*Prisma Sains: Jurnal Pengkajian Ilmu dan Pembelajaran Matematika dan IPA IKIP Mataram*
*https://e-journal.undikma.ac.id/index.php/prismasains/index*
*e-mail: prismasains.pkpsm@gmail.com*

*July 2024. Vol. 12, No. 3*
*p-ISSN: 2338-4530*
*e-ISSN: 2540-7899*
*pp. 528-538*

# Field Independent/Field Dependent Student Thinking Interaction in Learning Quadratic Equations

**Syaiful Huda**
Mathematics Education Department, Faculty of Teacher Training and Education, Universitas Muhammadiyah Gresik. Jl. Sumatera 101 GKB, Gresik 61121, Indonesia.

*Corresponding Author e-mail: syaifulhuda@umg.ac.id

Received: June 2024; Revised: July 2024; Published: July 2024

**Abstract**

Mathematics learning occurs within the context of classroom interaction. This interaction entails the engagement of students with their peers, both within the whole class setting and within smaller group settings. Furthermore, students interact with their teachers and utilize various learning resources during the process of mathematics learning. This study aims to explore the role played by students with field-independent and field-dependent cognitive styles in the context of mathematics learning in vocational schools. The research methodology employed for this study is a case study approach. The findings of this research revealed that there existed a division of student roles within the groups, which was determined through collaborative decision-making amongst the group members. The division of student roles during class discussions can be summarized as follows: 1) In order to successfully complete the activities assigned by the teacher, it is imperative to establish a division of roles within the groups. 2) Various interaction patterns were observed, including requests for help, provision of assistance, and negotiation. 3) The pattern of Thinking Interaction observed indicated distinct roles for the three students with field-independent cognitive styles. Consequently, this finding contradicts Witkin's assertion that field independents prefer to work independently.

**Keywords:** Pattern Interaction; Thinking; Mathematics

**How to Cite:** Huda, S. (2024). Field Independent/Field Dependent Student Thinking Interaction in Learning Quadratic Equations. *Prisma Sains : Jurnal Pengkajian Ilmu dan Pembelajaran Matematika dan IPA IKIP Mataram, 12*(3), 528-538. doi:https://doi.org/10.33394/j-ps.v12i3.12198

https://doi.org/10.33394/j-ps.v12i3.12198



## INTRODUCTION

Classroom interaction is an important element in determining learning success, especially in mathematics. This interaction is a significant activity for effective learning (Bishop, 1988; Elber, 2003). Interaction in mathematics learning in the classroom can occur between teachers, students and learning resources (Setianingsih, 2017) so that it can build an interactive social environment, with the main aim of improving the learning process (Chi, 2009; Elber, 2003; Gravemeijer & Cobb, 2006; Gravemeijer & Terwel, 2000; Liu, T., Tan, T., & Chu, 2007; Knowledge et al., 2017; This interaction is not just a conversation, but a thinking interaction that builds students' understanding and cognitive structures. Interaction is an internal transformation from one agent to another which results in the formation of a new structure or re-structuring of the existing schema (cognitive structure) (Parta, 2018). Previous research shows that peer interaction, including group discussions, improves mathematical understanding and is an effective way to promote student performance (Apriliyanto et al., 2018; Ayuwanti et al., 2021; César, M. & Torres, 1997; César , 1997; Chapman, 2004; Vygotsky, 2016).

Apart from that, interactions are also influenced by cognitive style. Cognitive styles, such as field independent and field dependent, also influence this interaction. Previous research

focused on cognitive styles which concluded students' tendencies in obtaining, processing, and organizing information in mathematics learning and presenting this information again based on experience (Kane et al., 2016). Cognitive style describes how a student interacts in receiving and organizing surrounding information (Woolfok, Anrita, 1993) such as learning mathematics in class. Furthermore, cognitive style refers to the consistency of patterning that students produce with intellectual approaches and/or strategies in solving problems (Coop, 1974) in learning mathematics.

This research is different from previous research because it focuses on student interaction. Pedagogically, the roles that can be given to students in small groups, such as: a) The Summarizer, b). The Researcher (researcher), c). The Checker (checker), d). The Runner, e). The Observer/Troubleshooter (observer/conflict resolver), f). The Recorder (recorder) (Johnson, David W.; Johnson, 1994). The phenomenon in the field shows that field independent students can regulate the roles of other students in group discussions. This is contrary to the assumption that field independent students prefer to work independently (Witkin HA, 1981). This phenomenon encourages researchers to find out more about the role that can be played in students with field independent and field dependent cognitive styles in learning quadratic equations. This, in accordance with the opinion of Radulovic & Stancic, emphasizes the need to question and reorganize the roles of students and teachers in the learning process (Vietri et al., 2020).

This research aims to analyze the interaction patterns of field independent and field dependent students' thinking in learning quadratic equations. It is hoped that the research results can become an alternative strategy for teachers in helping students achieve learning goals. This research is different from previous research because it focuses on thinking interactions and considers students' cognitive styles. The formulation of the problem in this research is how does field independent and field dependent student thinking interact in learning quadratic equations? The aim of this research is to qualitatively analyze the interaction patterns of field independent and field dependent students' thinking in learning quadratic equations. It is hoped that the results of this research can help teachers in: 1) Understanding the interaction of field independent and field dependent students' thinking, 2) Developing learning strategies that suit students' cognitive styles, 3) Improving student learning outcomes in learning quadratic equations. It is hoped that this research can contribute to the development of more effective and student-centered mathematics learning.

## METHOD

This research is qualitative research with a case study design. The case study design was chosen to provide facts in the field (Ferguson, 2013) about the interaction patterns of field independent and field dependent students' thinking in mathematics learning about quadratic equations. The instruments used in this research include the main instrument and supporting instruments: the main instrument is the researcher as a non-participant observer, namely observing and recording phenomena (Creswell, 2012) of student thinking interactions in mathematics learning. Meanwhile, the Supporting Instrument consists of 1) an interview guide containing questions such as a) why do you mention reasons like this?; b) why choose these functions instead of quadratic functions. Other questions are contained in the attachment to the research instrument which aims to explore information related to the thinking interactions that have been carried out during learning. 2) Student worksheets contain mathematical problems about quadratic equations which are designed to encourage students' thinking interactions. 3) Field notes function to record the chronology of events and a general description of student thinking interactions and the roles played by students. 4) Audiovisual camera: to record images, atmosphere, behavior and sounds during the research.

This research was conducted during 4 meetings in mathematics learning about the concept of quadratic equations. Participants in this research were students of SMK Negeri 1

Cerme-Gresik who met the criteria, namely: 1) Having a field independent cognitive style of 3 students, 2) Having a field dependent cognitive style of 2 students.

The researcher acted as an observer of students' thinking interactions in learning quadratic equations which was photographed while students were working on student worksheets. Next, the researcher conducted interviews to dig up information related to the thinking interactions that had been carried out during the lesson. Researchers analyzed the data obtained by reading all the data in the form of student worksheet work, field notes, interview results, and learning recordings. Then, interpret it with codes for participants such as ($FI_1$: Field Independent 1, $FI_2$: Field Independent 2, $FI_3$: Field Independent 3, $FD_1$ : Field Dependent 1, $FD_2$ : Field Dependent 2), the role of participants during student thinking interactions in learning the concept of quadratic equations such as (Main actor, Secondary Actor, and Delayed Lead Actor). The final stage carried out by the researcher was to present and interpret the findings from the research.

This research has several limitations (Creswell, 2012), namely: Limited research time which is adjusted to the number of learning meetings on quadratic equation material, because the researcher does not have his own class. It is hoped that this research can contribute to the development of more effective and student-centered mathematics learning.

## RESULTS AND DISCUSSION

This research began by conducting an initial study and administering a cognitive style test to obtain participants who met the criteria in accordance with the objectives so that it could be used to understand the phenomenon of interaction between field independent and field dependent students' thinking in learning mathematics about the concept of quadratic equations. The selected participants consisted of 3 men and 2 women who had different characteristics in terms of knowledge or skills as well as cognitive style as follows $FI_1$ = AK (Lk); $FI_2$ = FS(Lk); $FD_1$ = D(Lk); $FD_2$ = KN(Pr); $FI_3$ = AA (Pr). The selection of participants was based on the fact that when group discussions were carried out, these participants divided roles in the group discussion when completing the activities given on the student worksheet.

Next, the results of the research are given regarding the interaction patterns that occur in the learning process. In this group, students' thinking interactions in completing student worksheets on the concept of quadratic equations are: 1) Interaction of providing assistance, 2) Interaction of asking for help, and 3) Interaction of discussion or negotiation. Tables 1-3 show the participants who interacted and a description of the interactions carried out.

**Table 1.** Interactions providing assistance

| Helpful participants | Assisted participants | Description |
|---|---|---|
| $FI_2$ Students | $FI_1$ Students | 1. Provide assistance in the form of an explanation of the reasons why only problem 1b is a quadratic function and the other functions are not quadratic functions<br>2. Provide assistance in the form of opinions regarding conclusions to answer No. 9 |
| $FI_1$ Students | $FD_1$ Students | 1. Provide assistance in the form of explanations on how to draw graphs via Geogebra |
| $FI_1$ Students | $FD_2$ Students | 1. Provide assistance in the form of explanations on how to draw graphs via Geogebra |
| $FI_1$ Students | $FI_3$ Students | 1. Provide assistance in the form of explanations on how to draw graphs on worksheet |
| Teacher | $FI_1$ Students | 1. Providing assistance in the form of explanations about (ideas) examples of coefficients. |

| Helpful participants | Assisted participants | Description |
|---|---|---|
| | | 2. Provide assistance in the form of answering No. 9 which is the conclusion of all activities in worksheet 1 |
| Teacher | $FD_2$ Students | 1. Provide guidance on answering question no. 5 – 8.<br>2. Provide assistance in the form of (ideas for) possible numbers that can be used to create different graphic shapes |
| Teacher | $FI_3$ Students | 1. Provide assistance on how to draw appropriate graphs on worksheet |

Based on Table 1. We can see that the participant who interacted a lot with other participants was $FI_1$. $FI_1$ interacted to provide assistance to participants $FD_1$, $FD_2$, and $FI_3$. Meanwhile, $FI_2$ only provided assistance to $FI_1$ once and did not interact with other participants. On the other hand, the interaction of asking for help obtained the opposite result from the interaction of giving help. Where, FI1 asks for help from FI2 and other participants ask for help from FI1. Results can be seen in Table 2.

**Table 2.** Interactions asking for help

| Participants who ask for help | Participants Asked for Help | Description |
|---|---|---|
| $FI_1$ Students | $FI_2$ Students | 1. Ask for an explanation of the reasons why only problem 1b is a quadratic function and the other functions are not quadratic functions<br>2. Ask for ideas to answer No. 9 about the general form of quadratic functions and the reasons |
| $FD_1$ Students | $FI_1$ Students | 1. Asking for ideas on how to draw graphs via Geogebra |
| $FD_2$ Students | $FI_1$ Students | 1. Asking for ideas on how to draw graphs via Geogebra<br>2. Asking for ideas on how to put images on Canva |
| $FI_3$ Students | $FI_1$ Students | 1. Ask for an explanation whether the way to draw graphs on the LKPD is correct<br>2. Ask for an explanation whether the answer on Canva is correct |
| $FI_1$ Students | Teacher | 1. Ask for an explanation of (the idea of) the coefficient example<br>2. Ask for ideas on how to answer No. 9 which is the conclusion of all activities in LKPD 1 |
| $FD_2$ Students | Teacher | 1. Ask for ideas/hints to answer question no. 5 – 8 to bring up different graphic shapes<br>2. Ask for an explanation whether the image that has been made is in accordance with the request in question no. 5 – 8. |
| $FI_3$ Students | Teacher | 1. Asking for ideas on how to draw the right graph on the LKPD |

**Table 3.** Discussion or negotiation interactions

| Discussion or Negotiation between Students | Description of Discussion or Negotiation |
|---|---|
| $FI_1$ Students, $FI_2$ Students | 1. Discuss the reasons why it is a quadratic function and not a quadratic function |

| Discussion or Negotiation between Students | Description of Discussion or Negotiation |
|---|---|
| | 2. Hold negotiations to conclude the activity (answer question No.9) |
| $FI_1$ Students, $FD_1$ Students | 1. Discuss the quadratic function and its graph in question no. 6 |
| $FI_1$ Students, $FD_2$ Students | 1. Discuss the quadratic function and its graph in question no. 5<br>2. Negotiate the appearance of decimal values in quadratic functions |
| $FI_3$ Students, $FD_2$ Students | 1. Discuss the answer to question no. 9 |
| $FI_1$ Students, $FI_3$ Students | 1. Discuss the quadratic function and its graph in question No.7<br>2. Negotiating the emergence of negative numbers in quadratic functions |
| $FI_1$ Students, $FI_2$ Students, $FI_3$ Students, $FD_1$ Students, $FD_2$ Students | 1. Discuss the quadratic function and its graph in question no. 8<br>2. Discuss the conclusions on question no. 9<br>3. Negotiate the results of the answers to all the questions that have been done before being done<br>4. Discuss their respective roles in the presentation |

In discussion or negotiation interactions, the emergence of activities that remain concentrated on the activities carried out by $FI_1$ participants is obtained. Negotiation interactions arise because of different thoughts regarding the answer given, for example negotiating whether to produce a decimal number or not, whether a negative number appears or not, and negotiating for the results of the written answer. Meanwhile, discussion interactions arise when other participants want to know the answers from each participant. More details of the discussion or negotiation interactions that emerged can be seen in Table 3.

The results obtained in observing the productive thinking interactions of field independent/field dependent students in the quadratic equation material presented in Table 4.

**Table 4**. Student activities in thinking interactions and their roles

| Indicator | Activity | Field Notes | $FI_1$ | $FI_2$ | $FD_1$ | $FD_2$ | $FI_3$ |
|---|---|---|---|---|---|---|---|
| convey ideas from the results of understanding | convey the idea of the definition of quadratic equations and not quadratic equations | | √ | | | | √ |
| | convey the idea of what are called variables, coefficients, and constants | | √ | √ | | | |
| | convey the idea of making graphs with geogebra | | √ | | | √ | |
| | convey the idea of obtaining the general form of quadratic equations | | | √ | √ | | |
| | convey ideas for creating different graphic shapes | $FI_2$ Ask the friend to make a graph by giving negative numbers | | √ | | | |

| Indicator | Activity | Field Notes | $FI_1$ | $FI_2$ | $FD_1$ | $FD_2$ | $FI_3$ |
|---|---|---|---|---|---|---|---|
| | convey ideas for how to draw graphs | $FI_1$ asks to create a chart with 4 quadrants because $FD_1$ previously asked for only 2 quadrants | | | √ | | √ |
| criticize the ideas of his friends with ideas that have been developed | criticize his friends' ideas in making graphs | $FI_1$ asks to create a graph with 4 quadrants | | √ | | | |
| | criticized his friend's ideas in determining variables, coefficients and constants | | | | √ | | |
| | Criticize friends who only come up with whole numbers to form quadratic equations | | √ | √ | | | |
| convey new ideas and are different from previous ideas | conveyed the idea of comparing geogebra results and manual graphics | | √ | | | √ | |
| negotiating ideas | Main actor: | Variables are in the form of letters, constants are in the form of letters, and coefficients are numbers that contain letters | √ | | | | |
| | Secondary Actor: | What is the difference between variables, constants and coefficients | | | | √ | √ |
| | Delayed Lead Actor: | Knowing what is symbolized is a machine | | √ | | | |

Table 4 shows that thinking interactions are dominated by $FI_1$ participants. Participant $FI_1$ actively conveys ideas from the results of understanding the questions, criticizes other participants regarding the ideas given, generates new ideas from answers given by other participants, and becomes the main actor in negotiating ideas, participants $FI_3$ and $FD_2$ become secondary actors who ask questions and follow the steps given by $FI_1$ and $FI_2$. Meanwhile, participants who both have a field independent cognitive style, namely $FI_2$, carry out thinking interactions when there is a stimulus given by $FI_1$ and bring up the delayed role of the main

actor, namely participants who already understand the answer but do not provide a direct answer to the other participants.

## Discussion

### *Learning experience in dividing roles in discussion groups*

From the results of observations during 4 meetings and data analysis carried out, it was found that before conducting group discussions, students shared roles in completing the LKPD given by the teacher. The division of student roles in the discussion is as follows: 1) $FI_1$ (male) acts as chairman or discussion leader. $FI_1$ students are considered to be able to organize the work of other students. $FI_1$'s role is to provide explanations to other friends after $FI_1$ has discussed with $FI_2$, draw graphs with Geogebra, determine which answers will be written in the LKPD and become joint answers, provide conclusions from the explanation during the presentation. 2) $FI_2$ (male) acts as a validator of answers that have been discussed by other friends in one group, draws graphs with Geogebra, provides explanations in the presentation if there are questions from other groups. 3) $FI_3$ (Female) plays the role of looking for answers, writing answers, drawing graphs with Geogebra, delivering answers during presentations. 4) $FD_1$ (Male) plays the role of finding answers, drawing graphs with Geogebra, delivering answers during presentations. 5) $FD_2$ (Female) plays the role of finding answers, drawing graphs with Geogebra, drawing graphs on LKPD, delivering answers during presentations. Pedagogically, roles can be given to students in small groups, such as: a) The Summarizer, b). The Researcher (researcher), c). The Checker (checker), d). The Runner, e). The Observer/Troubleshooter (observer/conflict resolver), f). The Recorder (recorder) (Johnson, David W.; Johnson, 1994).

This division of roles is a criterion that can be considered to promote student interaction (Juárez-Díaz & Ojeda-Ruiz, 2021). Student interactions in cooperative social environments provide many opportunities to observe, imitate, and then develop higher mental functions (Vygotsky, 2016) and demonstrate the importance of students' mathematical development (Chapman, 2004; Yackel et al., 1991). The division of roles gives rise to thinking interactions, students can test ideas or concept (Berg, 2020) and can formulate perceptions about mathematics that demonstrate mathematical understanding (Chapman, 2004; Johnson, David W.; Johnson, 1994) in quadratic equation material.

### *Interaction patterns formed from the learning process*

There is continuous student interaction in learning. This is interesting to observe because the class is divided into 7 groups, only 3 groups have a focus on completing the activities given, one of which is the red group. This shows the need for a learning design that is able to make all students in the class have the same focus in participating in learning and completing activities on the LKPD given by the teacher.

In this group, student interactions in tasks during group learning that emerged were 1) Interactions providing assistance; 2) Interaction asking for help, 3) Discussion or negotiation interaction. The group was able to complete the LKPD given by the teacher, but was not able to connect the information obtained from working on question No. 1 to No. 9. The following is given for each interaction pattern that is formed.

The form of interaction providing assistance that occurs in this group is shown in Figure 1 which was created based on Table 1 above. Based on Figure 1 obtained, we can see that the teacher only provides procedures or facilitates so that participants can answer the problems given. Meanwhile, the interaction of providing ideas and providing explanations to other participants was carried out by participant $FI_1$. Specifically, $FI_2$ provided ideas and explanations to $FI_1$ participants.

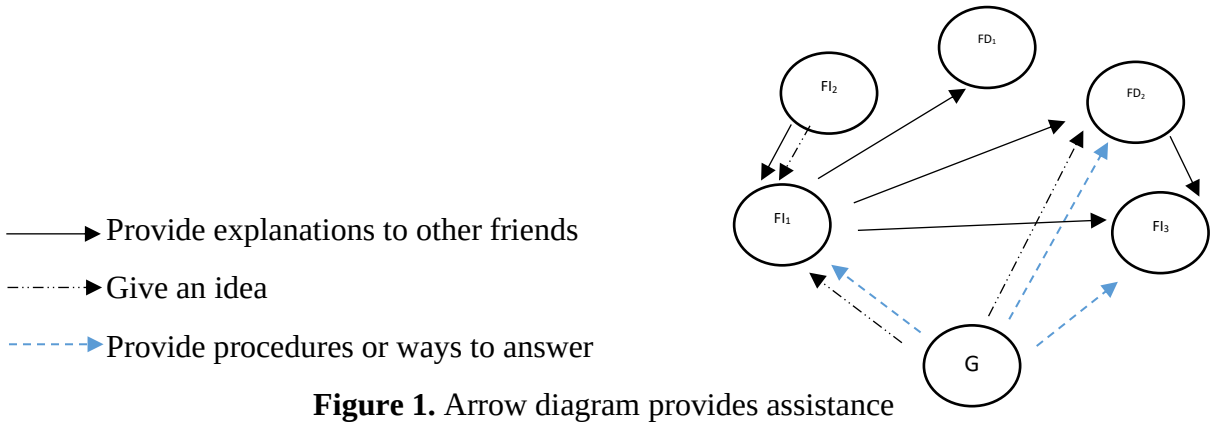


**Figure 1.** Arrow diagram provides assistance

The second form of interaction is interaction asking for help. The forms of interaction providing assistance that occur in this group are shown in Figure 2 which was created based on Table 2 above. Figure 2 shows the roles presented by participant $FI_1$ following the pattern shown in Figure 1. Likewise with participant $FI_2$ who only interacted with participant $FI_1$.

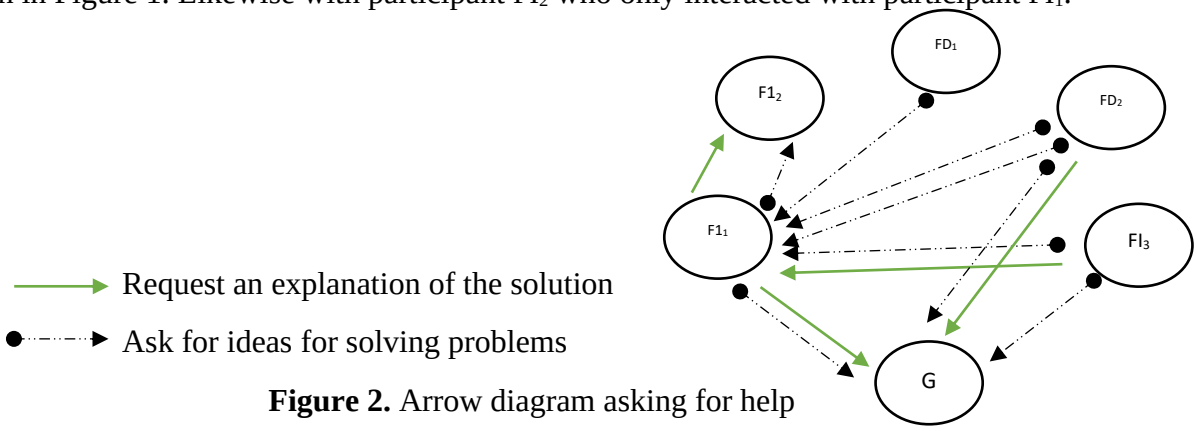


**Figure 2.** Arrow diagram asking for help

The third form of interaction is discussion or negotiation interaction. The form of discussion or negotiation interaction that occurs in this group is shown in Figure 3. Figure 3 shows that this discussion or negotiation interaction only involves students in the group and the teacher does not participate in the interaction. Discussion or negotiation interactions run actively and continuously when students want to get group answers written in the LKPD. In discussion or negotiation interactions, the teacher does not bring up activities because the discussion or negotiation interaction activities are related to the answers raised by the participants.

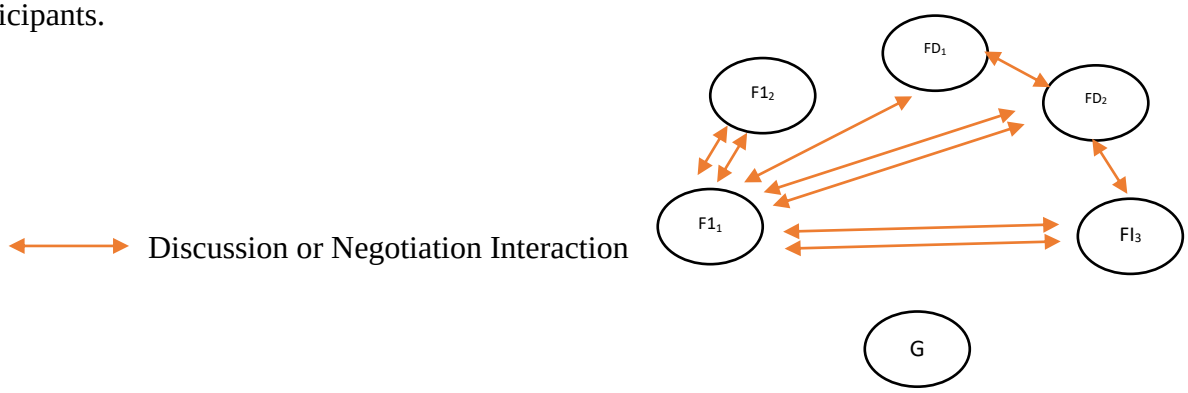


**Figure 3.** discussion or negotiation interaction

From the three interaction patterns obtained in Figures 1 - 3 where participants completed tasks during group learning on quadratic equation material, a combined interaction pattern was obtained as in Figure 4. This interaction pattern determines the retention of knowledge acquired by a person (Parta, 2018).

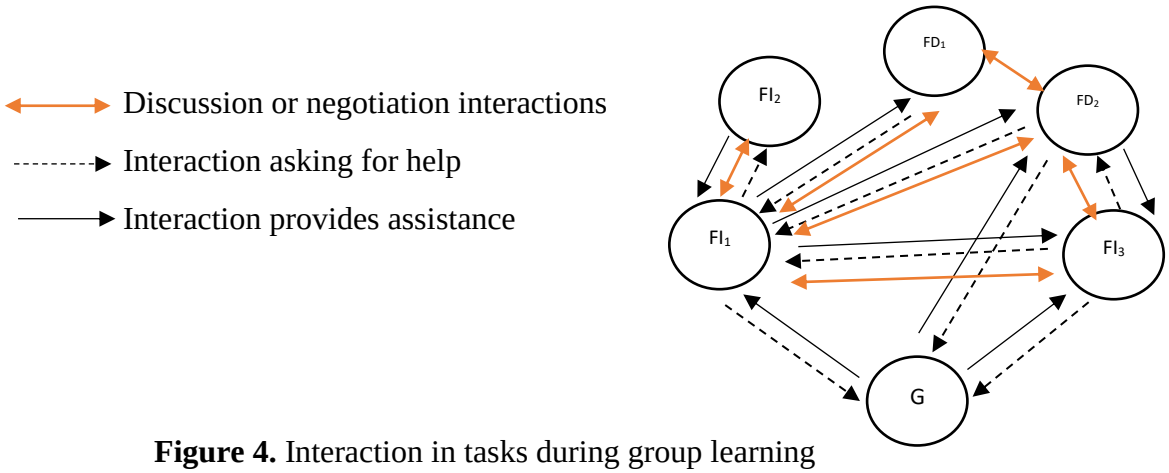


**Figure 4.** Interaction in tasks during group learning

The interaction pattern that was formed gave rise to the result that participants with a field independent cognitive style, namely $FI_1$, had interactions that were different from the characteristics that should appear in individuals who have a field independent cognitive style. Field independent students also have disadvantages, namely they are less sensitive to other people's feelings and are not effective in social situations (Anita E, 2004). However, the interaction patterns obtained actually show that $FI_1$ is the center of the interactions that emerge in learning. This is in contrast to the opinion that students who have a field independence cognitive style depend on an internal frame of reference and prefer to do activities on their own (Witkin HA, 1981).

This fact was strengthened in the deeper analysis carried out, namely pattern interaction of field independent/field dependent students' thinking in learning quadratic equations. Based on Table 4, we obtain the emerging pattern of student thinking interactions, which is shown in Figure 5 below.

Information:

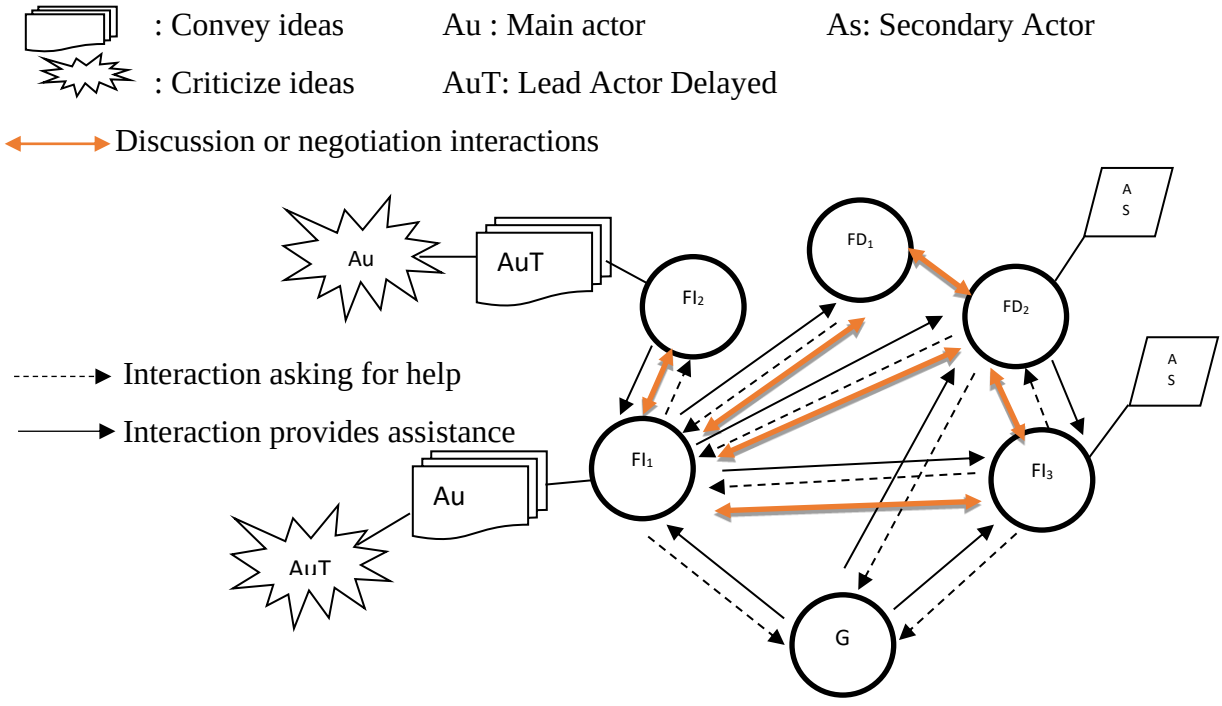


**Figure 5.** Thinking Interaction Patterns of FI/FD students

Apart from that, from observing activities, it was found that those who were more of the main actors in productive thinking interactions in learning quadratic equations were $FI_1$ students with a field independent cognitive style and acting as leaders. Meanwhile, $FI_2$ students who both have a field independent cognitive style are more of a delayed main actor, who know

what other friends are asking but do not actively provide answers. $FI_2$ students act more as validators in student thinking interactions. Meanwhile, $FD_2$ and $FI_3$ students are more dominant as secondary actors, who need help from other students. Another finding is that $FI_3$ students in learning quadratic equations should find it easier to explain complex things and solve problems more easily, and learn natural science and mathematics more easily(Anita E, 2004; Wahidah et al., 2024; Witkin HA, 1981). However, the role that appears in $FI_3$ students' thinking interactions is the opposite and is more of a secondary action, which in fact is the student asking questions and following the steps given by other students.

## CONCLUSION

In this study, researchers found different phenomena in students who had a field independent cognitive style, namely 1) field independent 1 students had high social interactions with other students, 2) field independent 2 students only interacted with field independent 1 students and liked work alone, 3) field independent 3 students only interact to ask for help and follow the steps given by other students. On the other hand, the division of roles found in this research can encourage thinking interactions among all students in learning quadratic equations.

## RECOMMENDATION

In future research, more in-depth research can be carried out on students' thinking interaction patterns by paying attention to the scores on cognitive style tests obtained by students, so that the causes of the phenomena that emerge from this research can be found.

## ACKNOWLEDGMENT

We would like to thank the students who agreed to become research subjects and the teachers who accompanied them during the research. Apart from that, we would not forget to thank the Directorate of Research and Community Service at the University of Muhammadiyah Gresik for providing support for this research.

## REFERENCES

Anita E. (2004). *Woolfolk dan Lorraine McCune-Nicolich. Mengembangkan Kepribadian dan Kecerdasan Anak-anak.* Inisiasi Press.

Berg, G. van den. (2020). Context Matters : Student Experiences of. *Turkish Online Journal of Distance Education-TOJDE*, *21*(October), 223–236.

Chapman, O. (2004). Facilitating Peer Interactions in Learning Mathematics: Teachers' Practical Knowledge. *Proceedings of the 28th Conference of the International Group for the Psychology of Mathematics Education*, *2*, 191–198.

Johnson, David W.; Johnson, R. T. (1994). *Learning Together and Alone. Cooperative, Competitive, and Individualistic Learning. Fourth Edition.* https://eric.ed.gov/?id=ED369778

Juárez-Díaz, C., & Ojeda-Ruiz, L. (2021). Active Participation in the Student-to-Teacher Interaction in Online Synchronous Sessions in Higher Education. *RECIE. Revista Caribeña de Investigación Educativa*, *5*(2), 52–67. https://doi.org/10.32541/recie.2021.v5i2.pp52-67

Parta, N. (2018). *MODEL PEMBELAJARAN INKUIRI Refleksi Membangun Pertanyaan Penghalusan Pengetahuan Internalisasi Pengetahuan Dr . I Nengah Parta , M . Si Departemen Matematika Universitas Negeri Malang*. *February*.

Wahidah, N., Sunardi, S., Suwito, A., Yudianto, E., & Ambarwati, R. (2024). Analisis Habits of Mind Siswa Dalam Menyelesaikan Masalah Segi Empat Ditinjau Dari Gaya Kognitif Field Dependent dan Field Independent. *Proximal: Jurnal Penelitian Matematika Dan Pendidikan Matematika*, *7*(1), 222–234. https://doi.org/10.30605/proximal.v7i1.3131

Witkin HA, G. D. (1981). Cognitive styles: essence and origins. Field dependence and field independence. *Psychol Issues*, *51*, 1–141.

Yackel, E., Cobb, P., & Wood, T. (1991). National Council of Teachers of Mathematics Small-Group Interactions as a Source of Learning Opportunities Second-Grade Mathematics. *National Council of Teachers of Mathematics*, *22*(5), 390–408.