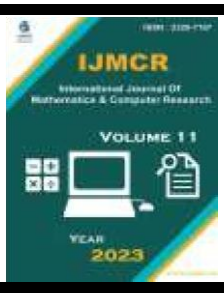
International Journal of Mathematics and Computer Research
ISSN: 2320-7167
Volume 11 Issue 10 October 2023, Page no. – 3827-3836
Index Copernicus ICV: 57.55, Impact Factor: 7.362
DOI: 10.47191/ijmcr/v11i10.07



Mathematical Communication of Prospective Teachers in Teaching Reviewed From Differences in Emotional Intelligence

Sunyoto Hadi Prajitno[1*], Feny Rita Fiantika[2], Satriya Dendy Pinta Yoga[3]
[1]Mathematics Education, Faculty of Science and Technology, Universitas PGRI Adi Buana Surabaya, Jl. Dukuh Menanggal XII Surabaya, East Java, Indonesia 60234, ORCID iD:0000-0001-9824-4924
[2]Primary School Teacher Education, Faculty of Pedagogy and Psychology, Universitas PGRI Adi Buana Surabaya, Jl. Dukuh Menanggal XII Surabaya, East Java, Indonesia 60234, ORCID iD: 0000-0001-7632-5563
[3]SMK Kertanegara, Jl Ir. Sutami 27 Kediri, East Java, Indonesia 64182

ARTICLE INFO
Published Online:
31 October 2023

ABSTRACT
This study was aimed to describe the mathematical communication profiles applied by students of PLP-II program reviewed from emotional intelligence. Qualitative research was applied as the study method with questionnaire and observation as the research instrument. Observations were performed using recording tools (video recording) so mathematical communication done by students while studying can be observed through the recording results. The analysis was conducted in a qualitative-descriptive manner. The results of this study indicated that subjects with high emotional intelligence were capable of showing great mathematical communication skills in the development of learning instrument, comprising seven observed aspects. Meanwhile, subjects with moderate emotional intelligence only demonstrated proficiency in 4 aspects related to the creation of learning materials. In the practical learning setting, subjects with high emotional intelligence exhibited completeness, fluency, accuracy, systematicity, and focus on all observed aspects. This indicated that subjects with high emotional intelligence possessed good mathematical communication abilities in practical learning. As for subjects with moderate emotional intelligence, they only demonstrated proficiency in 14 out of 24 observed aspects, which still fell within the category of good mathematical communication.

Corresponding Author:
Sunyoto Hadi Prajitno

KEYWORDS: mathematical communication, prospective teachers, teaching practice, emotional intelligence.

INTRODUCTION

According to some experts, it is stated that: "The mathematical communication ability of a student is the capability of expressing mathematical ideas through spoken or written words [[1], [8], [9], [10]]. A student's oral mathematical communication ability can be measured when the student articulates their mathematical skills. The written mathematical communication ability of a student can be measured through the student's written expressions about mathematics [[1], [2], [3], [4], [5], [6]]."

In the School Field Introduction Program II (PLP-II), students are trained to be able to express ideas about mathematics, both orally and in writing. While guiding the PLP-II students [31], the researcher often found students trembling, lacking confidence, and experiencing difficulties in conveying mathematical ideas, resulting in a rigid, less engaging learning process, and suboptimal learning outcomes.

One of the reasons for this condition is that students may have difficulty controlling their emotions, causing the mathematical ideas they have learned to disappear momentarily when they stand in front of the class. This leads to students engaging in mathematical communication that differs from what was planned. This study aimed to describe the profile of mathematical communication carried out by students in the PLP-II program in terms of emotional intelligence.

Based on the opinions of several experts, emotional intelligence in this study was classified into three categories: (1) High emotional intelligence ("Measured using an emotional intelligence test with the criteria that if the emotional intelligence test score is ≥ 56, then the student is

categorized as having high emotional intelligence. The indicators encompassed: "Students can accurately recognize emotions, understand and manage even the slightest changes in emotions, have an optimistic attitude, show empathy towards others, can build and deepen social relationships."); (2) Moderate emotional intelligence ("Measured using an emotional intelligence test with the criteria that if the emotional intelligence test score is ($36 \leq$ score ≤ 56), then the student is categorized as having moderate emotional intelligence. The indicators encompassed: "Students sometimes do not fully understand their own feelings or emotions, they may sometimes control their emotions, but at times lose control, they are not yet able to motivate themselves effectively, have difficulty empathizing with others, and struggle to establish good relationships with others."); (3) Low emotional intelligence ("Measured using an emotional intelligence test with the criteria that if the emotional intelligence test score is ≤ 36, then the student is categorized as having low emotional intelligence. The indicators include: "Students have not fully understood themselves, they have unstable emotions and are easily influenced by external factors, which can lead to depression, stress, and hopelessness when facing problems, and they have difficulty self-motivating and empathizing effectively with others [[7]. [8],[9]].

Based on the opinions of several, what is meant by mathematical communication in the teaching practice used in this study is how a prospective teacher can demonstrate the aspects of each teaching practice activity completely, clearly, accurately, fluently, systematically, and with focus [[10], [11], [12], [13]].

RESEARCH METHOD

This study was qualitative research, and the supporting research instruments encompassed an emotional intelligence questionnaire, interview guide for learning tools, and observation guideline for teaching practice [28]. Observations were performed using recording tools (video recording) so mathematical communication done by students while studying can be observed through the recording results.

The instrument used to select the research subjects was an emotional intelligence test proposed by several experts and modified by the researcher in a previous study. However, this test has been further modified to match the current conditions and validated by psychology experts at PGRI Adi Buana University in Surabaya, specifically by Counseling Guidance lecturers. The result of the validation showed that 94% of them stated that the emotional intelligence instrument was feasible to use.

The interview guideline instrument consisted of questions used to explore the profile of mathematical communication of subjects with high emotional intelligence who were currently in the process of developing learning materials. The questions in the interview guideline were fundamental questions that can evolve during the interview. The interview guideline instrument was prepared by the researcher, referencing the opinions of mathematical communication experts and the guidelines for developing learning materials from the PGRI Adi Buana University in Surabaya.

The instrument, that was used a guideline for mathematical communication interviews in teaching practices, was prepared by the researcher, taking into account the opinions of mathematical communication experts and the teaching practice guidelines of PGRI University Adi Buana Surabaya. The guideline for mathematical communication interviews used to explore the communication profiles of subjects with high and moderate emotional intelligence was validated by learning experts and psychologists, with the results indicating that 92% of the guidelines were feasible to use.

The subjects of this study were 73 students from Universitas PGRI Adi Buana Surabaya who were currently taking teaching practice course. Among these students, 39 are undergoing emotional intelligence testing. Based on the emotional intelligence test, it was found that students were categorized as having high emotional intelligence if they score above 56, which amounted to 24 students. Those who scored between 36 and 56 ($36 <$ score < 56) were categorized as having moderate emotional intelligence, and there were 24 students in this category. From the results obtained, two subjects were selected to represent the study: one with high emotional intelligence (ST) and one with moderate emotional intelligence (SD).

RESEARCH RESULT

The mathematical communication profiles of prospective teachers with high emotional intelligence in developing learning materials

In preparing the learning materials, ST has accurately determined the learning objectives, as indicated by the alignment between the learning objectives, core competencies, basic competencies, and indicators. The learning objectives set by the ST were clear and did not lead to multiple interpretations. The learning objectives made ST were comprehensive.

The material selection by ST was clear, in line with the learning objectives and students' characteristics. The material selection by the ST was accurate, in accordance with government references, and mathematics materials, particularly in integer arithmetic operations. The material selection done by ST followed a good systematic approach tailored to the students' characteristics. The organization of the teaching materials by ST regarding the commutative properties in integer arithmetic operations taught in the odd

semester of Grade VII junior high school was complete, appropriate, clear, accurate, and systematic.

The selection of learning resources or media by ST was comprehensive, appropriate, clear, accurate, and systematic. This was demonstrated by complete (1) textbooks, learning media, and PowerPoint presentations created by ST; (2) learning resources and learning media created by STs were in accordance with government references or curriculum as well as theories related to integer arithmetic operations; (3) learning resources and learning media presented by ST have a good structure, complemented by illustrations in the form of pictures that align with the characteristics of the students.

The learning scenario created by ST was complete, appropriate, clear, accurate, and systematic. This was demonstrated by a complete (1) learning scenario created by ST, including preliminary activities, core content, closure, and assessment; (2) the learning scenario created by ST has been appropriate, using the PBL (Problem-Based Learning) model along with the steps provided by presenting a mathematical problem-solving question to activate students; (3) the scenario created by ST has been clear, proved by the explanations outlined in the lesson plan; (4) the learning scenario created by ST was accurate and systematic, as indicated by the selection of the problem-based learning model and the scientific approach systematically outlined in the explanations for the preliminary, core, and closure activities.

The assessment techniques created by ST were comprehensive, appropriate, clear, accurate, and systematic. This was demonstrated by: (1) The assessment techniques created by ST were comprehensive, including the evaluation of attitudes, knowledge, and skills; (2) The assessment techniques created by ST were appropriate and clear. In assessing attitudes, ST evaluated aspects of confidence, politeness, discipline, and responsibility. In assessing knowledge, ST used open-ended questions that include problem-solving tasks. In assessing skills, ST evaluated aspects of collaboration, creativity, and communication; (3) The assessment techniques created by ST were accurate and in accordance with the government curriculum; (4) The assessment techniques created by ST were systematic and presented in tabular form for each assessment of attitudes, knowledge, and skills.

The follow-up provided by (ST) was complete, appropriate, clear, accurate, and systematic, as evidenced by: (1) the follow-up provided by ST was complete by specifying that the follow-up for students was in the form of enrichment questions; (2) the follow-up provided by ST was appropriate, as it included enrichment questions that were in line with the material and curriculum formulated by the government; (3) the follow-up provided by ST was clear and outlined in the lesson plan, detailed in the form of enrichment questions for the follow-up written in the student worksheet; (4) the follow-up provided by ST was accurate, aligning with the government curriculum and theories of integer addition; (5) the follow-up provided by ST was systematic and in the form of problem-solving questions presented in a descriptive format.

The mathematical communication profiles of prospective teachers with high emotional intelligence in teaching practice

The preliminary activities carried out by ST during the teaching practice were smooth and systematic, as indicated by: (1) the well-ordered preparation to start the lesson by asking students to pray and then checking attendance; (2) being fluent and systematic in conducting preconception, which involved discussing some prerequisite material before teaching the intended subject, namely integer operations.

The core teaching activities performed by ST during the teaching practice, which involved mastering the subject, were proper, as evidenced by: (1) the completeness of the material presented by ST during the teaching practice aligning with the instructional materials he/she created; (2) the fluency in explaining the learning material during the teaching practice conducted by ST was very smooth and effective; (3) the accuracy in explaining the material was evident when ST conducted the teaching practice observed by the researcher; (4) the systematic approach in explaining the learning material during the teaching practice conducted by ST was highly organized, coherent, and easily understood by the students; (5) ST's focus on explaining the learning material was demonstrated by the absence of errors made by ST during the teaching practice.

The core teaching activities carried out by ST during teaching practice, which involved linking the material with relevant knowledge, were proper. This was demonstrated by: (1) the completeness in connecting other relevant material conveyed by ST during teaching practice, such as linking integer arithmetic operations with real-world problems; (2) fluency in linking other relevant materials during teaching practice conducted by ST by providing mathematical problem-solving questions that were later discussed with the students; (3) accuracy in linking other relevant material was evident when ST conducted teaching practice and in the preparation of learning materials; (4) the systematic approach in linking other relevant material was proper, as ST's teaching during practice was very systematic, coherent, and easy to comprehend by students; (5) ST"'s focus on linking other relevant materials was demonstrated by the alignment between the integer arithmetic operations and the mathematical problem-solving questions presented by ST.

The core teaching activities conducted by ST during teaching practice, which involved delivering content in

accordance with the learning hierarchy and student characteristics, were proper. This was evidenced by: (1) the completeness in delivering content that aligns with the learning hierarchy and student characteristics; (2) fluency in delivering content that aligns with the learning hierarchy and student characteristics; (3) accuracy in delivering content that aligns with the learning hierarchy and student characteristics; (4) the systematic approach in delivering content that aligns with the learning hierarchy and student characteristics was quite coherent and engaging; (5) ST's focus on delivering content that aligns with the learning hierarchy and student characteristics, making the materials easier to understand and are engaging as well.

The core teaching activities performed by ST during the teaching practice, which involved connecting the material with real-life situations, were proper. This was demonstrated by: (1) completeness in connecting the material with real-life situations; (2) smoothness in linking the material with real-life situations conveyed during the teaching practice; (3) accuracy in connecting the material with real-life situations; (4) the systematic approach in connecting the material with real-life situations was well-ordered and engaging; (5) ST's focus on connecting the material with real-life situations was shown through a contextual problem about profit and loss in trade linked to integer operations.

The core teaching activities performed by ST during teaching practice were already systematic and focused on the implementation of learning in accordance with the intended objectives and student characteristics. This was evident in the way the learning were conducted, which aligns with the teaching materials prepared by ST. During the teaching practice, ST was focused and the learning systematic has been clear and coherent. ST was capable of effectively managing the classroom, as evidenced by the ability to guide students in accordance with the steps outlined in the lesson plan.

The core teaching activities implemented by ST during contextual teaching practice have been performed well. This was evidenced by the completeness, smoothness, accuracy, focus, and systematic approach in implementing contextual learning, which has been executed successfully.

Furthermore, ST's core learning activities during the teaching practice that encouraged the development of positive habits have been done excellently. This was demonstrated by the completeness, smoothness, accuracy, focus, and clear systematic approach observed during the teaching practice. In addition, ST has conducted the teaching in accordance with the allocated time.

The core teaching activities performed by ST during the teaching practice already demonstrated effective and efficient use of media. This was evidenced by the completeness of the presented media, the smooth and effective use of media, and a well-structured system in media utilization, which was excellent. The teaching practice conducted by ST was well-delivered and generated engaging messages.

The core teaching activities performed by ST during the teaching practice have also demonstrated the ability to involve students in the use of media smoothly and systematically. Additionally, ST has been able to foster active student participation in learning, including the completion of student worksheets. Moreover, ST has shown an open attitude towards student responses, as indicated by (1) paying attention to both verbal and non-verbal expressions that constituted responses to students, and (2) completeness, fluency, and accuracy in responding to student feedback, as evident in the teaching practice conducted by ST.

The core learning activities implemented by ST during the learning practice comprised the following abilities: (1) fostering joy and enthusiasm in learning effectively, as demonstrated by the smooth and well-organized approach to incorporate happiness and enthusiasm in learning; (2) monitoring learning progress during the learning process, as evidenced by the completeness, accuracy, systematic approach, and focus maintained by ST throughout the learning process, such as checking students' written work and when students were working on their worksheets; (3) conducting comprehensive, accurate, systematic, and goal-aligned final assessments; (4) using both spoken and written language correctly, as reflected in the quality of learning materials and during the learning practice; (5) delivering messages appropriately, demonstrated by the smooth and systematic manner in which messages were conveyed, which was proper.

The closing learning activities have also been conducted by ST effectively, namely in the following aspects: (1) reflecting or summarizing with student involvement, which has been done by ST completely, smoothly, accurately, systematically, and attentively; (2) carrying out follow-up by providing instructions for learning about associative properties and giving problem-solving tasks for enrichment in a complete, smooth, accurate, systematic, and focused manner.

The mathematical communication profiles of prospective teachers with moderate emotional intelligence in developing learning materials

In preparing the learning materials, SD has accurately defined the learning objectives, as evidenced by the alignment between the learning objectives, core competencies, basic competencies, and indicators. The learning objectives formulated by SD were clear and did not lead to multiple interpretations. The learning objectives established by SD were comprehensive.

The selection of materials performed by the SD was clear, in line with the learning objectives, and the characteristics of the students. The material selection by SD

was accurate, in accordance with government references, as well as specific mathematical materials, particularly the coordinate system. The material selection conducted by SD was systematically organized, tailored to the students' characteristics. The organization of teaching materials by SD regarding the coordinate system taught in the 8th-grade of junior high school in the odd semester was complete, appropriate, clear, accurate, and systematic.

The selection of learning resources or media done by SD was already comprehensive, appropriate, clear, accurate, and systematic. This was evident through (1) complete textbooks, learning media, and PowerPoint presentations (PPT) created by SD; (2) learning sources and learning media created by SD were in accordance with references or the curriculum provided by the government or theories related to integer arithmetic operations; (3) the learning sources and learning media presented by SD have a good structure, complemented by illustrations in the form of pictures that were made suitable for the characteristics of the students.

The learning scenario created by SD needs to be: (1) detailed further to make it more comprehensive; (2) aligned with the rules that have been written; (3) clarified by adding necessary explanations; (4) elements that are still lacking need to be added to align with the current curriculum to make it more accurate; (5) to make it more systematic and in line with the problem-based learning model used, it is necessary to add syntax in the explanation of the preliminary, core, and conclusion activities.

The assessment techniques created by SD still need further enhancement, specifically in terms of: (1) completeness, where currently, only attitude and knowledge assessments exist, but the skill assessment was missing and, therefore, still needs to be developed; (2) the assessment techniques established by SD were already suitable and clear, especially in attitude assessment, which consisted of 10 points. For knowledge assessment, multiple-choice and essay questions were utilized, including some problem-solving questions, but skill assessment has not yet been developed by SD; (3) the assessment techniques devised by SD were accurate and in line with the government curriculum; (4) the attitude and knowledge assessment techniques created by SD were systematic, while the skill assessment was still absent.

The follow-up made by the teacher has been comprehensive, appropriate, clear, accurate, and systematic, but it has not been elaborated in a clear manner, as evidenced by: (1) there was already a follow-up made by SD that has been written in the lesson plan but it was only a reflection by summarizing and writing follow-up actions without clear details; (2) the follow-up made by the teacher did not yet have a clear system.

The mathematical communication profiles of prospective teachers with moderate emotional intelligence in teaching practice

The introductory activities conducted by SD during teaching practice were already smooth and systematic, as evidenced by: (1) smoothly preparing to start the lesson by having the students pray and then checking their attendance; (2) in conducting the apperception, SD was not discussing prerequisite materials but proceeding directly to the core activities.

The core teaching activities carried out by SD during the teaching practice, which involved mastering the material, still need improvement, as indicated by: (1) the completeness of the material presented by SD during the teaching practice was in line with the teaching materials prepared; (2) in explaining the learning material during the teaching practice, SD did perform quite smoothly, but he appeared to read from a book or a PowerPoint presentation; (3) the accuracy in explaining the material became evident when SD conducted the observed teaching practice; (4) the systematic approach to explain the learning material performed by SD during the teaching practice still needs improvement to make it easily understandable for students; (5) SD lacked focus in explaining the learning material, as shown by some things that were overlooked even though they were written in the teaching materials.

The core learning activities done by SD during the teaching practice, which involved connecting the material with other relevant knowledge, were proper. This was demonstrated by: (1) completeness in linking other relevant materials conveyed by SD during the teaching practice, such as the connection of the coordinate system with real-world issues, namely the position or location of a residence in Cartesian coordinates; (2) fluency in connecting other relevant material during the teaching practice by SD, namely providing mathematical problem-solving questions, which were later discussed with the students; (3) accuracy in connecting other relevant material was evident when SD conducted teaching practice and also in the preparation of teaching materials; (4) the systematic approach in connecting other relevant material done by SD during the teaching practice, was quite systematic, logical, and easily understood by the students; (5) SD's focus on connecting other relevant material was shown by the alignment between the coordinate system material and the mathematical problem-solving questions presented by SD.

The core learning activities performed by SD during the teaching practice, which involved delivering content in line with the learning hierarchy and student characteristics, were proper. This was indicated by: (1) completeness in delivering content that is in line with the learning hierarchy and student characteristics; (2) smoothness in delivering content that is in line with the learning hierarchy and student

characteristics; (3) accuracy in delivering content that is in line with the learning hierarchy and student characteristics; (4) the systematics in delivering content that is in line with the learning hierarchy and student characteristics was fairly organized; (5) SD were focused on delivering content that is in line with the learning hierarchy and student characteristics, although there were some omissions.

The core learning activities performed by SD during the teaching practice, which involved linking the material to real-life situations, were proper. This is demonstrated by: (1) completeness in connecting the materials to real-life situations; (2) fluency in connecting the material to real-life situations conveyed during the teaching practice; (3) accuracy in connecting the materials to real-life situations; (4) systematic arrangement in connecting the materials to real-life situations was quite orderly; (5) SD was focused on connecting the material to real-life situations, which took the form of a contextual problem related to the position of a residence or market associated with the coordinate system.

The core learning activities conducted by SD during the teaching practice were less systematic. Additionally, SD lacked focus in implementing learning that aligns with the intended goals and student characteristics. This was evident in the execution of learning where several elements were omitted and did not align with the lesson plans created by the SD. In conducting the teaching practice, SD lacked a certain level of organization, but he was skilled at managing the class effectively. This was demonstrated by his ability to create a conducive environment for students to actively engage in learning.

The core learning activities conducted by SD during contextual learning practice have been done properly. This was evidenced by the completeness, smoothness, accuracy, focus, and systematic execution of the contextual learning.

The core learning activities performed by SD during the teaching practice that foster positive habits have been performed effectively. This was demonstrated by the comprehensiveness, smoothness, accuracy, focus, and clear systematic approach during the teaching practices. Additionally, SD also conducted the learning in accordance with the allocated time.

The core learning activities performed by SD during practical learning were already capable of using media effectively and efficiently. This was indicated by the completeness of the presented media, the smooth and effective use of media, as well as good organization and structure in media utilization. However, during the teaching practice, SD struggled to generate engaging messages.

The core learning activities conducted by SD during the learning practice were already able to involve students in the use of media smoothly and systematically. Additionally, SD were also able to foster active student participation in learning, one of which was through completing student worksheets. However, SD were less adept at displaying an open attitude towards student responses. This was evident in two ways: (1) insufficient attention to both verbal and non-verbal expressions that constitute responses to students, and (2) a lack of completeness, fluency, and accuracy in responding to student feedback during the teaching practice.

The core learning activities conducted SD during the practice of learning were deficient in: (1) fostering joy and enthusiasm in learning, as evidenced by the lack of smoothness and a good system in fostering joy and enthusiasm in learning; (2) monitoring learning progress during the learning process, indicated by the lack of monitoring when students worked on worksheets in groups or failing to check the work submitted by students to the primary school; (3) not conducting comprehensive, accurate, systematic, and competency-focused final assessments [[25], [26], [27]].

The core learning activities conducted by SD during the practice of learning were good at: (1) using spoken and written language correctly, as evidenced by the quality of the learning materials and the practice of teaching; (2) delivering messages in an appropriate manner, demonstrated by the smoothness and system in delivering messages, which were proper [[29], [30], [31]].

The closing activities done by SD regarding: (1) formulating a reflection or summarization by involving students, has not been carried out by SD; (2) but SD has conducted follow-up activities by providing motivation, and complete, fluent, accurate, systematic, and focused homework assignments.

DISCUSSION OF RESEARCH RESULTS

Based on the data analysis, there were similarities in mathematical communication in developing learning materials between subject ST and subject SD in terms of: (1) formulating learning objectives; (2) material selection; (3) organizing instructional materials; (4) selecting learning resources or media. Both subjects demonstrated completeness, suitability, clarity, accuracy, and good systematic approaches in these four aspects [[14], [15], [16], [17], [18]] .

The differences in mathematical communication in developing learning materials between subject ST and subject SD can be observed in Table 1.

No	Aspect	ST	SD
1	Learning scenario	More comprehensive, suitable, clear, accurate, and systematic	Less comprehensive, suitable, clear, accurate, and systematic
2	Assessment techniques	More comprehensive, suitable, clear, accurate, and systematic	Less comprehensive, suitable, clear, accurate, and systematic, as indicated by the absent of skill assessment
3	Follow-up activities	More comprehensive, suitable, clear, accurate, and systematic	Less comprehensive, suitable, clear, accurate, and systematic, as indicated by the absent of explanation regarding the questions used for follow-up activities in the form of homework

The similarity in mathematical communication in the teaching practice between subject ST and subject SD lies in the following aspects: (1) the preliminary activities involved checking attendance and having students pray before the lesson begins; (2) the core activities were relating to relevant materials; (3) delivering content in accordance with the learning hierarchy and student characteristics; (4) connecting the material to real-life situations; (5) classroom management; (6) implementing contextual learning; (7) fostering positive habits in learning; (8) adhering to the planned time allocation for the lesson; (9) using media effectively and efficiently; (10) involving students in utilizing media; (11) encouraging active student participation in learning; (12) using both spoken and written language effectively; (13) delivering messages appropriately; (14) closing activities, particularly carrying out follow-up activities by providing guidance or assignments as part of remedial or enrichment. In all fourteen aspects, both subjects demonstrated completeness, alignment, clarity, accuracy, and good systematic organization [[19], [20], [21], [22], [23], [24]]

The differences in mathematical communication in developing learning practice done by subject ST and subject SD can be observed in Table 2.

No	Aspect	ST	SD
1	Preliminary activities, particularly the implementation of apperception activities	Conducting apperception activities by explaining fluently and systematically the prerequisite materials needed before studying the core material.	Did not provide explanations about prerequisite materials although it has been written in the teaching instrument to explain about prerequisite materials
2	Core activities, especially the mastery of teaching materials	Mastering the materials as indicated by the fluency, accuracy, systematically, and attentively in delivering the learning materials	Did not fully master the materials as indicated by many readings of text and PPT during the teaching practice
3	Core activities, particularly implementing the learning in accordance with the intended goals and student characteristics	Done in systematic and focus manner	Some essential matters mentioned in the lesson plan were not delivered in the teaching practice (such as prerequisite materials, core activities, and some missing assessments), as a result, learning goals have yet to be defined as achieved or not achieved

No	Aspect	ST	SD
4	Core activities, particularly implementing the learning coherently	Have been systematic and focused in implementing the coherent learning	Less systematic and focused in implementing the coherent learning
5	Core activities, particularly producing engaging messages	Being fluent in producing engaging messages	Less fluent in producing engaging messages
6	Core activities, particularly showing an open attitude towards students' responses	Have been capable of showing expressions both verbal and non-verbal as a form of response towards students' responses	Have not been capable of paying attention to expressions, both verbal and non-verbal as a form of response towards student' responses. This was indicated by the absent of feedback from students' answers. Less comprehensive, fluent, and accurate in giving responses.
7	Core activities, particularly fostering joy and enthusiasm in learning	Have been fluent, systematic, and focused in fostering enthusiasm in learning.	Less fluent, systematic, and focused in fostering enthusiasm in learning
8	Core activities, particularly monitoring the learning progress during the learning process	Have been comprehensive, accurate, systematic, and focused in monitoring the learning progress during the learning process	Lacking the monitoring towards the learning, both oral and in written, individually or in group
9	Core activities, particularly in implementing final assessment in accordance with competencies or goals	Have been comprehensive, accurate, systematic, and focused in conducting final assessment in accordance with competencies or goals	Have yet to conduct final assessment
10	Closing activities, particularly in reflecting or summarizing with the involvement of students	Done fluently, comprehensively, accurately, systematically, and focused in summarizing with the involvement of students	Have yet to reflect or create a summary by involving students

REFERENCES

1. Goleman, Daniel, 1995. Emotional Intelligence, Hermaya, T. Translator. Jakarta, PT Gramedia Pustaka Utama
2. G. S. Dasar, Interviewee, Interview guru tentang pelaksanaan literasi dan numerasi di sekolah. [Interview]. 10 10 2021.
3. F. R. Fiantika, "Mathematical and Mental Rotation Skill in Internal Representation of Elementary

Students," Journal of Physics: Conference Series, vol. 1, no. 012011, p. 1776, 2021.
4. E. Yudianto, S. Sunardi, T. Sugiarti and F. R. Fiantika, "Student's Anticipation Profile at Rigor Level in Determining Papaya Tree Root Dimensions," Jurnal Didaktik Matematika, vol. 8, no. 1, pp. 66-83, 2021.
5. S. H. Prayitno, S. Suwarsono and T. Y. E. Siswono, "The profile of conceptual comprehension of pre-service teacher in the mathematical problem solving with low emotional intelligence," Journal of Physics: Conference Series, vol. 012089, no. 983, pp. 1-6, 2018.
6. F. R. Fiantika and S. P. Setyawati, "Representation, representational transformation and spatial reasoning hierarchical in spatial thinking," Journal of Physics: Conference Series, vol. 2, no. 022056, p. 1321, 2019.
7. E. T. Ruseffendi, Pengantar Kepada Membantu Guru Mengembangkan Kompetensinya dalam Pengajaran Matematika untuk Meningkatkan Cara Belajar Siswa Aktif (CBSA), Bandung: Tarsito, 2006.
8. W. Sanjaya, Strategi Pembelajaran Berorientasi Standar Proses Pendidikan, Jakarta: Kencana, 2007.
9. H. Hudojo, Pengambangan Kurikulum dan Pembelajaran Matematika, Malang: JICA-Universitas Negeri Malang, 2005.
10. U. Sumarmo, "Berfikir dan Disposisi Matematik: Apa, Mengapa, dan Bagaimana Dikembangkan Pada Peserta Didik," Jurnal FMIPA UPI, p. 5, 2010.
11. L. O. Cavey and M. T. Kinzel, "A Refinement of Michener's Example Classification," Mathematical Processes: Research Reports, p. 316, 2015.
12. P. J. Silaban and E. J. Simarmata, "Meningkatkan Kemampuan Pemahaman Matematis Siswa melalui Alat Peraga Montessori pada Mata Pelajaran Matematika Kelas IV SD Assisi Medan," Prossiding Seminar Nasional: Pendidikan Guru Sekolah Dasar, vol. 2, no. 1, pp. 19-27, 2020.
13. J. Kilpatrick, J. Swafford, B. Findell and N. R. C. (U.S.), Adding it up: Helping children learn mathematics, Washington, DC: National Academy Press., 2001.
14. S. H. Prajitno, "Profil Pemahaman Konseptual Calon Guru Ditinjau dari Kecerdasan Emosional," Unesa, Surabaya, 2018.
15. Sukjaya and Suherman, Petunjuk Evaluasi untuk Melaksanakan Evaluasi Pendidikan Matematika, Bandung: Wijayakusumah, 1990.
16. Streefland, Realistic Mathematics Education in Primary School., Utrecht: CD-b Press / Freudenthal Institute, Utrecht University, 1991.
17. A. Treffers, E. De Moor and E. Feijs, "Treffers, A., De MoProeve van een nationaal programma voor het reken-wiskundeonderwijs op de basis school. Deel I. Overzicht einddoelen," in [Design of a national curriculum for mathematics education at primary school. Part I Overview of goals], Zwijs, Tilburg, 1989, p. 2.
18. J. M. Rubenstein, B. Nunley and M. Healy, Study Guide for The Cultural Landscape: An Introduction to Human Geography, Ohio: Miami University of Ohio, 2010.
19. M. o. E. Ontario, Geometry and spatial sense, grades 4 to 6, Ontario: Queen's Printer for Ontario, 2008.
20. NRC, Learning to think spatially, Washington, D.C: The National Academies Press, 2010.
21. W. S. Bednarz and S. B. Robert, The importance of spatial thinking in an uncertain world, Texas: Texas: A&M University, College Station, TX., 2016.
22. J. Lee and R. Bednarz, Components of spatial thinking: Evidence from a spatial thinking ability test, London: Routledge, 2011.
23. S. W. Bednarz, Maps and spatial thinking skills in the ap human geography classroom, Texas: Texas A&M University College Station, TX, 2004.
24. S. Maf'Ulah, H. Fitriyani, E. Yudianto, F. R. Fiantika and R. Hariastuti, "Identifying the reversible thinking skill of students in solving function problems," Journal of Physics: Conference Series, vol. 1, no. 012033, p. 1188, 2019.
25. H. Fitriyani, E. Yudianto, S. Maf'Ulah, F. R. Fiantika and R. Hariastuti, "Van Hiele's Theory: Transforming and Gender Perspective of Student's Geometrical Thinking," Journal of Physics: Conference Series, vol. 1, no. 012070, p. 1613, 2020.
26. F. R. Fiantika, C. Maknun, I. Budayasa and A. Lukito, "Analysis of students' spatial thinking in geometry: 3D object into 2D representation," Journal of Physics: Conference Series, vol. 1, no. 012140, p. 1013, 2018.
27. F. R. Fiantika, F. A. Sugianto, H. N. Jannah, F. Junior and C. Perdani, "Abstraction mathematics concepts: Learning innovation based on heritage culture during the pandemic COVID-19 era," Journal of Physics: Conference Series, vol. 4, no. 042094, p. 1918, 2021.
28. Miles, M.B. & Huberman, A.M. 1992. Analisis Data Kualitatif: Buku Sumber Tentang Metode-metode Baru. Translated by: Tjetjep Rohendi. Jakarta: UI-Press
29. L. Sastra, "Blog," 02 June 2021. [Online]. Available: https://literasisastra.com/pengetahuan-

umum/prinsip-prinsip-dasar-logika/. [Accessed 10 April 2022].

30. F. R. Fiantika, C. Sa'Dijah, A. Qohar and Darsono, "Link between modern building and Kediri's tradition: An idea to develop teaching-learning equipment," Journal of Physics: Conference Series, vol. 1, no. 012001, p. 1470, 2020.
31. Pramujiono, Agung, et al. 2020. Panduan Program. Pengenalan Lapangan Persekolahan I (PLP I) Fakultas Keguruan dan Ilmu Pendidikan. UPT-PPL. Universitas PGRI Adi Buana Surabaya