

## Students Understanding of Science in Using the Cognitive Thinking Skills Method With Online Learning as A Solution for Speaking Skills in The Era of Digital Technology

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### Abstract

The research examines the cognition of Foreign English (EFL) students using the Cognitive Thinking Skills method using online media as a solution for speaking skills in the digital era. The research method uses a mix method, namely: a sample of 20 students uses quantitative data analysis techniques to calculate validity and reliability, while qualitative data is analyzed based on Huberman and Miles' theory, namely collecting, reducing, verifying and displaying. The research results showed that students gave positive responses, learning felt easy and they were confident in practicing English with online media so that the development of students' cognition using the Cognitive Thinking Skill method was more adaptable and flexible. Questionnaire with a Likert scale, validity and reliability are calculated statistically: 45 items are tried out into 20 valid items, then whether the items are valid or not use the significance value (P-value) provided that if the significance value is  $< 0.05$  then the item is valid and if significance value  $> 0.05$  then the item is invalid. Cronbach's Alpha is significant at  $0.758 > 0.21$ , meaning the data can be concluded to be reliable. The questionnaire instrument contains aspects of student cognition using the Cognitive Thinking Skills Method with three indicators, namely: thinking, judgment and decision. The percentage shows 45% of students gave a positive response. 25% of the total respondents to the online speaking class were in the very positive category and another 35% chose neutral. Percentage data can provide evidence that cognitive skills are a complex function of the human brain that involves aspects of memory, both short-term and long-term, attention, planning, and reasoning and strategies in a person's thinking.

**Keywords:** Cognitive Thinking Skill, Cognition, Online.

### How to cite this article:

Susanto, F., Zasrianita, F., Nadrah. (2024). Students Understanding of Science in Using the Cognitive Thinking Skills Method with Online Learning as A Solution for Speaking Skills in The Era of Digital Technology. *IJIS Edu: Indonesian Journal of Integrated Science Education*, 6(1), 39-47. doi: <https://dx.doi.org/10.29300/ijisedu.v6i1.13856>





## INTRODUCTION

Rigid thoughts in comprehensively analyzing the development of digital thinking patterns will certainly influence modern cultural thinking patterns, especially in the humanistic generation in this century. Rigidity in thought patterns is basically thinking that cannot openly accept the development of digitalization globally (Ludovico Bullini Orlandi, 2016) The digital era is changing consistently, previous marketing scenarios and actual problems must be addressed to close the capability gaps created by digital innovation. The enormity of the development of the digital world is developing massively, dynamically and consistently, also occurring in changes in educational culture which must be able to move in parallel continuously to balance the development of learning methods towards digitalization. Lack of relevance of learning methods to student needs or the curriculum can cause failure in understanding and applying learning material. Practically, it is clear that intellectual interaction between humans and artificial intelligence, which need each other, is clearly visible. Digital system connectivity is a tool for interacting with digital pedagogy teaching systems. For this reason, a detailed understanding of the accuracy of appropriate teaching methods is needed to be implemented, especially the application of digital pedagogy and connectivity so as to be able to develop thinking power that is able to master technology.(Dziubaniuk, O., Ivanova-Gongne, M. & Nyholm, M, 2023) The principles of connectivism can help instructors to develop learning environments in which students add understanding to their previous knowledge about sustainability through online interactions and by accessing digital knowledge resources. English has factually and rationally proven its existence as a lingua franca language which is the language of instruction in the international world as a language of world communication which is actively used by world leaders so that in the era of industrial revolution 4.0 and e-learning 5.0 it has now become an active world communication trend as evidenced by the meeting. The United Nations, ASEAN, European Union and G-20 level meetings have used English as a means of communication to unite various countries in the world. However, the development of English as a communication trend is not directly proportional and less significant is the development occurring in Indonesia at this time. In fact, Indonesia does have a unified language,

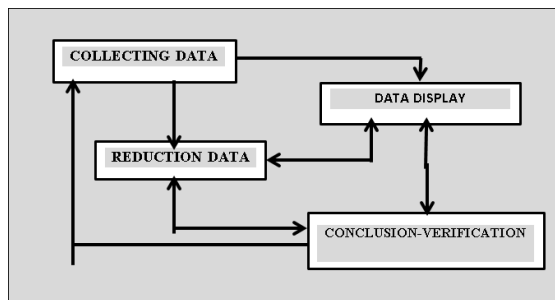
namely Indonesian, so English is a second language.(CNN Indonesia, 2022) In fact, English language skills in Indonesia show a relatively low index in 2022, Indonesia is only ranked 81st in the world, even far behind neighboring countries such as Singapore, which is ranked 10th and Malaysia, which is ranked 30th in the world. In fact, it is far behind countries such as Bangladesh, which is ranked 63rd in the world, while Vietnam is ranked 65th in the world, meaning that Indonesia is only slightly better than Cambodia, which is ranked 84th and Thailand is ranked 89th in the world. This data is based on the 2022 English Proficiency Index Report released by EF education First, placing Indonesia in 81st position out of a total of 11 countries studied. This phenomenon factually shows that there are many things that should be corrected and the right solution immediately sought. The government, through the Indonesian Ministry of Research and Technology, has made many changes, starting from the English curriculum which uses the audio-lingual method to the communicative competency which is often used today, but it turns out that it is still not able to make Indonesian English mastery better. The teachers-center pattern has changed to a Students-Centered pattern, but it turns out that it is still not able to provide significant changes to English language skills in Indonesia so changes in learning methods really need to be analyzed well, especially in the current digital era. Digital-based learning is not just an offline (face to face) to (face to screen) learning process, but requires the use of appropriate methods so that it can suit the learning objectives and needs of students. The development of sophisticated digital systems certainly requires human resources who have the skills to master technology by functioning the brain well, especially reading various kinds of the latest technological systems, and memorizing the steps that must be followed to master digital technology, meaning that this ability places greater emphasis on the ability to analyze various technological problems thus making a major contribution to the mastery of technology. Mastering digital technology requires having strong memory skills so that you are able to operate various kinds of sophisticated technological tools so all the skills that can support all of these are learning methods for developing Cognitive Thinking Skills. Because this method is the development of students' skills, Cognitive Thinking Skills can be explained that cognitive skills are the main skills related to brain

function. From the ability to read, the ability to learn and memorize are part of cognitive skills that are connected to the brain. The strong cognitive skills of students are reflected in their decision making and problem analysis skills, contributing to the growth of their IQ and also playing a useful role in improving memory. Mastery of technology in the learning process in this digital era requires people who are skilled in mastering technology so that technology can be controlled according to needs. Good mastery of technology can certainly improve students' cognitive skills so that along with the rapid progress of digital technology which focuses on cognitive skills, the most appropriate method for the digital era of the industrial revolution is the Cognitive Thinking Skill method. This method can certainly make a big contribution to the development of digital-based learning methods in the era of industrial revolution 4.0 towards 5.0. (Ramesh Kumar Chaturvedi, Vishal Verma, Kushendra Mishra, 2022) concluded that there was a significant improvement in memory, self-confidence, concentration, intuition, and reading and color identification skills with students' blindfolds. Learning with the use of technology automatically creates strong interactions between students and the technological tools used, resulting in a close emotional relationship, where this relationship is considered a mutualistic relationship. As a significant impact, this activity will become one of the cognitive styles, cognitive load in a job, for this reason we really need the Cognitive Thinking skill method. (Chang, CC., Yang, ST., 2023) the findings show that there is a significant interactive effect of DGBL scaffolding and cognitive style on learning emotions, cognitive load, and learning performance. Good learning should have a teaching method so that the target you want to achieve can be achieved, with this method the learning process will be more planned and make it easier for students to understand the material being taught. Like many English language learning materials, each word that will be processed into sentences has its own structural rules, whereas learning through digital processes and technology, this of course requires the right method, especially in mastering integrated skills in English. (Jane Yeomans, 2023) Learning is a complex process that involves various cognitive thinking skills such as attention, memory, problem solving, and decision making. These skills are important for acquiring new knowledge, making connections between different concepts,

and applying what has been learned in different situations. By applying the right learning methods, you can also find confidence in adaptability and flexibility to determine the most appropriate method in the current digital era. Based on the phenomena that occur during the digital era which requires the ability to master technology and be able to collaborate with artificial technology so that it will produce thought patterns and styles, strategies, techniques and learning methods that are appropriate for the era, namely the digital era, comprehensively and with facts on the ground clearly shows that technology must be controlled by humans and not technology that controls humans. For this reason, the appropriate learning method in the digital and technological era is the development of Cognitive Thinking Skills.

## **METHOD**

The research method uses a mix method, namely quantitative and qualitative data. (Murat Doğan Şahin<sup>1</sup>, Gökhan Öztürk, 2019) a pragmatic approach that believes both research methods are necessary and useful, and that both methods can be used together when the research problem requires it. (Ramakrishnan Vivek and Sathiyakumar AICPA CA CPA and CFA Chandrakumar, 2023) These recommendations highlight the potential benefits of using mixed methods research and suggest directions for future research. (John W. Creswel and J. David Creswe, 2018) Qualitative and quantitative research questions (or hypotheses) need to be advanced in a mixed methods study in order to narrow and focus the purpose statement. Before the two data bases can be integrated or combined, they need to be analyzed separately in response to questions. The research population was used as a research sample as totality sampling. The sample was 20 students and the instruments used in this research were valid and reliable results of observations, interviews, documentation (triangulation) and questionnaires. Quantitative data analysis techniques involve calculating validity and reliability, while qualitative data is analyzed based on Huberman and Miles' theory, namely collecting, reducing, verifying and displaying. The data management process is described as follows:



**Figure. 1 Processing Data analysis based on Hubberman and Miles**

Data reduction is carried out continuously during data analysis in order to obtain relevant data. It occurs through factual or objective-descriptive editing, segmentation by taking objective and reflective notes and summarizing the data. In the middle stage, this occurs through coding and memo, and associating activities such as finding themes, clusters and patterns. Then the researcher can carry out data reduction activities independently to obtain data that is able to answer research questions. Data Display, data display is a format that presents information thematically and data displays organize, compress and assemble information by displaying data through graphs, charts and diagrams. The data display is directed so that the reduced data is organized, arranged in a relationship pattern, so that it is easier to understand. Conclusion-Verification, the initial conclusions put forward are still temporary and will change if strong evidence is found that supports subsequent data collection. This verification process is a data verification process so that logical conclusions can be drawn. Then the quantitative data is in the form of a questionnaire using a Likert scale, then validity and reliability are calculated using statistical calculations as follows: The validity test aims to determine the validity of the questionnaire created by the researcher, of the 45 items created after a tryout on the questionnaire, 20 items are valid. by using SPSS version 26 statistical data management to find out whether the item is valid or not, the researcher uses a significance value (P-value) provided that if the significance value is < 0.05 then it is concluded that the item is valid and if the significance value is > 0.05 then it is concluded that the item is invalid.

**Tabel . 1 conclusions based on the correlation table**

Validity of the Instrument Item	Signifi cant value	Signi fican	Descripti on
Item_2	0,001	0,05	Valid
Item_3	0,001	0,05	Valid
Item_4	0,002	0,05	Valid
Item_8	0,003	0,05	Valid
Item_10	0,000	0,05	Valid
Item_12	0,004	0,05	Valid
Item_13	0,000	0,05	Valid
Item_15	0,000	0,05	Valid
Item_17	0,000	0,05	Valid
Item_19	0,001	0,05	Valid
Item_2	0,000	0,05	Valid
Item_4	0,000	0,05	Valid
Item_5	0,002	0,05	Valid
Item_8	0,000	0,05	Valid
Item_10	0,002	0,05	Valid
Item_11	0,000	0,05	Valid
Item_12	0,000	0,05	Valid
Item_13	0,005	0,05	Valid
Item_15	0,000	0,05	Valid
Item_36	0,004	0,05	Valid
<b>TOTAL : 20</b>			

Reliability Statistics	
Cronbach's Alpha	N of Items
.758	21

Based on the statistical reliability table, it shows that the value obtained by Cranach's Alpha is significant at 0,758 > 0,21 meaning that the data can be concluded as reliable. The data from the questionnaires were analyzed quantitatively, the researcher counted the responses from every respondent for every item on the questionnaires after they completed the statements on the questionnaires. as determined by analyzing the score of each student's questionnaire response. The score from every student's questionnaires response were analyzed to assess students' Cognitive Thinking Skills Method with online learning for Speaking Skills in digital era. The researcher used a formula to analyze the students' responses:

$$P = \frac{F}{N}$$



Where :

P = Percentage

F = Frequency of Answer

N = Number of Respondents

## RESULT AND DISCUSSION

The qualitative data that has been collected, it is then reduced which is carried out continuously during data analysis in order to obtain relevant data. The results of data reduction, display, which are organized, arranged in a relationship pattern, so that all data can be concluded-verified as a data verification process so that it can be concluded logically shows that students give positive responses, can learn easily and are confident in practicing the language English by using online speaking classes so that the development of student cognition using the Cognitive Thinking Skill method is more adaptable and flexible in the current era of digitalization. Meanwhile, based on the results of the quantitative data analysis were collected by using questionnaires, namely positive statements and negative statements, which are explained in below:

a. Thought

**Table. 2 Number Item 2**

Item 2			
Media that are easy to use			
Decisions	Frequency	Percent	
Strongly disagree	3	15.0	
Agree	9	45.0	
Netral	8	40.0	
Total	20	100.0	

Data shows that student cognition in online speaking classes has a good impact on the learning process. A percentage of students (15%) chose to strongly disagree, then there were 9 students (45%) who chose the agree category, meaning they gave a positive response. In the neutral category there are 8 students with a percentage of (40%). So, based on the data, it can be concluded that it is easy for students to use it, with a positive response, students think about the learning and then they are able to interpret the

judgment in understanding and deciding to apply this knowledge.

**Table 3. Number Item 2**

Item 2			
Media that can be used by all mobile devices			
Decisions	Frequency	Percent	
Strongly disagree	1	5.0	
Agree	8	40.0	
Netral	5	25.0	
Strongly Agree	6	30.0	
Total	20	100,0	

The percentage data shown that students' cognition in online speaking classes has a positive impact, 8 students who chose to agree (40%) ) and students who chose to strongly agree were 6 people with a percentage of (30%). On the basis of data can be concluded that media can be used by all mobile devices and they can think, access learning from anywhere via the internet.

**Table 4. Number Item 3**

Item 3			
The online speaking classes used attract students' attention			
Decisions	Frequency	Percent	
Strongly disagree	1	5.0	
Agree	5	25.0	
Netral	10	50.0	
Strongly Agree	4	20.0	
Total	20	100,0	

The percentage shown that 10 students (50%) chose the agree category, meaning that online speaking classes have a positive impact on students' cognition during the learning process. The online speaking class used attracts students' attention so that it can improve students' thinking in understanding the learning material.

**Table 5. Number Item 4**

Item 4			
The online speaking media used attracts students' interest in learning			
	Decisions	Frequency	Percent
	Strongly disagree	2	10.0
	Agree	2	10.0
	Netral	9	45.0
	Strongly Agree	7	35.0
	Total	20	100.0

There were 9 students (45%) who chose to agree, then there were 7 students with a percentage (35%) who chose to strongly agree, this data illustrates that the online speaking media used attracts students' interest in learning so that it has a positive impact on students' thinking.

**Table. 6 Number Item 5**

Item 5			
Interesting media allows me to understand speaking learning more quickly			
	Decisions	Frequency	Percent
	Strongly disagree	2	10.0
	Agree	2	10.0
	Netral	9	45.0
	Strongly Agree	7	35.0

	Total	20	100.0
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Item 5 has 7 students with a percentage (35%) agreeing with item 5, then there are 4 students strongly agreeing with a percentage (20%), this means that online speaking classes have a good impact on students.

**Table. 7 Number Item 6**

Item 6			
Speaking learning media that is not boring			
	Decisions	Frequency	Percent
	Strongly disagree	2	10.0
	Agree	8	40.0
	Netral	6	30.0
	Strongly Agree	4	20.0
	Total	20	100.0

There were 6 students who chose to agree with the percentage (30%), and 4 students chose to strongly agree with the percentage (20%), then there were 2 students who chose to agree with the percentage (10%), based on this percentage the number of students who agreed and strongly agreed more so it can be concluded that the online speaking class has good performance and has an impact on students' cognition and is not boring in understanding the lesson.

**Table. 8 Number Item 7**

Item 7			
The media used is very useful			
	Decisions	Frequency	Percent
	Strongly disagree	3	15.0
	Agree	6	30.0
	Netral	7	35.0



Strongly Agree	4	20.0
Total	20	100.0

There were 7 students who chose to agree with a percentage of (35%), who chose to strongly agree, and there were 3 students with a percentage (15%) based on this percentage it can be concluded that more students chose to agree and strongly agree, meaning that the media used was very useful and has a positive impact on the development of students' cognition.

**Table. 9 Number Item 8**

Item 8			
Online speaking class exercises are used to improve students' ability to speak English			
Decisions	Frequency	Percent	
Strongly disagree	2	10.0	
Agree	2	10.0	
Netral	8	40.0	
Strongly Agree	8	40.0	
Total	20	100.0	

There were 8 students who agreed with the percentage (40%), then there were 8 students who strongly agreed with the percentage (40%). Practicing speaking using media is very useful so that students can then assess what they see and know, then make decisions according to their ability to understand the material provided by the lecturer or teacher. This means that online media has received a positive response and can be an alternative to overcome the problem of distance and study time.

a. Judgment

**Table. 10 Number Item 9**

Item 9
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Speaking using online media is easier to understand and understand			
Decisions	Frequency	Percent	
Strongly disagree	1	5.0	
Agree	7	35.0	
Netral	9	45.0	
Strongly Agree	3	15.0	
Total	20	100.0	

The highest percentage agreed was 9 students (45%), then there were 3 students with a percentage (15%) who strongly agreed that the online speaking class was easy to understand, then there were 7 students with a percentage (35%) who chose neutral. Online learning that is easy to understand has the impact of improving students' cognitive development.

**Table. 11 Number Item 10**

Item 10			
Online class learning is very dependent on cellular networks, so make sure the cellular network used is in good condition			
Decisions	Frequency	Percent	
Strongly disagree	4	20.0	
Agree	4	20.0	
Netral	7	35.0	
Strongly Agree	5	25.0	
Total	20	100.0	

The percentage (35%) chose neutral and those who chose strongly agreed. Based on the large percentage of students who speak online depending on the cellular network, this shows

that there is an influence of online speaking and the cellular network affecting students' access to the learning process which influences students' cognition in understanding the material provided.

**Table. 12 Number Item 11**

<b>Item 11</b>			
Feel more comfortable and enjoyable when taking speaking classes using online media			
Decisions	Frequency	Percent	
Strongly disagree	4	20.0	
Agree	7	35.0	
Netral	5	25.0	
Strongly Agree	4	20.0	
Total	20	100.0	

Feeling more comfortable and enjoyable taking speaking classes using online media, then there are 5 students with a percentage (25%) who choose to agree, then there are 4 students with a percentage (20%) who choose to strongly agree and are more comfortable when studying in online speaking classes. Convenience and fun when studying online speaking classes.

**Table. 13 Number Item 12**

<b>Item 12</b>			
Speaking using online media really helps you learn speaking so you are more active and effective			
Decisions	Frequency	Percent	
Strongly disagree	5	25.0	
Agree	8	40.0	
Netral	5	25.0	
Strongly Agree	2	10.0	

Total	20	100.0
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There were 8 students with a percentage (40%) who chose neutral regarding the effectiveness of online speaking classes so that most students chose neutral regarding the effectiveness of online speaking classes in student assessment, then there were 5 students with a percentage (25%) who chose agree, 2 students with a percentage (10%) chose strongly agree.

**Table. 14 Number Item 13**

<b>Item 13</b>			
Online learning is very suitable to be applied after the pandemic to improve students' cognitive thinking skills in mastering technology			
Decisions	Frequency	Percent	
Strongly disagree	1	5.0	
Agree	6	30.0	
Netral	9	45.0	
Strongly Agree	4	20.0	
Total	20	100.0	

There were 9 students with the highest percentage (45%) choosing to agree that online learning is very suitable to be implemented after the pandemic, then there were 4 students who chose to strongly agree with the percentage (20%), there were 6 students who chose neutral with the percentage (30%), so the data illustrates how important it is to do online learning because apart from being able to improve students' cognitive abilities, it also provides the benefits of time efficiency and flexibility which can be done anywhere and at any time.

**Table. 15 Number Item 14**

<b>Item 14</b>			
Distance does not limit the online media learning system during online speaking classes			

Decisions	Frequency	Percent
Strongly disagree	2	10.0
Agree	3	15.0
Netral	8	40.0
Strongly Agree	7	35.0
Total	20	100.0

Distance does not limit the cognitive development of online speaking class students totaling 8 people with a percentage (40%), then 7 students who strongly agree with the percentage (35%), there are 3 students who are neutral with the percentage (15%).

#### C. Decision

**Table. 16 Number Item 15**

Item 15		
Learning can be maximized by online speaking class		
Decisions	Frequency	Percent
Strongly disagree	2	10.0
Agree	3	15.0
Netral	8	40.0
Strongly Agree	7	35.0
Total	20	100.0

There were 7 students chose the neutral category with a percentage (35%), agreed with the percentage (20%), and 6 students with a percentage (30%). This data means that the online learning process can be used optimally by students to understand teaching material so that students are able to develop their cognitive thinking.

**Table. 17 Number Item 16**

Item 16		
It's easy to find the learning resources that you need in online media		
Decisions	Frequency	Percent
Strongly disagree	1	5.0
Agree	4	20.0
Netral	7	35.0
Strongly Agree	8	40.0
Total	20	100.0

Thre were 8 students who strongly agree with learning resources that were easy to find with a percentage (40%), then 7 students answered agree with a percentage (35%) based on this data, online speaking has a positive impact on students' decisions because students can easily get access. to student learning resources during online speaking classes.

**Table. 18 Number Item 17**

Item 17		
Learning can be more flexible by online media		
Decisions	Frequency	Percent
Strongly disagree	1	5.0
Agree	4	20.0
Netral	7	35.0
Strongly Agree	8	40.0
Total	20	100.0

There were 9 students with the highest percentage (45%) choosing to agree that online learning provides more freedom in accessing information, then 8 students chose to strongly

agree with the percentage (40%), Based on data item 17, students can be more flexible in studying online speaking classes and providing positive impact on students' decisions regarding mastery of the speaking material provided.

**Table. 19 Number Item 18**

Item 18			
Online speaking classes are a practical and easy way to use			
Decisions	Frequency	Percent	
Strongly disagree	1	5.0	
Agree	8	40.0	
Netral	8	40.0	
Strongly Agree	8	40.0	
Total	20	100.0	

There were 8 students who chose the neutral category with a percentage (40%) regarding ease of practice and use in speaking classes, then there were 8 students who chose the agree category with a percentage (40%), and there were 4 students with a total percentage (20%) who strongly agreed. Students feel that they find it easy to practice, comfortable to speak online.

**Table. 20 Number Item 19**

Item 19			
Online speaking learning can improve learning achievement, especially improving speaking fluency			
Decisions	Frequency	Percent	
Strongly disagree	4	20.0	
Agree	5	25.0	
Netral	7	35.0	

Strongly Agree	4	20.0
Total	20	100.0

The highest percentage of students chose the agree category with 7 students (35%), then 4 students with a percentage (20%) who strongly agreed with the increase in learning outcomes. Increasing learning outcomes during online speaking classes has a positive impact on students' decisions in learning a foreign language.

**Table. 21 Number Item 20**

Item 20			
Speaking classes via online media can be a post-Covid-19 learning solution.			
Decisions	Frequency	Percent	
Strongly disagree	3	15.0	
Agree	2	10.0	
Netral	9	45.0	
Strongly Agree	6	30.0	
Total	20	100.0	

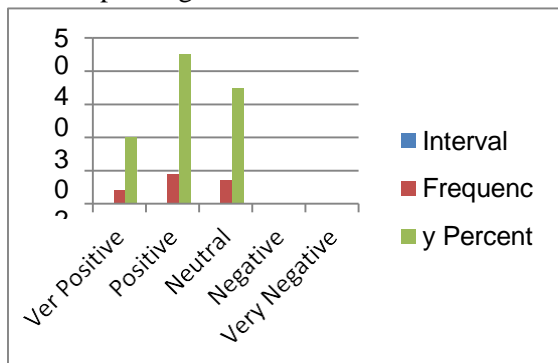
The highest percentage of students who chose the category agreed that online speaking classes could be a solution to the post-Covid-19 pandemic learning system as many as 9 students (45%), then 6 students who chose strongly agreed with the percentage (30%) So based on the data it shows that online speaking classes has a good impact on the post-covid-19 learning system, and this also has a good impact on student decisions.

**Table. 22 Frequency Data of student cognition of online speaking class**

Category	Interval	Frequency	Percent
Very Positive	95-110	4	20%
Positive	77-94	9	45%
Neutral	59-76	7	35%
Negative	41-58	0	0

Very Negative	22-40	0	0
Total			100

After getting data from questionnaire data regarding students' perceptions about students' Cognition by Cognitive Thinking Skills Method with online learning, EFL in online speaking classes, it can be seen that students have positive statements about how students' cognition in online speaking class.



**Figure. 2 Diagram Result**

English Foreign Language (EFL) Students' Cognition by Cognitive Thinking Skills Method with online learning Questionnaire data analysis by distributing 20 valid questionnaires has been used to determine the impact of EFL students' cognition in online speaking classes. Questionnaires were distributed to 20 class students in the English education program at UIN Fatmawati Sukarno for the 2022/2023 academic year. The questionnaires of instrument contain aspects of Students' Cognition by Cognitive Thinking Skills Method with three indicators thought, judgement and decision. This research used Linkert Scale with 5 points. Questionnaires were distributed in class by researchers. Before distributing the questionnaire, the researcher tested the questionnaires to find out which questionnaire was valid and reliable to use. The results of the questionnaire data, the majority of students have positive statements regarding Student Cognition using the Cognitive Thinking Skills Method with online learning to speak Foreign English online, this can be seen from the data obtained where 45% of students gave a positive response, then 25% of the total respondents gave a response towards online speaking classes using the Cognitive Thinking Skills Method with online learning in the very positive category, and the

other 35% chose neutral and were able to take online speaking classes using the good cognitive Thinking Skills method.

## CONCLUSION

Qualitatively, after the data has been analyzed by reducing, displaying data, conclusion-verification, it can be concluded rationally and logically that students give positive responses, can learn easily and are confident to practice speaking English using online media so that students' cognitive development increases. Develop by supporting the application of the Cognitive Thinking Skill method so that the learning process is more adaptable and flexible in the current era of digitalization.

Quantitatively, the data shows that the majority of students have positive statements regarding Student Cognition using the Cognitive Thinking Skills Method with online learning to speak Foreign English online, the percentage shows that 45% of students gave a positive response to the Cognitive Thinking Skills Method with online learning, then 25% of the total students responded to the online speaking class in a very positive category towards the Cognitive Thinking Skills Method with online learning, and the other 35% chose neutral and were able to take part in the online speaking class with good cognition

## REFERENCES

- Amy Lawson Moore, Terissa Miller and., et all (2019). Comparing Two Methods of Delivering ThinkRx Cognitive Training to Children Ages 8–14: a Randomized Controlled Trial of Equivalency', *Journal of Cognitive Enhancement*, 3, pp. 261–270. Available at: <https://doi.org/DOI:10.1007/s41465-018-0094-z>.
- Borg, S. (2022). Review article Teacher cognition in language teaching : A review of research on what language teachers think , know , believe , and do', pp. 81–109. Available at: <https://doi.org/10.1017/S0261444803001903>.
- Chang, CC., Yang, ST. (2023). Interactive effects of scaffolding digital game-based learning and cognitive style on adult learners' emotion, cognitive load and learning performance', *Int J Educ Technol High Educ*, 20(20 March 2023), p. 16. Available



- at: <https://doi.org/10.1186/s41239-023-00385-7>.
- CNN Indonesia (2022). Warga RI Tak Fasih Berbahasa Inggris, Posisi ke-81 dari 111 Negara', CNN Indonesia.
- Cynthia S. Sunal and Vivian H. Wright (2012). Online Learning. In: Seel, N.M. (eds) Encyclopedia of the Sciences of Learning', in. Boston, MA.: Springer Science+Business Media, LLC.
- Daniel Weitekamp and Kenneth Koedinger (2023). Computational Models of Learning: Deepening Care and Carefulness in AI in Education', International Conference on Artificial Intelligence in Education [Preprint], (30 June 2023). Available at: [https://doi.org/10.1007/978-3-031-36336-8\\_2](https://doi.org/10.1007/978-3-031-36336-8_2).
- Davy Tsz Kit Ng, Wanying Luo, et all (2022). Using digital story writing as a pedagogy to develop AI literacy among primary students', Computers and Education: Artificial Intelligence, 3.
- Dziubaniuk, O., Ivanova-Gongne, M. & Nyholm, M (2023). Learning and teaching sustainable business in the digital era: a connectivism theory approach', International Journal of Educational Technology in Higher Education, 20. Available at: <https://doi.org/10.1186/s41239-023-00390-w>.
- Ekene Francis Okagbue and Tosin Yinka Akintunde, et all. (2023). A comprehensive overview of artificial intelligence and machine learning in education pedagogy: 21 Years (2000–2021) of research indexed in the scopus database', Social Sciences & Humanities, 8(1).
- Erin Tharalson, Michelle Morgan. et all (2023). Innovative Digital Pedagogy: Adaptive Learning Platform Integration in Nurse Practitioner Curriculum', The Journal for Nurse Practitioners The Journal for Nurse Practitioners, 19(10 november).
- Fenglin Jia, Daner Sun and Chee-kit Looi (2023). Artificial Intelligence in Science Education (2013–2023): Research Trends in Ten Years', Journal of Science Education and Technology [Preprint], (Oktober 2023).
- Available at: <https://doi.org/10.1007/s10956-023-10077-6>.
- Geoffrey Broughton, et.al (2020). Teaching English as a Foreign Language', in. New York: Routledge, p. 6.
- Goldberg, B and Robson, R (2023.) AI to Support Guided Experiential Learning', Book cover Book cover International Conference on Artificial Intelligence in Education, p. 30 June 2023. Available at: [https://doi.org/10.1007/978-3-031-36336-8\\_16](https://doi.org/10.1007/978-3-031-36336-8_16).
- Ina Blau, Tamar Shamir-Inbal and Orit Avdiel (2020). How does the pedagogical design of a technology-enhanced collaborative academic course promote digital literacies, self-regulation, and perceived learning of students?', The Internet and Higher Education, 45.
- Isaac, O. et al. (2019). Online learning usage within Yemeni higher education: The role of compatibility and task-technology fit as mediating variables in the IS success model', Computers and Education, 136(November 2017), pp. 113–129. Available at: <https://doi.org/10.1016/j.compedu.2019.02.012>.
- Isotani, S, Bittencourt, I., G and Walker, E (2023). Artificial Intelligence and Educational Policy: Bridging Research and Practice', Book cover Book cover International Conference on Artificial Intelligence in Education [Preprint], (30 June 2023). Available at: [https://doi.org/10.1007/978-3-031-36336-8\\_9](https://doi.org/10.1007/978-3-031-36336-8_9).
- Jane Yeomans (2023). Cognitive Thinking Skills', Structural learning, Cmbridge, UK.
- John W. Creswel and J. David Creswe (2018) 'Research Design Qualitative, Quantitative, and Mixed Methods Approaches', in. in the United States of A: ition. | Los Angeles.
- Kumar, A. et al. (2021). Impact of the COVID-19 pandemic on teaching and learning in health professional education: a mixed methods study protocol', BMC Medical Education, 21(1), pp. 1–7. Available at:



- <https://doi.org/10.1186/s12909-021-02871-w>.
- Lijuan Zhang (2022). The Transformation and Upgrading of English Teaching Modernization under the Background of Information Technolog', MATEC Web of Conferences [Preprint]. Available at: <https://doi.org/DOI:10.1051/mateconf/202235901025>.
- Ludovico Bullini Orlandi (2016). Organizational capabilities in the digital era: Reframing strategic orientation', Journal of Innovation & Knowledge, Vol. 1.(Issue 3.), pp. 156–161.
- Miri Barak and Carmella Shahab (2022). The Conceptualization of Critical Thinking: Toward a Culturally Inclusive Framework for Technology-Enhanced Instruction in Higher Education', Journal of Science Education and Technology [Preprint], (20 September 2022). Available at: <https://doi.org/10.1007/s10956-022-09999-4>.
- Murat Doğan Şahin<sup>1\*</sup>, Gökhan Öztürk (2019). Mixed method research: Theoretical foundations, designs and its use in educational research. International Journal of Contemporary Educational Research', International Journal of Contemporary Educational Research, 6, Number 2, pp. 301–310.
- ÖZTÜRK, M. (2021). Teacher cognition: A powerful phenomenon developing and governing habits of teaching', Turkish Journal of Education, 10(2), pp. 178–194. Available at: <https://doi.org/10.19128/turje.801945>.
- Parthasarathy Pk , Amit Mittal and Arun Aggarwal (2023). Literature Review: Learning Through Game-Based Technology Enhances Cognitive Skills', International Journal of Professional Business [Preprint]. Available at: <https://doi.org/DOI:10.26668/businessreview/2023.v8i4.1415>.
- Rajneesh Chowdhury (2023). Holistic Flexibility for Deploying Systems Thinking as a Cognitive Skill', Systemic Practice and Action Research, 36(5). Available at: <https://doi.org/DOI:10.1007/s11213-022-09626-8>.
- Ramakrishnan Vivek and Sathiyakumar AICPA CA CPA and CFA Chandrakumar (2023). A critical review of the mixed method application and its criticism. Social A CRITICAL REVIEW OF THE MIXED METHOD APPLICATION AND ITS CRITICISM', Social Work and Education, 10, pp. 242–253. Available at: <https://doi.org/DOI:10.25128/2520-6230.23.2.8>.
- Ramesh Kumar Chaturvedi, Vishal Verma, Kushendra Mishra (2022). Differential effect of pre and post cognitive skills training program: a study on healthy young children', Smart Learn. Environ, 9(17 January 2022), p. 7. Available at: <https://doi.org/10.1186/s40561-021-00185-4>.
- Sadaf Taimur and Motoharu Onuki (2022). Design thinking as digital transformative pedagogy in higher sustainability education: Cases from Japan and Germany', International Journal of Educational Research, 144.
- Shengnan Wang, Aaron Wilson., et al (2023). Opportunities to learn literacy in digital classrooms in New Zealand primary schools: Does class achievement level make a difference?', Teaching and Teacher Education, 130.
- Simone M. Ritter and Nel Mostert (2017). Enhancement of Creative Thinking Skills Using a Cognitive-Based Creativity Training', Journal of Cognitive Enhancement [Preprint]. Available at: <https://doi.org/DOI:10.1007/s41465-016-0002-3>.
- Sugiyono (2018). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung: Alfabeta CV.
- Wasana Karunarathne & Angelito Calma (2023). Assessing creative thinking skills in higher education: deficits and improvements', Studies in Higher Education [Preprint]. Available at: <https://doi.org/10.1080/03075079.2023.2225532>.
- Ya-Yu Claudia Ho (2020). Communicative language teaching and English as a foreign language undergraduates' communicative competence in Tourism English', Journal

of Hospitality, Leisure, Sport & Tourism Education, 27.

Yehudit Judy Dori and Rea Lavi (2023). Teaching and Assessing Thinking Skills and Applying Educational Technologies in Higher Education', Journal of Science

Education and Technology [Preprint], (8 agustus 2023). Available at: <https://doi.org/10.1007/s10956-023-10072-x>.

Yujie Wei, Jiaxin Ye and et all (2023). Online Prototype Learning for Online Continual Learning', Reaserch gate [Preprint].