Industrial Revolution 4.0: Innovation of Mandarin Language Students Learning Outcomes

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Abstract

Along with the rapid advances in technology and innovation today because of globalization of the 21st century and the industrial revolution 4.0, educational learning outcomes need to be maintained so as not to deviate to the point of failure. Mandarin is a compulsory subject in Three Language schools (Indonesian, English, Mandarin). Thus, learning Mandarin at the Three-Language School also involves all forms of innovation and transformation that are currently taking place in the delivery of learning materials and learning assessments. Learning outcomes from learning are students' ability to communicate. This paper intends to analyze the latest technological advances and innovations in the Chinese language teaching process along with student test scores, data collection methods based on student activity in collecting assignments in Google Classroom (GCR) and students' final grades. The respondents of this study were 26 junior high school students at the Pahoa Three Language School, Tangerang. The exam questions include completing the dialogue (60%), answering questions after hearing the contents of the text (30%) and answering questions from reading (10%). The learning process that lasted for 4 months was evaluated 5 times with assignment at GCR. The conclusion of this study is that the intensity of task collection has a close relationship with test results. This research is expected to be a reference for further research by utilizing technology and innovation in learning and assignments, especially in foreign language learning.

Keywords：

Mandarin, Speaking, Assessment, Evaluation，Learning Apps

1. Introduction.

Today, the development of Chinese language teaching has reached various aspects, the methods used are also diverse. One of them can also be through applications, for example the Mobile Assisted Language Learning (MALL) application, this application can be used to support classroom learning and independent learning at home (Jureynolds et.al 2021). In addition, the development of Chinese learning platforms, especially e-learning course-based platforms can maximize the advantages of functional, structural, variety, and content management aspects (Jureynolds et.al 2020).

During the pandemic, the use of online media as a medium to collect student assignments also emerged, for example with the online media Google Classroom (GCR). GCR allows teachers to directly provide assignments to students, then ask them to submit assignments in their virtual classrooms and provide feedback on their work. With online media such as GCR, students become more flexible in collecting assignments that have been given by the teacher.

Apart from technology as a supporting material in learning, the role of the teacher also has a significant influence on students' learning abilities. In addition, the teacher's response in improving student learning is also a consideration in various aspects, including proficiency in using technological devices, etc. Lisnawati (2021) states that the teacher's response to the use of multimedia is very important, because it is the teacher who will operate the tool and on the other hand the media can really improve the learning process and results. In addition, lecturers must also be able to provide motivation and arouse students' desire to improve their speaking skills (Wael, A., Asnur: 2018)

In terms of feedback, the lecturer must provide clear verbal feedback and students consider the lecturer's verbal corrective feedback an important part of language learning because they learn how to use the correct form of the target language after being corrected (Muslem et al: 2021). So, it can be said that feedback from the teacher plays an important role in the progress of students' abilities

In addition to teacher feedback, the type of exam being tested also has a big influence on the assessment of students' understanding of speaking skills. Yetty (2012) through his research, the speaking test should have a reading section, question and answer, retelling and group conversation. However, in this study, most of the exam questions faced by students were in terms of the ability to repeat and answer the questions being tested

This paper intends to analyze the latest technological advances and innovations in the Chinese language teaching process along with student test scores, data collection methods based on student activity in collecting assignments in Google Classroom (GCR) and students' final grades.

1.1 Objectives
The purpose of this study was to analyze the relationship between student activity in doing assignments and the test scores obtained by students. Relationships during learning and after learning have a big enough influence on students in doing their assignments. In addition, the value obtained can be a reference in the use of internet-based teaching media to students.

2. Literature Review
In learning to speak, apart from providing assignments and exercises, we also need to pay attention to various aspects. Gao (1998) stated that the practice of speaking Mandarin (implicit communication, focused listening, politeness, insider focus and directed communication strategies) can support other focuses of learning Mandarin itself. Liao (2009) said that topic choice paid little attention to student interaction and speaking ability.

Aulia (2019) in her research, stated that there are four aspects that influence each other in learning, namely: humans, self-development, technology, and innovation. In addition, global changes such as the environment and technology also play a role in the learning paradigm, Qamar (2019) suggests that education also needs to follow these changes and with the mindset of the young generation and future entrepreneurs. Therefore, learning with innovative media also plays a role in learning a new language. El Iq Bali (2021) said that innovative learning will greatly help students to be able to solve problems in the learning process, one of which is e-learning.

At the same time, Riyandi (2021) states that e-learning learning using class conferences has similarities when learning is carried out in class, but in order to maintain learning motivation, certain problems that must be considered are internet quotas and connections. Apart from the learning techniques, the Mandarin language itself also does not become an obstacle for the child to learn it. Chang (1998) stated that the absence of tense markers and gender pronouns in Mandarin does not cause developmental delays in Chinese-speaking children

In terms of students themselves, Liu (2008) stated that the presence of students' reluctance to communicate was significantly positively correlated with their foreign language anxiety. These concerns can also be diverse, Ralph Ocon (2021) states Concerns related to diversity will continue to affect students both in their personal lives and in the workplace. Therefore, it is important for students to have an understanding of diversity problems and the skills to solve these problems effectively.

Now we have entered the era of the industrial revolution 4.0, where technology has been integrated into learning. Pratidhina (2020) mentions that education in the industrial revolution era has the characteristics of openness and independence in learning, and also raises the concept of self-directed learning and long-life learning, learning resources are not only limited to teaching materials in the classroom.

In preparing students to face the era of the industrial revolution 4.0, it requires learning strategies that are able to facilitate students to develop. According to Astuti & Asikin (2019), the learning strategies needed by teachers in the Industrial Revolution Era 4.0 are to help students learn, to provide opportunities for students to develop and excel, to strengthen character education, to be technologically literate, and to become effective teachers.

Google Classroom is one of the media that can be used in teaching and learning activities. Atikah (2021) states that online learning activities can use Google Classroom as a learning medium according to the needs of learning activities. Google Classroom can be easily accessed by both teachers and students. According to Rohman, M (2020), Google Classroom is also one of the safe and free platforms. Through Google Classroom, it allows interaction between teachers and students to be more effective and makes online learning more productive

Atikah (2021) also stated that using Google Classroom as a learning medium had a positive impact on learning. Providing assignments to students through Google Classroom can also improve student learning outcomes. The use of Google Classroom has proven to be effective in improving student learning outcomes through planning, processes, results and student learning evaluations.

Learning innovation is a new idea or idea that is applied in learning activities to achieve learning objectives well. In implementing learning innovations, teachers have an important role in controlling the learning process. Meanwhile, parents play a role in facilitating the student's learning process to occur well at home, so that it can improve the quality of education, efficiency and relevance of education can also be carried out properly. (Rosyidin, 2022)

Innovation is needed in learning, so that learning becomes better, creative and more effective. According to Narmaditya (2021), learning innovation in material can increase students' motivation and achievement, especially online learning. By composing innovative and interesting learning, students who study online will get the same benefits as when learning face to face.

3. Research Method
This study uses a qualitative research approach, which examines the relationship between the assignment to the speaking test scores of 26 students with data collection for 4 months (February 2022 to May 2022). Through this study, data will be recorded regarding the relationship between students' speaking abilities and the intensity of student assignment collection.

4. Result and Discussion
An understanding of speaking indicates how students complete speaking tasks and use what they have learned. In this study, it includes data between the intensity of collecting speaking assignments and the scores that have been obtained by the students themselves

4. 1 Details of Student Speaking Practice Tasks
Based on the learning on the GCR, the learning materials carried out include questions and answers, and different frequencies on the given topic. (See Table 1).

Table 1 Deliver in Chinese Practice and Interaction Topics of Students' Speaking Tasks

Practices	Image of China
Date	Feb 16th 2022
Questions	1. What is your first impression when you hear "China"? 2. If you have the opportunity to go to China, where would you like to go? Why?)
Practices	Study Abroad to China
Date	Mar 2nd 2022
Questions	1. Could you tell us about the difference between China and Indonesia? 2. Why do many people want to study in China now? Talk about your opinions.
Practice	Be Vegan
Date	Mar 16th 2022

Questions	1. Please read aloud the dialogue of "The Reasons to Be Vegetarian" - view pdf
	     1. Please answer the following question after thinking for no less than one minute (be specific
	     2. Do you think vegetarianism is good for the body? Why?

Practice	Diet
Date	Apr 6th 2022
Questions	1. What do you think are the ways to lose weight? 2. If you are fat, how are you going to lose weight?
Practice	Unexpected moment
Date	May 13th 2022
Questions	1. What should you do if you pick up something? 2. Have you ever picked up something before? What have you found? How did you deal with it? 3. Have you ever found a wallet or money? How did you deal with it? Is it the right way to keep what you find? If someone picks up something, what should he/she do?

Based on the types of topics above asking questions based on previous discussions in textbooks, in speaking exercises 1 and 2 are related to vocabulary in chapter 13, where the total vocabulary is 38, while in speaking exercises 3 and 4 found in chapter 10, with a total vocabulary of 34, and speaking practice 5 is found in chapter 11 with a total vocabulary of 31. Based on the vocabulary that has been studied, students should have easier and faster understanding of the task in question, except in the case of students reluctant to do the assigned task. (Table 2)

The frequency of collecting speaking assignments by students also varies according to the table below. It appears that the highest percentage of exercise collection is in the 4th part of the exercise, which is the topic of "Diet" □while the lowest score is in the 1st exercise with the topic of "Image of China". (Figure 1)
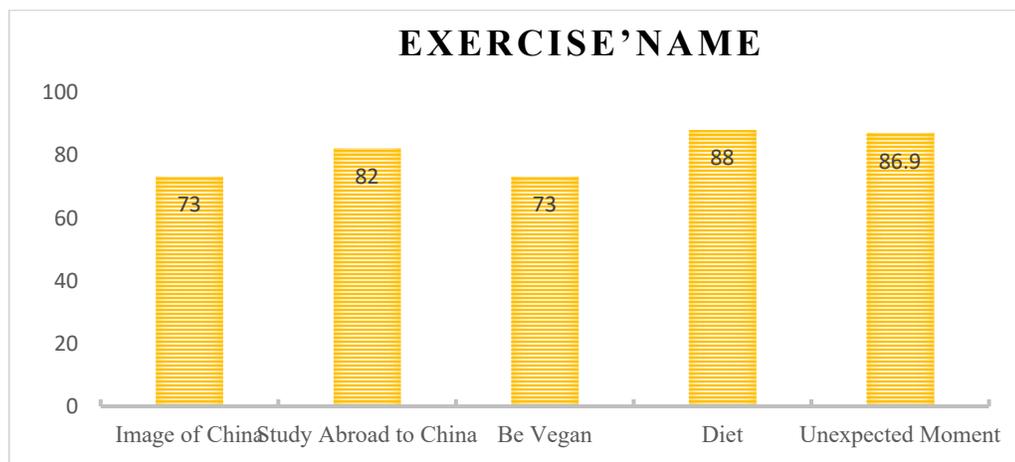

Figure 1 Exercises' name

Table 2 Number of Student Assignments

Number of Exercises	Number of Collected Practice
Exercises 1	19 / 26
Exercises 2*	19 / 23
Exercises 3	19 / 26
Exercises 4	23 / 26
Exercises 5*	20 / 23

*The three student scores were not included, because they were not present in the lesson

Meanwhile, based on the number of students who submitted assignments, it can be seen in the Figure 2 below:
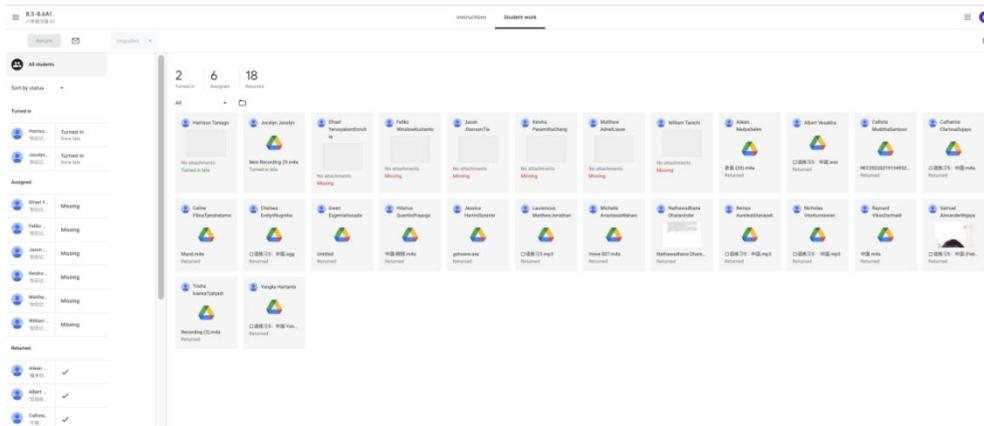
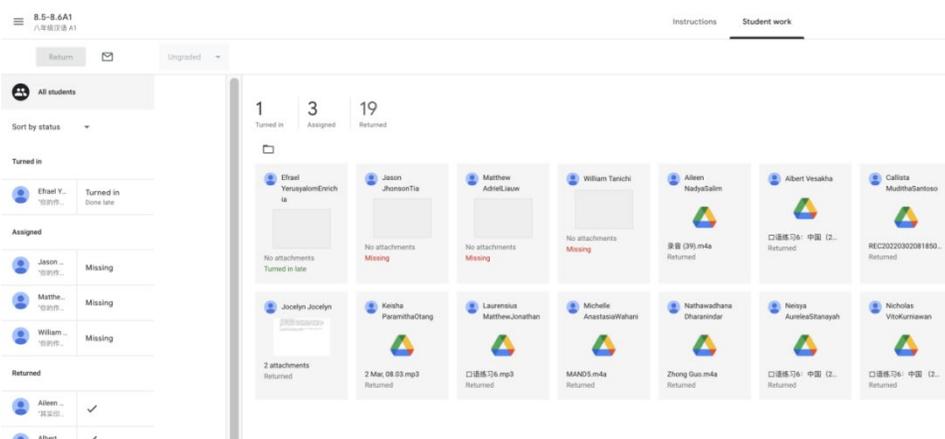Figure 2. Collection of Student Work on the GCR Platform (Exercise 1)

Figure 3 Collection of Student Work on the GCR Platform (Exercise 2)
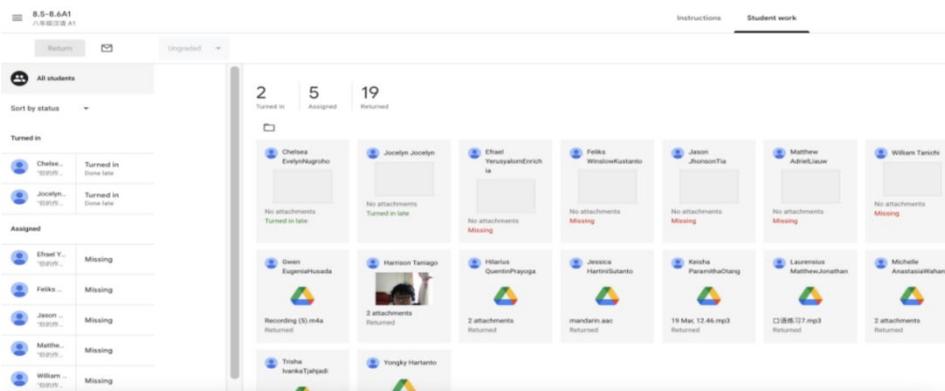
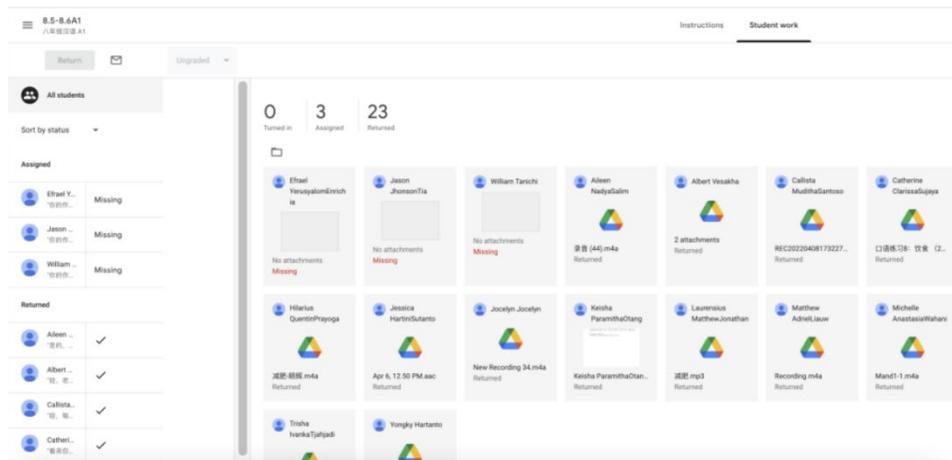Figure 4 Collection of Student Work on the GCR Platform (Exercise 3)

Figure 5 Collection of Student Work on the GCR Platform (Exercise 4)
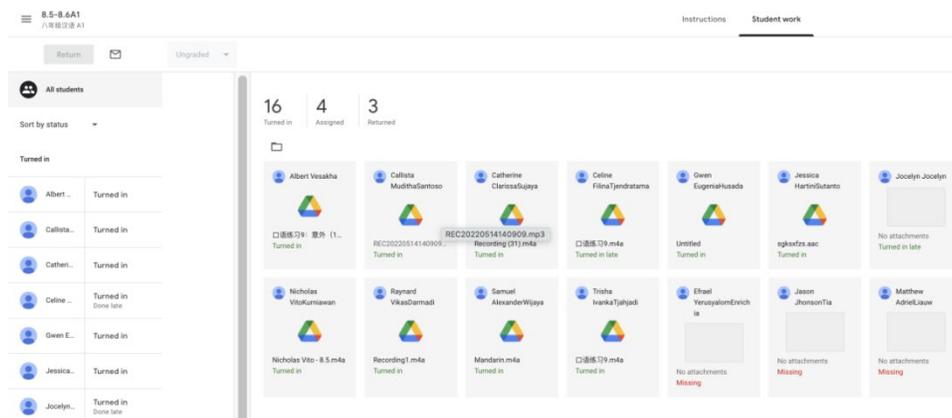

Figure 6 Collection of Student Work on the GCR Platform (Exercise 5)

Based on the Figures 3 – 5 above, the participation of students in doing speaking assignments is still relatively moderate the lowest number is in the first and third exercises, each of which is 78% or about 18 of 23 students who do speaking assignments. The first practice questions include subjective questions, which ask questions about: what was your response when you heard "China" for the first time and if you had the chance to play in China, where would you like to go? Why? then the third speaking practice question includes reading the reading text and answering the question, what do you think about vegetarianism, why? where these three types of questions are more subjective and easier to understand.

4. 2 Details of Speaking Exam Questions and Student Exam Scores
The student's speaking test includes 3 types, namely repeating reading material, listening and then answering questions and answering questions. With the percentage of each question as shown in the Table 3 below:

Table 3 Test material for speaking exam questions

Material	Question Quantity	Percentage of question
Repeat after listening	15	60%
Answer after listening	10	30%
Answer questions	2	10%

Based on the test results obtained, students who get grades vary from the range of 50-90, with the period of the score range as follows
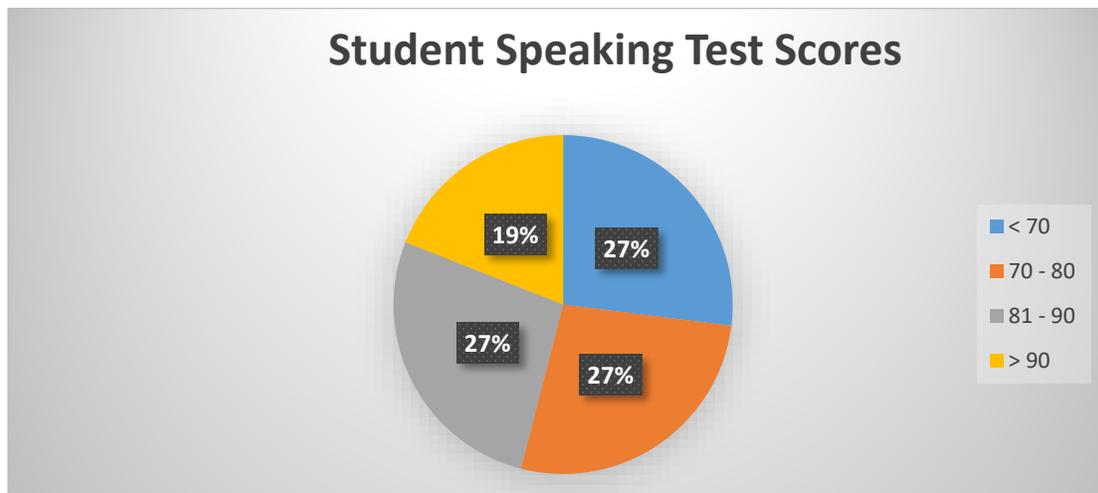

Figure 7 Number of participants and their score criteria

Based on the data on the number of students Figure 7 above, the number of students who do not meet the criteria for grades is about 7 out of 26 students, which is 26.9%. This indicates that there are still some students who are not proficient in answering questions or are reluctant to do the assignments given by the teacher.

4.3 The relationship between speaking assignments and speaking exams
Based on the type of exam and the available materials, it can be concluded that speaking test questions refer more to personal literacy understanding, because the questions are aimed more at subjective questions and those that have been previously discussed during the learning process.

The exam questions in the third session (answering questions) are as follows:
1. Do you think you have to know popular things to make friends? Why?
2. If you bumped into your shirt today, what would you think/how would you do?
3. Please introduce different ways to eat New Year's Eve dinner. And explain why there are these changes.
4. Do you think it makes sense to have a New Year's Eve dinner? Why?

The four kinds of questions above are actually questions that can be answered by students, as long as they understand the intent and have sufficient vocabulary. Therefore, we can reflect on the frequency of assignments that have been collected by students. Based on the intensity of assignment collection by students on the GCR platform, the very close realization between students who diligently collect assignments and their test scores, see Table 4.

Table 4 Comparative Analysis of Students' Speaking Scores Before and After Using GCR

Students	Test scores before using practice in GCR 2021 December 10th	Assignment Submission Frequency	Test scores after using practice in GCR 2022 Mei 23rd	Increase/decrease comparison（%）
A Student	92	5 / 5 (100%)	90	- 0.97
B Student	90	5 / 5 (100%)	80	- 0.88
C Student	94	5 / 5 (100%)	97	+ 1.03
D Student	89	4 / 5 (80%)	82	- 0.92
E Student	91	5 / 5 (100%)	89	- 0.97
F Student	77	1 / 5 (20%)	68	- 0.88
G Student	75	5 / 5 (100%)	75	=
H Student	90	5 / 5 (100%)	93	+ 1.03
I Student	79	5 / 5 (100%)	77	- 0.97
J Student	65	0 / 5 (0%)	55	- 0.84
K Student	87	5 / 5 (100%)	91	+ 1.04
L Student	77	5 / 5 (100%)	78	+ 1.01
M Student	96	5 / 5 (100%)	93	- 0.96
N Student	87	4 / 5 (80%)	85	- 0.97
O Student	46	0 / 5 (0%)	50	+ 1.08
P Student	76	0 / 5 (0%)	62	- 0.81
Q Student	91	5 / 5 (100%)	83	- 0.91
R Student	90	4 / 5 (80%)	67	- 0.74
S Student	77	5 / 5 (100%)	70	- 0.90
T Student	82	5 / 5 (100%)	78	- 0.95
U Student	97	5 / 5 (100%)	97	=
V Student	55	5 / 5 (100%)	65	+ 1.18
W Student	87	5 / 5 (100%)	85	- 0.97
X Student	90	3 / 5 (60%)	88	- 0.97
Y Student	77	2 / 5 (40%)	75	- 0.97
Z Student	51	2 / 5 (40%)	68	+ 1.33

There is a direct relationship between the continuous assignment of assignments to the GCR and their test results. Easier collection of assignments can improve the quality of student learning. Just as the quality of student learning and students' pursuit of higher grades is enhanced by the careful selection of the first assessment method, it encourages the development of students' intellectual and occupational skills (Karen Scouller 1998).

This indicates that learning speaking material should not only be based on monotonous material in textbooks, but it is better to discuss it with material that students often encounter in everyday life, so as to increase student engagement with the teaching material being taught.

5. Conclusion

Based on the research above, we can conclude that the use of GCR-based learning applications also has a significant influence on student activity in participating in learning. In learning using the GCR media, a more practical collection does not guarantee that all students will collect it on time, but it has a close relationship with student test results, where students who do not submit assignments in the GCR tend to have lower scores. Therefore, the application of using GCR learning media needs to be carried out as much as possible

Acknowledge

References

Astuti, Waluya, S. B., Asikin, M., Strategi Pembelajaran dalam Menghadapi Tantangan Era Revolusi Industri 4.0., *Prosiding Seminar Nasional Pascasarjana UNNES*, 2019.

Atikah, R., Prihatin, R. T., Hernayati, H., & Misbah, J., Pemanfaatan Google Classroom Sebagai Media Pembelajaran Di Masa Pandemi Covid-19. *Jurnal Pendidikan Teknologi Infoemasi dan Komunikasi,* Vol. 7, No. 1, pp. 7-18, 2021.

Bali, M. M. E. I., Baharun, H., Madanibillah, A., Muali, C., Lukman, N. K. A., & Bon, A. T., Innovative Learning Media Based on e-Learning in the New Normal Era, *Proceedings of the 11th Annual International Conference on Industrial Engineering and Operations Management*, 2021.

Chang, C. J., The development of autonomy in preschool Mandarin Chinese-speaking children's play narratives, *Narrative Inquiry*, Vol. 8, No. 1, pp. 77-111, 1998.

Gao, G., Don't take my word for it—understanding Chinese speaking practices. *International Journal of Intercultural Relations*, Vol. 22, No. 2, pp. 163-186, 1998.

Hadining, A. F., Sukanta, S., Hidayat, W. (2019). An Investigation of Student Perspective for E-Learning Readiness Measurement. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, pp. 5-7, 2019.

Jureynolds, Theresia, Ying, Y., Benefits of Using Mobile Apps as a Support for Mandarin Language Learning. *Journal of Physics: Conference Series,* Vol. 1764, No. 1, pp. 012088. IOP Publishing., 2021.

Jureynolds, Ying, Y., Characteristics and Challenges of Chinese E-Learning Platforms in Indonesia, *Journal of Physics: Conference Series*, Vol. 1477, No. 4, pp. 042014, IOP Publishing, 2020.

Lisnawati, I., Speaking learning based on multimedia, *Journal of Language and Linguistic Studies*, Vol. 17, No. 4, pp. 2046-2056, 2021.

Liu, M., Jackson, J., An exploration of Chinese EFL learners' unwillingness to communicate and foreign language anxiety, *The modern language journal*, Vol. 92, No. 1, pp. 71-86, 2008.

Liao, G., Improvement of Speaking Ability through Interrelated Skills. *English Language Teaching*, Vol. 2, No. 3, pp. 11-14, 2009.

Muslem, A., Zulfikar, T., Astilla, I., Heriansyah, H., & Marhaban, S., Students' Perception Toward Oral Corrective Feedback in Speaking Classes: A Case at English Education Department Students, *International Journal of Language Education*, Vol. 5, No. 4, pp. 244-259, 2021.

Narmaditya, B.S., Megasari, R., Wahjoedi, W., & Hardinto, P., Peningkatan Inovasi Pembelajaran Melalui Pengembangan Konten Pembelajaran Daring. *Jurnal Karinov*, Vol. 4, No. 1, pp. 23-27, 2021.

Ocon, R., *Using Creativity to Help Students Learn About and Solve Diversity-Related Problems*, 2021.

Pratidhina, E., Education 4.0: Pergeseran pendidikan sebagai konsekuensi revolusi industri 4.0. *Humanika, Kajian Ilmiah Mata Kuliah Umum*, Vol. 20, No. 1, pp. 1-12, 2020.

Qamar, S. Z., Pervez, T., & Al-Kindi, M., Engineering education: Challenges, opportunities, and Future Trends, *Proceedings of the 16th IEOM Global Engineering Education: First GCC International Conference on Industrial Engineering and Operations Management*, Riyadh, Saudi Arabia, pp. 26-28, 2019.

Riyandi, A., Imron, M., Nurhayati, S., *The Influence of Conference Class Technology Using Zoom on E-learning in the Covid-19 Pandemic*, 2021.

Rohman, M., Baskoro, F., & EndahCahyaNingrum, L., The Effectiveness and Efficiency of Google Classroom as an Alternative Online Learning Media to Overcome Physical Distancing in Lectures Due to the Covid-19 pandemic: Student Perspectives. *2020 Third International Conference on Vocational Education and Electrical Engineering (ICVEE),* pp. 1-6, 2020.

Rosyiddin, A.A.Z., Johan, R.C., & Mulyadi, D. (2022). Inovasi Pembelajaran Sebagai Upaya Menyelesaikan Problematika Pendidikan Indonesia. *Jurnal Inovasi Kurikulum*, Vol. 19, No. 1, pp. 22-53, 2022.

Wael, A., Asnur, M. N. A., & Ibrahim, I., Exploring Students' Learning Strategies in Speaking Performance. International *Journal of Language Education*, Vol. 2, No. 1, 65-71, 2018.

Yetty, Y. (2012). The Perception of Binus University Chinese Speaking Teachers Towards the Speaking Test Questions. *Jurnal Humanior*a, Vol. 3, No. 1, pp. 210-214, 2021

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