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Application Of Purdue Learning Method In Improving Critical And Mathematical Thinking Ability Of Public School Students

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Abstract

The aim of this study is to investigate how the Purdue learning model can be implemented in accelerated classes to enhance students' high-level mathematical thinking skills. The method used in this study is called Classroom Action Research (PTK). This study only included students enrolled in accelerated classes as subjects. In this study, 100 people made up the sample. Field notes, interviews, observations, and diaries were all forms of qualitative data. A checkpoint is used to express quantitative data at the conclusion of each cycle. According to a combined data analysis, during the study period using the Purdue model, students' classroom activities improved in speed. This increase in activity involves verbal, written, visual, motor, cerebral, and emotional activities as well as writing, drawing, and writing. Mental and emotional activities are the most crucial kind of activity. Conversely, speaking and sketching exercises are given less emphasis. Students in accelerated classes generally report that they gain from Purdue's methodology of increased learning. The majority of students claimed that because they like studying in groups and found it challenging to finish the assignments provided at each meeting, studying under the Purdue model was more pleasurable. Nevertheless, several students responded negatively, stating that they did not understand the questions or the learning approach and that they wanted the researcher to clarify things immediately.

Keywords: Purdue Model Learning, Students, Mathematical Thinking Ability

Abstrak

Tujuan penelitian ini adalah untuk mengetahui bagaimana model pembelajaran Purdue dapat diterapkan di kelas akselerasi untuk meningkatkan kemampuan berpikir matematis tingkat tinggi siswa. Metode yang digunakan dalam penelitian ini disebut Penelitian Tindakan Kelas (PTK). Penelitian ini hanya memasukkan siswa yang terdaftar di kelas akselerasi sebagai subjeknya. Dalam penelitian ini, sampelnya berjumlah 100 orang. Catatan lapangan, wawancara, observasi, dan catatan harian merupakan semua bentuk data kualitatif. Pos pemeriksaan digunakan untuk menyatakan data kuantitatif pada akhir setiap siklus. Menurut analisis data gabungan, selama masa studi dengan menggunakan model Purdue, kecepatan aktivitas kelas siswa meningkat. Peningkatan aktivitas ini melibatkan aktivitas verbal, tertulis, visual, motorik, otak, dan emosional serta menulis, menggambar, dan menulis. Aktivitas mental dan emosional adalah jenis aktivitas yang paling krusial. Sebaliknya, latihan berbicara dan membuat sketsa kurang mendapat penekanan. Siswa di kelas akselerasi umumnya melaporkan bahwa mereka memperoleh manfaat dari metodologi peningkatan pembelajaran Purdue. Mayoritas siswa menyatakan bahwa karena mereka suka belajar berkelompok dan merasa kesulitan dalam menyelesaikan tugas yang diberikan pada setiap pertemuan, maka belajar dengan model Purdue lebih menyenangkan. Namun demikian, beberapa siswa memberikan tanggapan negatif, menyatakan bahwa mereka tidak memahami pertanyaan atau pendekatan pembelajaran dan mereka ingin peneliti segera mengklarifikasi hal tersebut.

Kata Kunci: Pembelajaran Model Purdue, Siswa, Aktivitas Siswa, Kemampuan Berpikir Matematis

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INTRODUCTION

Education is the basic foundation for humans to live in the era of globalization, which can be

used as a bridge for humans to achieve success. Changes in technology and information that are increasingly developing rapidly are one of the impacts of progress in the world of education (Adilla et al., 2021). With education, humans can increase their competence to answer the challenges of life, which is full of competition, especially in the advancement of science and technology (Tubagus et al., 2023). Since mathematics is ingrained in daily life without our conscious knowledge, it is crucial to the advancement of other sciences (Tubagus & Muslimin, 2019; Satra et al., 2023). Like music, which is full of symmetry, patterns, and rhythms that may entertain, mathematics is a technique of thinking and reasoning, a symbolic language that can be comprehended by many cultures (Bakri et al., 2023). It is a tool for architects, mapmakers, space navigators, machine builders, and accountants. Based on this definition, mathematics is the basis for studying other branches of science (Sutrisno et al., 2023; Violin, 2022).

In the world of education, especially at school, teachers often consider children who excel in mathematics to be intelligent and have a high IQ (Qurtubi, 2018). Studying mathematics is essential since it helps with reasoning, problem solving in daily life, relationship recognition, and generalizing experiences (Qurtubi, 2022). It also helps with clear and logical thinking (Supardi et al., 2023). Thus, from elementary school to higher education, mathematics must be taught to pupils in order to develop their ability to think rationally, critically, creatively, analytically, and methodically (Kamaruddin et al., 2023). The study of mathematics in the classroom is crucial for the growth of pupils' critical thinking skills (Qurtubi, 2021). Based on the depth and complexity of the subject matter, mathematical thinking is separated into two levels: low-level thinking and high-level thinking. High-order mathematical thinking capabilities, such as the capacity for analysis (C4), evaluation (C5), and creation (C6), are the kind of thinking abilities that are sought after in current learning (Sarumaha, 2016; Sarumaha et al., 2023). Students that possess higher order mathematical thinking abilities are able to analyze situations in greater detail and add greater significance to their education (Lubis et al., 2023; Tubagus et al., 2023).

Learning is an external factor that can make students' mathematical abilities low (Tubagus et al., 2020; Junaidi et al., 2023). Teachers routinely explain the material, provide examples, and practice questions to students (Aulia et al., 2021). The learning style is still expository, the learning is still teacher-centered, and the activities are more formulaic with few questions that push students to think at higher levels of thinking (Aulia, 2020; Sarumaha et al., 2018). When given other issues that deviate somewhat from the teacher's examples, pupils typically struggle to complete them since they are accustomed to working on routine questions that are almost identical to the examples (Haniko et al., 2023). This shows that students still use low-order thinking skills, so they are only able to work on questions that are similar to the examples given by the teacher (Lubis, 2019; Lubis et al., 2020). According to research conducted previously, almost all students in Semarang Regency (Aryanto et al., 2020), even students at schools that have the status of an International Standard School Startup, are still afraid of not passing the national examination (Putra & Damanik, 2020). This shows that students

still do not believe in their abilities. It can also be said that low levels of high-level thinking abilities do not only occur in regular schools; students who study in superior schools do not necessarily have good high-level thinking abilities (Wibowo et al., 2023).

There are numerous excellent schools in Indonesia that provide accelerated coursework. Classes that are specifically created for students who wish to accelerate their learning at a certain educational level are known as accelerated classes (Rony et al., 2019). Talented students, particularly those with high IQs, may benefit from accelerated courses. The way that students learn in accelerated classes differs from how they study in ordinary classrooms (Sumitra et al., 2021). Teachers that adapt learning activities for regular students to higher-order thinking styles run the risk of facing repercussions when they deploy learning activities tailored for intelligent pupils. Consequently, educators need to work toward non-routine instruction that develops students' higher level mathematical reasoning skills. Learning with the Purdue model is one method that helps foster higher-order mathematical thinking skills. The Purdue model of education offers learning phases that encourage students to actively engage in the development of higher-order mathematical thinking skills. The Purdue model is a three-stage enrichment model carried out for gifted students, in this case, students who are in accelerated classes (Kelvinia et al., 2021).

The low ability of students' high-order mathematical thinking is related to the students' lack of capacity to apply the concepts they have learned to solve problems, which can be addressed with the steps in the Purdue learning model. Fluency, flexibility, originality, and elaboration the phases of developing creative thinking skills can give children the chance to reinforce the ideas they have learned. The phases of issue solving (problem finding, clarification, analysis, and evaluation) involve applying learned concepts to challenges through collaborative problem-solving in small groups (Putra & Damanik, 2017). The independence, synthesis, implementation, and effectiveness phases of autonomous learning can help students develop their capacity for independent concept discovery and learning as well as their speaking and writing (presentation) skills (Malawat & Putra, 2018).

To help students think more deeply about the problems they encounter and give the lessons greater significance, math teachers must help them develop the skill of high-order thinking, often known as high-level thinking. The ability to analyze, evaluate, and create are considered high-order thinking abilities, and they are located at levels C4–C6 of the updated Bloom's Taxonomy. In order to develop and enhance advanced cognitive abilities in mathematics education, educators must employ non-routine learning methods (Violin et al., 2022). Non-routine learning is defined as learning that is unclear, difficult to understand, and places more emphasis on procedure than outcome. One attempt to enhance students' capacity for higher-order mathematical reasoning is to implement the Purdue model of instruction. Learning using the Purdue model is a three-stage enrichment model carried out for gifted students, in this case, students who are in superior schools or accelerated classes (Violin, 2019).

In phase I, the Purdue model of learning begins with learning activities to develop creative thinking skills. In the first level of instruction, the instructor gives equal weight to the development of

creative thinking abilities that are pertinent to the learning domain. The majority of short-term in-class and after-school activities are planned and overseen by the teacher (Kelvinia et al., 2021). Through tailored education and learning packages, students acquire foundational knowledge and content knowledge. Students will be inspired to want to delve deeper into the learning material in stages II and III by the activities in stage I. Students engage in sophisticated problem-solving exercises in Stage II. Students use issue-based learning and non-routine mathematics problem solving to work together in small groups and engage with content-based topics. This activity usually lasts longer than phase I activities. In phase II, the teacher's role shifts to being a learning facilitator (Putra & Damanik, 2017).

The culmination of learning occurs in Stage III, where students work independently to solve real-world problems, apply the knowledge and abilities they have learned in Stages I and II to solve real-world challenges, and produce high-quality outcomes, products, and solutions that they can share with other students (Rony et al., 2019). The main driving force behind stage III student interest is their desire to direct their own research and creative output. At this point, students will work both individually and in small groups somewhat more independently. Stage III offers chances to hone in on personal abilities and skills like self-awareness, planning, decision-making, and self-control. The teacher's function changes to that of a resource for the pupils.

METHOD

This research uses the Classroom Action Research method. This approach involves action research, which is conducted in-class by teachers who double as researchers or in collaboration with others by planning, carrying out, and reflecting on actions in a collaborative and participatory manner with the goal of enhancing or raising the caliber of the learning process in the classroom through a particular action in a cycle. All of the students in accelerated classes made up the study's population. There were one hundred samples used in this study. Daily notebooks, student activity observation sheets, field notes, teacher and student interview guides, and documentation in the form of activity images were the sources of the qualitative data used in this study. The percentage of students' learning activities, the students' daily notebooks kept while utilizing the Purdue model, and the students' scores on the high-order mathematical thinking ability test at the conclusion of each cycle serve as the quantitative data in this study.

The data collection for this research will be carried out as follows: Providing test questions for students' high-order mathematical thinking abilities at the end of cycles I and II. The test was carried out by acceleration class students as research subjects. Filling in daily student journals to find out student responses to the learning process using the Purdue model at each meeting. Students individually fill in journals at the end of each meeting. Collaborating teachers carry out data collection through observation at each meeting, using an observation sheet to observe student activities during learning. Researchers conducted interviews at the pre-research stage to directly assess the students' condition and gain a general understanding of the typical learning process. The researcher should

make field notes on findings during the lesson that were not observed during the observation. Taking documentation in the form of photos during the implementation of the action.

RESULT AND DISCUSSION

According to the research findings, students' average score on the high-order mathematical thinking test went from 64.5 in cycle I to 75.5 in cycle II, a 10.5 improvement. Furthermore, a sizable portion of pupils (72.5%) received a score of 77 or higher. The results of the high-order mathematical thinking ability exam, which are provided at the conclusion of each cycle, demonstrate that ≥ 72% of students' scores reach ≥ 77, indicating that the researcher has met one of the success indicators. According to the findings of cycle I learning reflection, students' performance on the high-order mathematical thinking ability exam has increased, demonstrating their inextricable link to advancements in the educational process. Some of the improvements made are by inviting students to review previous learning material and appointing several students who are less active to share their opinions, so that students are better prepared beforehand when learning takes place.

The STAD-type cooperation technique was used by the researcher during the small group discussion phase. Two students participated in a small group activity technique during the independent study phase. This made sure that even though they were studying in groups, the students still felt equally accountable for understanding the lessons covered at each session. The results of this study, which showed that students' high-order mathematical thinking ability test scores increased, are consistent with those of earlier studies, which found that problem-based learning can help students develop higher-order thinking abilities, which call for analysis, evaluation, and creation. Here, there are parallels between the Purdue model and problem-based learning, namely in the area of advanced problem-solving skills development (issue identification, clarification, analysis, and assessment). At this stage, students find problems based on the information provided and then clarify the problem. Next, students analyze the problem and evaluate the solutions used to solve it.

The Purdue model of learning and student activities is one of the main topics of this study. According to the research findings, there was a rise in the average student activity percentage from cycle I to cycle II, amounting to 13.5%; the average percentage for each cycle was 68.5% and 80%. The research success indicator, which is the average percentage of student learning activity during learning using the Purdue model, which reached > 77%, has been attained by the average percentage of student activity in cycle II, which was 82%. This demonstrates how increasing student learning activities through the use of the Purdue model of instruction Students can actively engage in creating and expanding their understanding on their own by using Purdue's learning paradigm. This is consistent with earlier research that found that STAD-type cooperative learning activities helped students develop their ability to work cooperatively in groups, ask probing questions when they felt stuck, actively respond to teacher inquiries, and have the courage to share the outcomes of their group projects.

Students' oral abilities were highlighted despite an increase in overall student engagement because they were comparatively less apparent in cycle I and cycle II learning. This is corroborated by earlier studies that discovered accelerated learning programs at schools were associated with a number of behavioral indicators in pupils, such as a lack of communication, tension, a decrease in socialization, and a dislike of sports classes. Additionally, the way these students behave shows that they are not socializing with their peers. Because they have to adhere to a busy schedule and study material, students who take accelerated classes feel as though they have less time for extracurricular activities or other social activities. This results in a lack of social interaction for students both at school and in their living environment.

Students' positive responses during learning with the Purdue model increased by 9.5% from cycle I to cycle II, according to their daily journals. The average percentage for each cycle was 77% and 84.5 percent. The research success indicator, which is the average percentage of positive student responses during learning using the Purdue model, which achieved ≥ 82%, has been attained by the average percentage of positive student responses, which was 82% in cycle II. This demonstrates how using the Purdue model to teach might boost students' affirmative reactions. According to this study, teaching with the Purdue model increases student engagement, enjoyment, and challenge. These results are consistent with other research, which suggests that learning models that are active, creative, inventive, successful, and enjoyable are those that can engage students through innovative models and make them feel excited to participate in the learning process.

Another finding obtained during the research was that students were accustomed to carrying out drills procedurally; this could be seen from the semester test questions given by the teacher, which were of the same type as regular classes. The results of students' answers on the high-order mathematical thinking ability test instrument for students in cycles I and II also showed that students directly entered formulas when working on questions, so that students' thinking processes could not be seen clearly. This is supported by previous research, which revealed that acceleration classes only speed up students' cognitive development but do not speed up the affective and psychomotor sides. Researchers also found that students tend to be more individual and have quite high levels of competitiveness with their peers. Each student strives to outperform their peers. This is in line with previous research findings, which revealed that teenagers feel uncomfortable because the learning atmosphere is tense, stressful, and frustrating due to existing demands, coupled with intense competition between teenagers compared to superior and regular classes.

Although class students show excellence in task commitment, certain challenges still arise, particularly regarding some students' feelings of boredom when working on Student Worksheets (LKS). However, the research results show that through encouragement from researchers and improvements in learning models, students can overcome this feeling of boredom and remain responsible for their assignments. High learning motivation is one of the main drivers behind class students' work commitment. Increasing motivation can be the focus of further development by

actively involving students in the learning process. Maintaining a learning atmosphere that is interesting, relevant, and challenging can foster and maintain student motivation. In responding to students' feelings of boredom, researchers can continue to develop strategies that are innovative and responsive.

An interactive learning approach, the use of technology, or integrating activities that arouse students' interest can be a solution to maintain their interest throughout the learning process. Researchers should continue to establish a supportive and motivating environment with students. Open communication between teachers and students can help identify potential problems or obstacles in task commitment so that corrective action can be taken more quickly. It should be highlighted that accelerated class students typically commit to more tasks than regular class students, which is consistent with earlier findings. Therefore, engaging regular class students in activities or projects that challenge and provide in-depth learning experiences can be an additional strategy to increase their on-task commitment. By implementing this approach, we aim to optimize regular class students' assignment commitments, create an empowering learning environment, and stimulate their academic growth and motivation.

CONCLUSION

The data analysis leads to the following conclusions: Open-ended problems are used to introduce students to several approaches to providing solutions as they progress through the phases of developing creative thinking skills. Students interact through expressing viewpoints and debating increasingly complicated problems as a result of the stages of acquiring complex problem-solving abilities paired with cooperative tactics. The independent learning stages are combined with small group activity techniques consisting of two people. At the end of the meeting, the researcher randomly assigned students the task of presenting the results of their discussion, ensuring that each individual took responsibility for mastering the material taught. With the Purdue model, students' participation in the learning process has generally increased in accelerated classes. There has been an increase in verbal, written, visual, physical, mental, and emotional activity in addition to sketching and writing. Mental and emotional activities are the most common kind of activity. Conversely, drawing and speaking activities are categorized as less important. Students in accelerated classes generally respond favorably, reporting that the Purdue model has increased their learning. The majority of students claimed that because they enjoyed studying in groups and found the worksheets provided at each meeting to be challenging, learning under the Purdue model was more pleasurable. However, several students who responded negatively stated that they would prefer it to be explained directly by the researcher because they were not familiar with the learning methods and questions given.

REFERENSI

Adilla, Y. dkk. (2021). Self-Esteem, Creativity, and Emotional Intelligence of Accelerated, Superior,

and Regular Class Students. *Jurnal Psikologi*, 6(2), 442-452.

Tubagus, M., Haerudin, H., Fathurohman, A., Adiyono, A., & Aslan, A. (2023). The impact of technology on islamic pesantren education and the learning outcomes of santri: new trends and possibilities. *Indonesian Journal of Education (INJOE)*, *3*(3), 443-450.

Tubagus, M., & Muslim, S. (2019). The Impact of The Development of Blended Learning Models Using Computer applications in Higher Education. *International Journal of Educational Research Review*, *4*(4), 573-581.

Satra, R., Syafie, L., & Tubagus, M. (2023, May). Comparison of server technologies using Kernel-based virtual machine and container virtualization. In *AIP Conference Proceedings* (Vol. 2595, No. 1). AIP Publishing.

Bakri, A. A., Wandanaya, A. B., Violin, V., & Fauzan, T. R. (2023). The Application of UTAUT Modified Model to Analyze the Customers Use Behavior of Shopee Paylater. *Jurnal Sistim Informasi dan Teknologi*, 96-101.

Sutrisno, S., Wulandari, W., Violin, V., Supriyadi, A., & Tawil, M. R. (2023). Prioritization of the Best Online Platform for MSMEs Using Simple Additive Weighting Method. *Journal on Education*, *5*(3), 10265-10275.

Violin, V. (2022). Influence Leadership, Competence and Motivation To Performance Employee Service Health Regency Bay Bintuni West Papua Province. *J. Adm. J. Pemikir. Ilm. dan Pendidik. Adm. Perkantoran*, *9*(2), 305-310.

Qurtubi, A. (2018). Impacts of monitoring and evaluation, active roles of lecturers, classroom interaction, and government policy on teaching productivity. *BISNIS & BIROKRASI: Jurnal Ilmu Administrasi dan Organisasi*, *24*(3), 3.

Qurtubi, A. (2022). The Effects Of Transformational Leadership And Organizational Citizenship Behavior (Ocb) On Islamic School Teachers' Satisfaction. *Journal of Positive School Psychology*, *6*(7), 2744-2753.

Supardi, S., Qurtubi, A., & Fatoni, H. (2023). Kemitraan Sekolah dan Komite Sekolah Dalam Meningkatkan Mutu Pendidikan di SMP IT Raudhatul Jannah Cilegon. *Journal on Education*, *5*(4), 11196-11203.

Kamaruddin, I., Tannady, H., Al Haddar, G., Sembiring, D., & Qurtubi, A. (2023). The Effect of Direct Compensation and Work Motivation on Teacher Productivity at Private Senior High School in Jakarta. *Edunesia: Jurnal Ilmiah Pendidikan*, *4*(2), 472-482.

Qurtubi, A. (2021). Educational Management Using E-Learning to Maximize Learning Efficiency and Speed Up the Industrial Revolution 4.0. *Al-Ishlah: Jurnal Pendidikan*, *13*(3), 2319-2326.

Sarumaha, Y. A. (2016). Perubahan pembelajaran yang berpusat pada guru ke berpusat pada siswa. *Intersections*, *1*(01).

Sarumaha, Y. A., Firdaus, D. R., & Moridu, I. (2023). The Application of Artificial Bee Colony Algorithm to Optimizing Vehicle Routes Problem. *JISTE (Journal of Information System, Technology and Engineering)*, *1*(1), 11-15.

Lubis, Z., Zarlis, M., & Aulia, M. R. (2023). Performance Analysis of Oil Palm Companies Based on Barcode System through Fit Viability Approach: Long Work as A Moderator Variable. *Aptisi Transactions on Technopreneurship (ATT)*, *5*(1), 40-52.

Tubagus, M., Syarifuddin, S., Syafie, L., Koderi, K., Satra, R., & Azis, H. (2023, May). The effectiveness test of the hybrid learning model based on the learning management system using statictical analysis. In *AIP Conference Proceedings* (Vol. 2595, No. 1). AIP Publishing.

Tubagus, M., Muslim, S., & Suriani, S. (2020). Development of learning management system-based blended learning model using claroline in higher education.

Junaidi, J., Lubis, Z., Effendi, I., Aulia, M. R., Utami, M. P., & Supriatna, D. (2023). Strategy Enhancement Performance MSMEs Through PTPN III Partnership Program. *Devotion Journal of Community Service*, *4*(2), 438-445.

Aulia, M. R., Saragi, C. P., & Simbolon, R. (2021). The Effect of Entrepreneurial Characteristics on Entrepreneurial Competence and Entrepreneurial Competence on Business Performance of Micro and Small-Scale Coffee Shops in Bogor. *BASKARA: Journal of Business and Entrepreneurship*, *4*(1), 37-48.

Aulia, M. R. (2020). Pengaruh kompetensi kewirausahaan terhadap kinerja usaha kedai kopi skala mikro dan kecil pada masa pandemi Covid-19 di Kota Medan. *Jurnal Agriust*, 38-44.

Aulia, M. R. (2020). Pengaruh Kompetensi Kewirausahaan Terhadap Kinerja Usaha Kedai Kopi Skala Mikro Dan Kecil Di Kota Medan. *Jurnal Manajemen Bisnis Krisnadwipayana*, *8*(3), 100-113.

Sarumaha, Y. A., Putri, R. I. I., & Hartono, Y. (2018). Percentage Bar: A Model for Helping Fifth Grade Students Understand Percentages. *Mosharafa: Jurnal Pendidikan Matematika*, *7*(2), 155-166.

Sarumaha, Y. A. (2018). Justifikasi dalam Pembelajaran Matematika.

Haniko, P., Sarumaha, Y. A., Satria, E., & Hs, N. Anas.(2023). Building Students' Critical Thinking Skill through Problem-Based Learning Model. *WIDYA ACCARYA: Jurnal Kajian Pendidikan*, *14*(1), 92-98.

Lubis, F. M. (2019). DIGITAL LEADERSHIP IN MANAGING WORK MOTIVATION OF MILLENIAL EMPLOYEES:(STUDY CASE: OIL AND GAS INDUSTRY IN INDONESIA). *Asia Proceedings of Social Sciences*, *4*(2), 108-110.

Lubis, F., Rony, Z., & Santoso, B. (2020, March). Digital leadership in managing employee work motivation (case study: oil and gas industry in Indonesia). In *Proceedings of the 2nd International Conference on Social Sciences, ICSS 2019, 5-6 November 2019, Jakarta, Indonesia*.

Aryanto, T., Tukinah, U., Hartarini, Y. M., & Lubis, F. M. (2020). Connection of Stress and Job Satisfaction to Successful Organizational Stress Management: A Literature Review. *International Journal of Advanced Engineering Research and Science*, *7*(11).

Putra, M. U. M., & Damanik, S. (2020). Service Implementation Of Consumer Interest In Tebing Tinggi Business Clinic Sumatera Utara. *International Journal of Research-GRANTHAALAYAH*, *8*(9), 200-208.

Wibowo, T. S., Suhendi, D., Suwandana, I. M. A., Nurdiani, T. W., & Lubis, F. M. (2023). The Role Of Transformational Leadership And Organizational Culture In Increasing Employee Commitment. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, *7*(2).

Rony, Z. T., Lubis, F. M., & Rizkyta, A. (2019). Job shadowing as one of the effective activities in the promotion process creates quality managers. *International Journal of Recent Technology and Engineering*, *8*(2), 388-396.

Sumitra, I. D., Wirawan, E., Putra, M., Kusumaningrat, I., & Maulana, H. (2021). Design of webinar information system for people with hearing impairments. *Indonesian Journal of Community and Special Needs Education*, *1*(2), 77-86.

Kelvinia, K., Putra, M. U. M., & Efendi, N. (2021). Pengaruh Lokasi, Harga dan Kualitas Pelayanan Terhadap Keputusan Pembelian. *Jurnal Wira Ekonomi Mikroskil*, *11*(2), 85-98.

Putra, M. U. M., & Damanik, S. (2017). Pengaruh ekspor migas dan non migas terhadap posisi cadangan devisa di Indonesia. *Jurnal Wira Ekonomi Mikroskil*, *7*(2), 245-254.

Malawat, M. S., & Putra, M. U. M. (2018, March). Review Of Implementation In Bunut Shoes Assistance Program In Order Of Micro, Small And Medium Enterprises Economic In Asahan Regency. In *Journal of Physics: Conference Series* (Vol. 970, No. 1, p. 012022). IOP Publishing.

Violin, V., Hasan, S., & Sufri, M. (2022). Pengaruh Konsep Low-Cost Carrier dan Kualitas Layanan terhadap Kepuasan dan Loyalitas Pelanggan pada Maskapai Lion Airlines di Indonesia. *Journal of Management Science (JMS)*, *3*(1), 150-160.

Violin, V. (2019). PENGARUH HARGA POKOK PRODUKSI TERHADAP VOLUME PENJUALAN PADA PT. SEMEN BOSOWA MAROS. *Jurnal Bisnis dan Kewirausahaan*, *8*(2).