted quantitatively through a pre-experimental method with one-shot case studies. The pre-experimental method is research that is still influenced by other variables, and there are some essential characteristics. In its implementation, the pre-experimental method will comprehensively observe what happens due to the given experimental objectives and obtain the experimental results. (Herawati et al., 2019). One-shot case study designs determine the scientific value of measurements in experimental research. In this design, one group is given treatment, and then the treatment results are observed (Saputri et al., 2016). This research aims to understand the material on how to write scientific papers for the students of elementary school teacher candidates as an outcome in carrying out field practice for children with special needs in public elementary schools, inclusive elementary schools, and special schools. Implementing synchronous and asynchronous guidance as a learning model is carried out through the preparation process for making scientific writing video tutorials developed since June 2020. A video explaining technical field practice is presented and shared via YouTube. The student-teacher candidates can conduct field practice and write report articles and evaluations by distributing surveys to participants using Google forms.

This research was conducted at one of the state universities in Purwakarta Regency, and the reason is that some of the students of elementary school teacher candidates showed a low ability to write scientific articles and had various difficulties. This study was carried out from 7 September – to 18 December 2021. Specifically, the implementation of fieldwork and preparing scientific articles as a practicum report was carried out from November – to December 2021.

The data in this study was obtained through survey data with the assistance of google forms in the form of a questionnaire distributed to 114 elementary school teacher candidates who took the Inclusive Education Course in the third semester of the 2020 class at one of the State Universities in Purwakarta Regency which was determined by purposive sampling. The population coverage in this study was all students of the elementary school teacher education program in West Java. The reasons for selecting the student sample were viewed from universities with superior clusters equivalent to

several state campuses in West Java. Students studying with the same curriculum as state universities in West Java, especially in implementing online learning during the COVID-19 pandemic, and all participants were students who have the same ability to utilize digital learning applications.

The questionnaire in this study is a mixed questionnaire consisting of questions with predetermined answers for students to choose according to the situation they are experiencing and questions with free description answers whose answers can be explained by students according to the situation they are experiencing and express their opinions freely. The questionnaire in this study utilizes digital technology facilities, namely Google Forms. The aim is to facilitate collecting data flexibly even in the COVID-19 pandemic situation, and students can freely fill in without being disturbed and forced during the filling process.

The aspect developed based on research questions was how elementary school teacher students responded to synchronous learning through Zoom and asynchronous platforms via YouTube and Google Classroom related to preparing scientific articles as a form of field practice reports for children with special needs. Several forms of questions in this research questionnaire are included in Table 1.

Table 1. *Research Questionnaire*

Question	Report Article Writing	Synchronous and Asynchronous Learning Activities
1.	How about delivering tutorial material for writing scientific papers that you watch via YouTube?	Do you understand the concept of synchronous and asynchronous lectures?
2.	Which part do you like about the video tutorials presented via YouTube?	What kind of courses are you more interested in (Synchronous, Asynchronous, or a combination of both)
3.	What part do you dislike about the video tutorials presented via YouTube?	What device do you use to access Video Lectures on YouTube?
4.	Through video tutorials on writing scientific papers that I watch via YouTube, it makes me feel...	How about video tutorials on writing scientific papers that you access via YouTube?
5.	Through video tutorials on writing scientific papers that I watch, I get...	What do you think about synchronous lectures with Zoom meetings?
6.	Through video tutorials on writing scientific papers that I watched via YouTube, I could...	What do you think about asynchronous lectures via YouTube and Google Classroom?
7.	YouTube makes learning a...	Is there anything new in this Inclusive Education course?
8.	How confident are you in writing scientific papers after watching video tutorials via YouTube?	
9.	What material do you understand best in scientific writing tutorials via YouTube?	
10.	What material do you least understand in scientific writing tutorials via YouTube?	
11.	Tell us your impressions of the video tutorials on writing scientific papers you watched via YouTube!	

The data analysis process is carried out using survey data analysis, particularly in digging out the information linked to the response difficulties of elementary school teacher candidates in writing scientific papers through a synchronous and asynchronous system. First, after elementary school teacher candidates do field practice, they are allowed to fill out a survey of field practice activities and write articles as practicum reports related to their research in overcoming the problems of children with special needs in their respective schools via Google Form link. Second, an in-depth analysis of the survey results obtained is carried out. In presenting the data, it is presented in tables, graphs, pie charts, percentages, and descriptions based on responses from respondents. Third, the researcher interprets and concludes.

RESULT AND DISCUSSION

Result

Lecture system with synchronous and asynchronous

This inclusive education lecture activity aims to provide understanding for the students of elementary school teacher candidates in overcoming problems and how to create an ideal class for

children with special needs. Lecture activities are carried out synchronously and asynchronously model. The lecturer ensures students' understanding of this learning model, so a survey is distributed to students. The goal is to ensure that students can adapt. In the survey, students seemed to have understood the learning model as stated in the survey results in Figure 1.

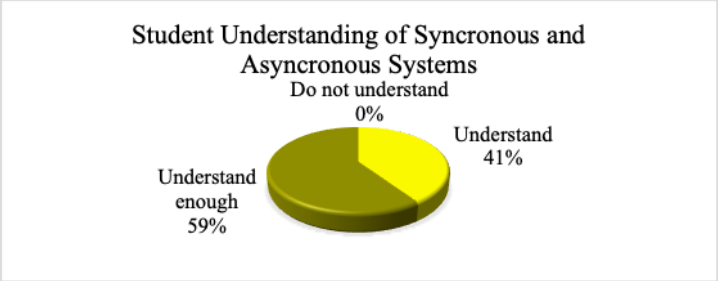

Figure 1. Student understanding of learning model

Based on Figure 1, students are considered to have a good understanding of the implementation of synchronous and asynchronous learning models, so students are considered to be able to adapt well when attending lectures. The first activity began by sharing the semester lecture plans for the next 16 meetings. The first to the thirteenth meetings are held synchronously to equip students regarding the lecture plans that will be carried out and how to handle children with special needs before field practice. The following Figure 2 shows lecture documentation synchronously via Zoom Meeting.

Figure 2. Lectures with synchronous system via Zoom Meeting

Figure 2 above is one of the synchronous lecture activities that explain inclusive education, divided into 16 topics of learning for children with special needs—supported by the provision of discussion rooms and presentation sessions for all students to strengthen their understanding before practicing in the field. The following is a list of topics during the 16 meetings of Inclusive Education

courses as set out in Table 2.

Table 2. *Inclusive Education Lecture Topic*

Week	Inclusive Education Lecture Topic	Models
1	Lecture Orientation (Learning contracts, the scope of material, lecture activities, evaluation components, and sourcebooks, Importance of inclusive education in schools, Positive Psychology as a foothold in developing inclusive education	Synchronous via Zoom
2	The basic concepts of positive psychology: Applications in the school and classroom	Synchronous via Zoom
3	Optimism in inclusive education	Synchronous via Zoom
4	Building Positive Self-Concepts for students with special needs	Synchronous via Zoom
5	Positive psychology and students with Intellectual disabilities	Synchronous via Zoom
6	Creating classes that can accept students with learning disabilities and mental retardation	Synchronous via Zoom
7	Creating classes that can accept students with physical and behavioral disabilities	Synchronous via Zoom
8	Creating Classes that can accept students with speech and language barriers	Synchronous via Zoom
9	Midterm exam	Asynchronous via YouTube and Google Classroom
10	Creating a Class that can accept students with visual and hearing impairments	Synchronous via Zoom
11	Creating a Class that can accept students with gifted and talented	Synchronous via Zoom
12	Creating Classes that can accept students with characteristics of autism and dyslexia (including Asperger's syndrome & dyscalculia)	Synchronous via Zoom
13	Strategies for creating inclusive schools: the role of parents, society, and community	Synchronous via Zoom
14	Inclusive education field practice	Asynchronous via YouTube and Google Classroom
15	Seminar on Dissemination of Fieldwork Reports	Webinar via Zoom
16	Final exams	Google Classroom

Based on Table 2, lectures are carried out by combining the synchronous and asynchronous models. Mainly for field practice activities at meeting 14 asynchronously through YouTube and Google Classroom to learn topics and carry out activities independently and flexibly. The following Figure 3 shows asynchronous learning models.

Figure 3 describes the application of learning models in asynchronous inclusive education courses. The use of google classroom and youtube as supporting tools for the learning process is provided by listing some things students should do, explaining courses, and making reports from field practices. Not only the provision of tasks that all elementary school teachers and students must comprehensively carry out but also the provision of draft composition materials in writing field practice reports by explaining the points of each order of doing scientific works through a youtube link linked in google classroom.

After implementing the synchronous and asynchronous lecture models, student responses tended to be positive and more comfortable with synchronous and asynchronous models, as shown in Figure 4.

In detail, the following quotations from student responses in Figures 4 and 5 can explain the reasons for their interest in synchronous and asynchronous learning models. Regarding synchronous learning through Zoom Meetings, the following are students' opinions in Table 3.

With synchronous learning via Zoom, in Table 3, students can practice their discussion skills and get direct explanations from lecturers regarding the topics discussed during learning during a pandemic. However, using Zoom is a consuming student internet quota and requires a stable network and a conducive environmental situation.

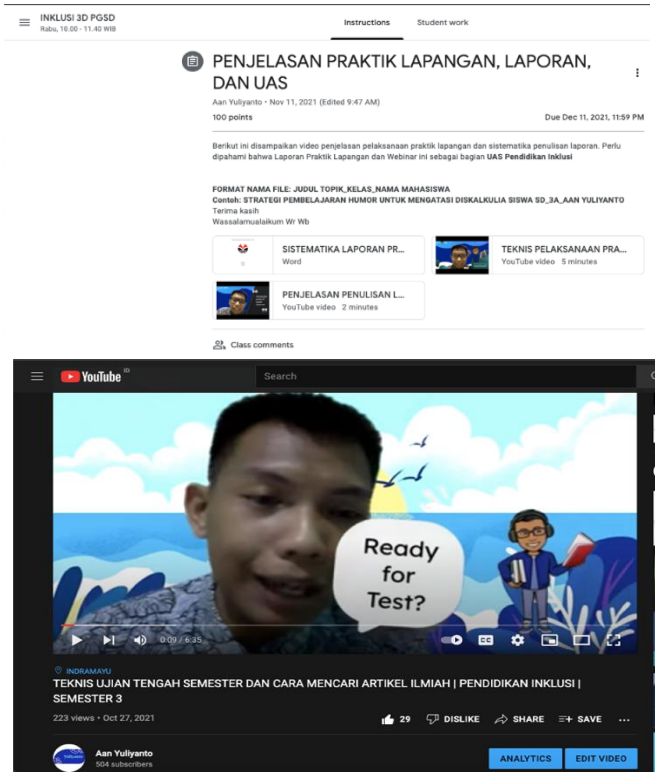

Figure 3. Lectures with the asynchronous system via YouTube and Google Classroom

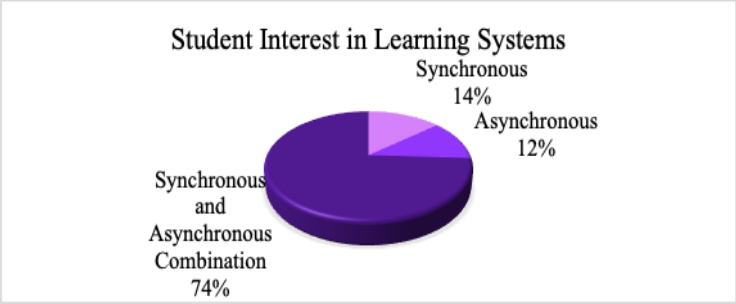

Figure 4. Student interest in learning systems

Table 3. *Student Response to Synchronous Learning via Zoom*

Student Response to Synchronous Learning via Zoom	
Student 1	In lectures, through zoom meetings, students can directly ask lecturers who do not understand the materials or tasks given. Students can give opinions and suggestions directly about the material given to lecturers and students, and lecturers can directly provide an in-depth explanation of the material.
Student 2.	The long duration of lectures through zoom meetings is enough to drain the data package. The weather is not conducive, and the electricity is very disturbing during the lecture session because of the poor network.
Student 3.	Quite exciting and sometimes train courage in front of lecturers and classmates, even though online zoom meetings
Student 4.	Less effective and entirely lacks concentration because it is quickly tired both body condition and vision

In addition, online learning through Zoom requires students to be alert in front of laptops, which is unsuitable for health if done for a long time. An asynchronous learning model is implemented to anticipate shortcomings and support the synchronous learning model. Some student responses look pretty diverse, as shown in Table 4.

Learning with an asynchronous model seems to balance learning that was previously carried out synchronously. Learning with an asynchronous model allows students to re-learn material that has not been understood easily, flexibly, and comfortably and save quotas. In addition, lectures with an asynchronous model can encourage students to study material from various sources to enrich their understanding.

Table 4. *Student Response to Asynchronous Learning Via YouTube and Google Classroom*

	Student Response to Asynchronous Learning Via YouTube and Google Classroom
Student 1.	I like lectures asynchronously because the material can be repeated another day if I understand it.
Student 2.	Exceptionally accessible, and more enjoyable, but you can ask directly if that is not understood as in using the zoom
Student 3.	Asynchronous lectures through youtube and google classroom are very effective because through youtube, there are many sources of knowledge learned, so much material is delivered through youtube, and students can have much knowledge. Then the classroom is beneficial for students in collecting assignments.
Student 4.	More save quota and also if the lecture is asynchronous, we can reopen we forget about the material given can be repeated periodically to understand it

However, with this asynchronous lecture, students have difficulty discussing or getting further explanations regarding the material they do not understand because they only refer to videos on YouTube, download materials, and submit assignments via Google Classroom.

Scientific article writing tutorial via YouTube and Google Classroom

The statement in Table 2 lecture contains several topics that all students with a learning process must undoubtedly follow through synchrony and asynchronous. The use of several learning media, such as zoom meetings, makes it easier for students to learn simultaneously, but this certainly has obstacles in its implementation, following the statements expressed by students in Table 3. So to achieve the purpose of lectures in the form of materials and tasks provided by other supporting media such as youtube and google classroom. The use of YouTube and Google Classroom is intended as a medium to convey material asynchronously, which undoubtedly helps to be accessed flexibly following the statement stated in Table 4 that the use of youtube and google classroom media provides convenience in accessing learning materials and can be watched repeatedly according to their respective times. One of the lecture materials provided is tutorial guidance in writing scientific articles given to students to understand writing scientific papers well by providing a scientific article writing tutorial that explains the elaboration of each systematic preparation of scientific article writing that will be done by prospective elementary school teaching students in the form of articles based on findings and field practices carried out. Tutorials presented through YouTube as an asynchronous lecture medium for inclusive education courses allow students to access the material provided coherently and systematically, scientific articles contained in document files that can be accessed through Google Classroom. Figures 5 and 6 below show YouTube channels and guidance documents for writing scientific articles in google classroom integrated as intermediaries for scientific article writing tutorials.

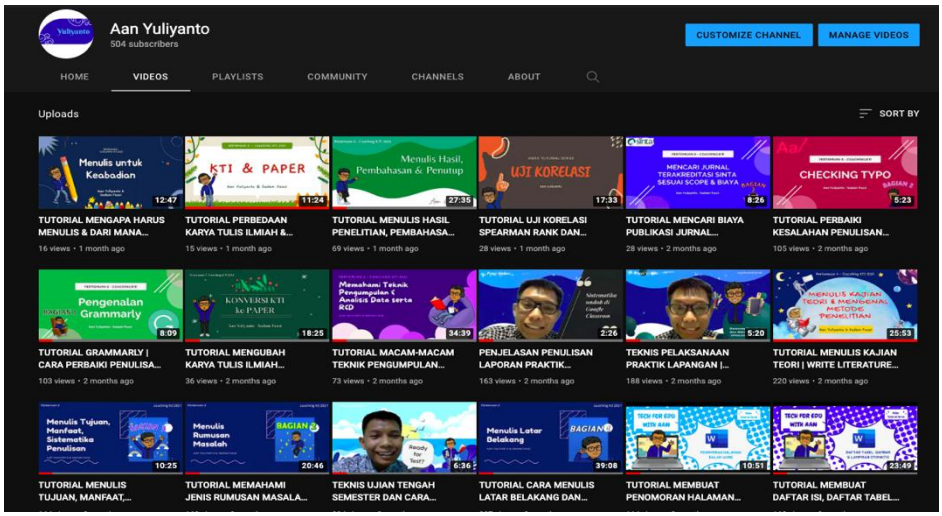

Figure 5. A YouTube channel that contains video tutorials for writing scientific articles

Figure 5 shows the integration of scientific article guide documents designed with a youtube channel that contains scientific work tutorial content that students can access. Thus, students are expected to make reports correctly to write scientific papers. So that the tutorial for writing scientific articles through the YouTube link is one of the supporting media that is easily understood and accessed by all the students of

elementary school teacher candidates. This is evidenced by a survey about the ease of accessing the youtube link provided. Elementary school teacher candidates stated that it was easy to access scientific papers by writing tutorial videos via youtube links as much as 100%. Thus, 114 students are more flexible in accessing anytime and anywhere they can listen to tutorials on writing scientific articles as an outcome of their field practice against the obstacles experienced by children with special needs. The use of these video tutorials is reinforced by excerpts from the statements of the students of elementary school teachers in Figure 6 regarding the perception of video tutorials presented with the asynchronous learning model.

ABSTRAK

Maks 250 kata mencakup uraian berikut:
Latar belakang
Tujuan
Metode
Partisipan
Teknik Pengumpulan Data
Analisis Data
Hasil
Rekomendasi

Ditulis dalam 1 paragraf secara naratif.
Contoh lihat di Tutorial Menulis Abstrak: https://www.youtube.com/watch?v=MssmPXcp-Fo&t=5s

Kata Kunci: Maks 5 Kata/Frasa

Figure 6. Systematic documents for the preparation of scientific articles in Google Classroom that are integrated with YouTube

Table 5 informs that several statements regarding students' perceptions of video tutorials presented via YouTube align with the asynchronous learning model. So that the material presented can provide more effectiveness to students because problems regarding the material can be seen again. In addition to using YouTube, which is easily accessible, it also allows students to explore knowledge further. Students also seem to like some parts of the video, such as tutorials on creating automatic pages, because generally, students create document pages manually, but these video tutorials can help compile pages more easily and quickly.

Table 5. *Student Opinions about Asynchronous and Youtube Video Tutorials*

	What do you think about asynchronous lectures via YouTube and Google Classroom?
Student 1.	This asynchronous lecture is a more effective way for students to review the explanation of the material presented. Then this method can also balance lectures synchronously so as not to get bored.
Student 2.	Lectures are flexible and can be accessed anywhere and anytime, so students can repeat the material explained. However, if the material has not been understood or some problems occur regarding the material, it is difficult to ask the lecturer concerned because students are reluctant or reluctant to contact the lecturer directly outside class hours.

	Which part do you like about the video tutorials presented via YouTube?
Student 1.	The video you have explained on YouTube is exciting, explaining it in detail and with creative animation and how to make it. I like it because the video is easy to understand.
Student 2.	Tutorial on making automatic pages, because all this time making manual pages, since the video has been beneficial in making it easier to create pages

	YouTube makes learning a...
Student 1.	Easily accessible, understood, and not complicated because various circles already know YouTube. No need to download the app
Student 2.	Become aware that I do not know anything because there are many pieces of knowledge that I do not know in it.

Thus, through tutorials on writing scientific articles presented on YouTube, you can provide positive feedback to all students of an elementary school teacher. The overall feedback can be seen clearly through the statement in Table 6.

The responses are shown in Table 6 the overall success and positive feedback of students where they feel an increase in their ability to write scientific articles. In addition, students understand the steps for making automatic bibliographies and good abstracts through tutorials via youtube. More than that, it is hoped that

students will be able to use their knowledge for future learning and that the difficulties faced by students can be resolved. The ability to write scientific articles as field practicum outputs can be well structured. When students feel they can write scientific articles, they will be confident to write other scientific articles for their academic purposes. Student self-confidence is also clearly seen in response to the level of confidence of the students of elementary school teacher candidates in writing scientific articles after listening to video tutorials via YouTube in Figure 7.

Table 6. *Feedback Watching Scientific Writing Tutorial Videos via Youtube*

The scientific writing tutorial videos that I watch on youtube make me feel...	
Student 1.	Simply have an overview and understanding of the steps that are good and correct in making a report on the results of my field practice.
Student 2.	Excited about the world of writing, it turns out that many things need to be learned before writing. The science of writing is essential for us as students
Through the video tutorial for writing scientific papers, I watched, I got...	
Student 1.	Knowledge and understanding are beneficial for me in working on this field practice report and writing other scientific papers someday regarding reasonable and correct steps in writing scientific papers.
Student 2.	How to cite with Mendeley, which turns out to be automatically done by compiling a neat bibliography, then regarding insert captions is a new science for me
Through the video tutorial on writing Scientific papers that I see on YouTube, I can...	
Student 1.	Learn how to make abstracts and sound backgrounds. Everything contained in the formation of papers becomes more understanding
Student 2.	I can write scientific papers correctly to use them for my future studies.

Figure 7. The level of confidence in writing scientific articles

In Figure 7, it is clear that the tutorial for writing scientific articles can increase the confidence of the students of elementary school teacher candidates to publish the results of their field practice through articles published in journals or seminar proceedings. So that negative thoughts and stigma about difficulties in making scientific articles can be avoided. However, the material is difficult to understand from all the videos presented, especially with some somewhat complicated article writing techniques. Table 7 depicts some challenges students had grasping the content in the YouTube session.

Table 7. *Unintelligible Material Statement*

What material did you least understand in the Karya Tulis Ilmiah tutorial via YouTube?	
Student 1.	Results, because many use tables during those who do not use tables, so a bit of confusion in compiling them
Student 2.	Understand data collection and analysis techniques and R&D
Student 3.	Tutorials create a table of contents, table list, picture list, and automatic attachment list in Microsoft word

In the tutorial, some topics are difficult to understand, such as writing research results, data collection and analysis techniques, and automatically organizing tables of contents, tables, pictures, and attachments in documents. Table 7 shows several factors that influence these difficulties are the techniques and formulas used in data analysis and the systematic writing of scientific articles. The reason is that some students, on average, do not have sufficient experience in writing and are new in the field of writing scientific articles. So from the confidence and difficulties faced by the students of elementary school teacher candidates, interesting impressions arise on the asynchronous and synchronous learning model through video tutorials on writing

scientific articles watched via YouTube. This impression is stated in the quote from the student response in Table 8.

Table 8 shows lectures asynchronously through video tutorials on writing scientific articles via youtube, giving elementary school teacher candidates a good impression. The tutorial via YouTube seems to increase the knowledge and breadth of thinking of the students of elementary school teacher candidates, especially in writing scientific articles as young intellectuals. In line with this, the supporting aspects of writing scientific articles can be seen from the smooth process of field practice in overcoming the problems of children with special needs, as shown in Figure 8.

Table 8. *The impression of a scientific writing tutorial video that is watched via youtube*

Tell us about your impressions of the scientific writing tutorial videos that you have watched via YouTube!	
Student 1.	My impression of the video tutorial on writing scientific papers is that even in the middle of many tasks from other courses, I took the time to understand each video tutorial that has been presented and write essential points for the continuity of the author of scientific papers that I will make at that time.
Student 2.	The explanation of the stages or steps in writing the written work delivered in the YouTube video is very useful in leading me to make a report, but the video tutorial helped me work on the report results of field practice.
Student 3.	Feeling happy turns out that anything is well studied in writing scientific papers is not difficult, but it is also not easy for me, who may still be a beginner. Nevertheless, it makes me more active in learning it.

Figure 8. Field practice for elementary school teacher candidates

Figure 8 shows the documentation of field practice activities from the students of elementary school teacher candidates carried out in public elementary schools, inclusive schools to special schools. As a follow-up, the findings must be presented in scientific articles so that all educators and prospective educators get benefits and solutions in the teaching and learning process with the same problem. In helping to strengthen student competence in writing scientific articles, students are allowed to watch video tutorials on writing scientific papers via YouTube. Figure 9 below shows student activities in listening to video tutorials on writing scientific articles on YouTube.

Figure 9. Documentation watching Youtube tutorial videos

Figure 9 shows the documentation for listening to tutorials for writing scientific papers asynchronously via YouTube. It is hoped that students' scientific writing skills can develop well through these activities. Based on field practice activities and the writing of scientific articles in inclusive education lectures, it can be stated that lectures can be carried out effectively while creating a forum for community service activities in which both lecturers and students in the field of education can directly overcome community problems and publish findings and solutions for the general public.

Discussion

Synchronous and asynchronous lectures

The implementation of synchronous and asynchronous lectures with the help of several digital platforms, especially in Inclusive Education Courses, aims to create learning that can be adapted to various situations, especially during the COVID-19 pandemic which makes face-to-face learning to be limited. Studies say synchronous and asynchronous learning can be combined to give a lecture or course (Kuzminska et al., 2021). In addition, synchronous and asynchronous learning models can guarantee the achievement of competency standards and, at the same time, reduce the time needed to conduct face-to-face learning (Febriantoro, 2018). Reviewing students' initial understanding of synchronous and asynchronous learning models shows that students understand these two learning models. A good student understanding of these two learning models will make it easier to adapt during lectures. Of course, even lecturers can flexibly adjust the pace or content of their lectures (Cao et al., 2016).

Inclusive Education Lectures with an asynchronous model are carried out at the beginning of the lecture to provide information regarding the description of the lectures that will be held during the next 16 meetings and allow lecturers to confirm some problems or direct responses in lectures faced by students. Simultaneously, synchronous learning models will enable students to obtain faster and more efficient replies to their queries or remarks (Abrahamsson, 2003). During the 16 meetings in lectures, the goal is to supplement lectures with a virtual direct discussion process, which will be done via the synchronous model and by mixing synchronous and asynchronous models. Lectures also provide opportunities for students to learn independently and flexibly. Research developed using the same method shows that combining synchronous and asynchronous lectures is essential for keeping students' attention and meeting academic requirements. While synchronous courses allow interaction and connection with lecturers, asynchronous learning has its advantages, such as learning at the student's pace of learning. Previous studies found that students had favorable attitudes about asynchronous lectures, whereas students preferred pre-recorded courses uploaded to Google Classroom or YouTube. This feature allows students to listen to lecture recordings repeatedly to understand the material better (Accettone, 2021; Prabawangi et al., 2021).

Lectures by combining synchronous and asynchronous models show a positive impact, where the students of elementary school teacher candidates are more comfortable in lectures by combining the two compared to only synchronous or asynchronous. The findings of research studies state that asynchronous learning has affected students' understanding of learning concepts. Furthermore, students who have a high level of readiness by attending flexible ous synchronous class sessions that bring up (Lin et al., 2019). Studies on the survey results of several other students also show that most faculty members and students prefer a combination of synchronous and asynchronous modes (Pan IIT Group, 2020).

Lectures with the synchronous model allow the students of elementary school teacher candidates to discuss with each other and listen directly to the explanations from the lecturers on the topics discussed. These findings align with research that says the synchronous model provides instructional content in real-time (Claman, 2015). Meanwhile, the asynchronous model makes it easier for the students of elementary school teacher candidates to review the topics that have been studied after the lecture is over. Because lectures asynchronously make learning involve participants more actively and control their learning (Dey et al., 2020). With this asynchronous model, modules or lecture videos given by lecturers can be accessed anytime and anywhere as needed through platforms such as YouTube and Google Classroom, and even students are free to access various other sources. The asynchronous model gives students tremendous flexibility to study online material at their convenience

and own pace, even discussing in small groups using blog platforms or email (Asabere et al., 2017; Poirier et al., 2014; Polat & Kayaduman, 2022; Rao, 2011). Of course, lectures with this model can save costs, mainly student internet quotas. As stated in previous research, namely asynchronous learning can help reduce costs and increase the speed of information transfer (Warner, 2019).

If learning only uses an asynchronous model such as through Zoom, the lecture will feel monotonous and make the body tired when using the device continuously. Studies show that continuous use of the device for long durations can cause motion sickness due to low order refresh frequency (T. Kumar, 2021). The synchronous model will also require a stable internet network and cost money. Other researchers found that the obstacles when teaching in virtual learning were time constraints and student complaints about signal access (Nurwahyuni, 2020). In addition, common barriers to synchronous learning: are cost, distance, and time (Abari et al., 2021). Meanwhile, when lectures are only run asynchronously, students will find it difficult to ask questions or discuss if there is still material that has not been understood, and it is challenging to control less disciplined students. Similar to these findings, asynchronous learning creates a lack of interaction with fellow students so that if students do not understand the material taught by the teacher, students may experience a lack of interest and enthusiasm for learning (Febryliani et al., 2021).

Thus, combining lectures with the synchronous and asynchronous model can provide wider opportunities for students to study lecture topics presented by lecturers during the COVID-19 in terms of learning activities, learning resources, learning media, time, place, and even cost. The study says combining synchronous and asynchronous provides practical learning ideas for post-pandemic lectures (Dyczkowska, 2021).

Scientific article writing tutorial

In this asynchronous learning model, the students of elementary school teacher candidates must, of course, get guidance through learning media. The statement is supported by online learning, which makes material delivery possible, one of which is using Google Classroom and YouTube. The material provided is tutorials on writing scientific articles, presented via YouTube with other intermediary media using Google Classroom. Intermediary media google classroom makes learning more effective because data storage can be stored and not deleted. The study says Google Classroom helps students to communicate more effectively. Perhaps more critical than user-friendly and accessible, the communication tool is also very effective because everything is cloud-based, and students are no longer "lost" on assignments (Barrera et al., 2020). Youtube is a media platform that is easy to exchange information. Studies suggest that YouTube is the second social platform and the first choice for students to exchange information (Ghounane, 2020), especially the explanation of the tutorial on writing scientific papers by allowing students to access the material provided systematically. The data demonstrate that YouTube provides not only a method of amusement viewing but also instructional content, which is echoed by the majority of them, demonstrating that YouTube does give not only fun but also educational information. "I use a YouTube function called tags, which shows videos from a succession of speakers who share their tags; my experience also includes subscribing to particular channels continuously releasing updates" (Ghounane, 2020). Especially in terms of scientific writing videos by continuing to provide updates in video tutorials so that the students of elementary school teacher candidates can learn by order of systematic writing of scientific papers.

In connection with studying video tutorials for writing scientific papers through YouTube, the students stated that they 100% experienced the ease of accessing video tutorials for writing scientific papers. Studies show the ease of accessing YouTube via desktop and on smartphones and tablets, and its immense popularity makes it effective (Watkins & Wilkins, 2011). In this case, the effectiveness of using YouTube as a medium to support lectures can also be easy to understand. The research survey studies state that 75 percent of students spend 2 hours every day on youtube 60% percent of students find it easy to understand certain things even in class (Chowdhury, 2019).

Elementary school teacher candidates state that YouTube is more flexible because it can be accessed anytime and anywhere, they will listen to tutorials on writing scientific articles as the outcome of their field practice. In order for pupils to believe that asynchronous learning is more effective than the synchronous learning model. When linked to this, studies suggest the role of asynchronous

education to reconsider their ideas. Asynchronous models make the learning process more flexible because students can access it in their spare time or flexible time (Baba et al., 2021). The flexibility of video tutorials for writing scientific papers via youtube also suggests that learning through youtube makes learning less tedious and more enjoyable. Studies show that youtube videos make lessons fun, engaging, and relevant, and attract their attention (June et al., 2014).

Thus, from the various narratives of the students of elementary school teacher candidates about flexibility, ease of access, and easy-to-understand material in scientific writing tutorials, they provide positive feedback. This is to the findings, which say that students feel a more complex and systematic understanding, benefit, and description related to the preparation of their scientific articles. This is also explained in the study of the YouTube tutorial methodology, which has a significant positive effect on learning (Iftikhar et al., 2019). So that prospective elementary school teachers' students can feel an increase in their ability to write scientific articles. The video tutorial for writing scientific papers via YouTube is expected to help students deal with difficulties in writing scientific articles. Writing scientific articles as the realization of field practicums can be well structured. The study believed that using videos helped them understand complex topics, "I use youtube to help me with my studies, and before every exam, I use youtube to revise because I do not understand some of the instructions in my class" (Moghavvemi et al., 2018).

It was found that 86 students experienced an increase in self-confidence of 70% about learning through video tutorials on writing scientific articles that they had studied. So, it is clear that the video tutorial has a significant effect on the level of self-confidence of each student of elementary school teacher candidate. This finding is reinforced by studies that suggest that when teaching tools such as videos and interactive activities are being applied during lessons, they become more responsive to the instructor and develop self-confidence (Baba et al., 2021). Some videos and materials are still challenging to understand in the tutorial for scientific papers, especially in complicated techniques and systematics. This finding aligns with the findings that explain the material that is difficult to understand. The average student states that the table of contents, pictures, and bibliography attachments are in the results section because of the technical factors and formulas used in data analysis. The reason is the experience of new students in terms of writing scientific articles.

So, from experience, learning asynchronously and synchronously with tutorials on writing scientific papers through students' YouTube gives a good and exciting impression. Students revealed that the tutorial via YouTube seemed to increase knowledge and broaden their horizons of thought. This statement is consistent with studies that suggest that YouTube material can provide insight into a broader topic (Carlson & Strandberg, 2008), especially for the students of elementary school teacher candidates who write scientific articles as young intellectuals.

With this supporting the making of articles, it is necessary to have a smooth process of field practice carried out by the students of elementary school teacher candidates as material for implementing innovations in new learning media for children with special needs. This is evidenced by the findings that show field practice activities for the students of elementary school teacher candidates and the application of learning to children with special needs. In helping to strengthen the understanding of scientific articles, tutorials for writing scientific papers are provided via YouTube, proving that students are very enthusiastic about watching YouTube videos. Based on field practice activities and writing scientific articles, it can be said that lectures through synchronous and asynchronous models can be practical and create a forum for community service activities in the field of education in overcoming community problems directly and publishing findings and solutions to the general public. The study stated that the results of this investigation show that synchronous and asynchronous learning models can be more effective, especially in improving cognitive abilities (Offir et al., 2008).

CONCLUSION

Guidance activities in writing scientific papers and essential articles for some groups are often conducted in webinars through digital platforms such as Zoom or face-to-face by presenting presenters in person. The study describes the guidance process for aspiring elementary school teachers so that they can write scientific articles about the results of their field studies on children with special needs as one of the requirements for passing inclusive education courses through a synchronous model through Zoom Meeting and Assuncronous models via YouTube and Google Classroom. The findings in this study will

be a breakthrough in scientific writing training by balancing synchronous and asynchronous models to support the digital era and the implementation of health protocols during the Covid-19 pandemic. This research certainly has some limitations. This research only focused on undergraduate students studying at one of the public campuses in Purwakarta Regency, thus allowing data that was considered less diverse.

Furthermore, the allocation of field studies and the preparation of scientific papers for students who are less than one semester raises some obstacles, and the two activities carried out by the students are not optimal, although the entire research process is carried out for almost a year. As a result, students respond to some unrepresentative and vague questions. In addition, the study focused only on the use of zoom platforms, YouTube, and Google Classroom, so there are still various platforms that can be used for further study and on more diverse subjects such as graduate student teachers. The application of synchronous and asynchronous learning models can make the guidelines more varied, not monotonous, and flexible, as well as facilitate the overall needs of students for the material provided. Synchronous and asynchronous learning also makes students more equipped to write scientific papers by providing complete and adaptable material to the difficulties faced by elementary school teacher education students in compiling scientific writing reports. Synchronous and asynchronous scientific writing training makes students understand the material in more detail and not miss important points that must be understood. This follows the exposure of several students who received positive responses to this learning model. By getting a renewal of knowledge in compiling scientific works as a starting point, they produce works that can be useful. In this case, it is recommended for lecturers or experts provide suggestions in the form of making scientific papers to explore different approaches and platforms so that more scientific papers or lectures become more significant learning opportunities. By guiding the writing of scientific papers so that all students can understand in depth the systematics in scientific writings.

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