IJEMS: Indonesian Journal of Education and Mathematical Science
2022 Vol. 3, No. 2, pp. 79–83
ISSN(e): 2715-985x
DOI : http://dx.doi.org/10.30596%2Fijems.v3i2.11088

EDUCATORS THINKING TOOL (CASE STUDY OF EDUCATORS' MINDSET AGAINST LOGIC, LANGUAGE AND MATHEMATICS AT KEATIF MEDIA STATE POLYTECHNIC)

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Article History
Received: 4
Revised:
Accepted:
Published:

Keywords
systemic thinking pattern, logical mindset, mathematical mindset

ABSTRACT

The purpose of this research is to systematically find out the process of thinking patterns of educators/lecturers in the classroom, and to find out its effect on the growth of students' academic characters who are logical, use good language and patterns of mathematical systems. The method used is a qualitative method with a descriptive approach, namely describing data analysis of the teaching and learning system of an educator in the classroom and outside the classroom using guided questionnaires and conducting qualitative analysis in order to get good analysis results. The data can show that every educator in the classroom uses elements of logic, language and mathematical development which are very useful in understanding the competence of skills at the Diploma 3 education level of the Politeknik Negeri Media Kreatif which demands an understanding of skill competence. The use of logical, linguistic and mathematical thinking in the classroom by educators/lecturers is a systemic thinking pattern needed in the industrial world.

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1. INTRODUCTION

We know very well that the main difference between humans and animals lies in the ability of humans to take alternative paths to achieve their goals. The whole mind of an animal is filled with needs which cause them to either seek out the object they desire or throw away anything that stands in their way. It is not much different when we see a monkey reaching in vain for what he wants, while the most primitive man is able to use a bandringan, lasso, or throw stones. Therefore, humans are often referred to as homo fabe, namely creatures who make tools; and the ability to make tools is made possible by knowledge. We can conclude simply that the development of knowledge requires tools that can support the development itself.

An educator in carrying out scientific activities and developing them well requires good thinking tools as well. The availability of these facilities enables regular and careful scientific studies to be carried out. The use of this scientific thinking tool is an imperative thing for a scientist. Without mastering this, good scientific activities cannot be carried out. Suriasumantri's opinion reveals that thinking is an activity (reason) in obtaining correct knowledge and scientific thinking is also an activity that combines induction and deduction. Induction itself is a way of thinking in which general conclusions are drawn from statements or specific cases; Meanwhile, deduction is a way of thinking in which specific conclusions are drawn from general statements.

When an educator thinks with the mathematical method, some of the abilities possessed can help in solving several problems in the learning environment, such as:

a. Using algorithms: the ability possessed is to perform arithmetic operations, set operations.
b. Perform mathematical manipulation: the ability possessed is to use properties or formulas or principles or theorems into mathematical statements
c. Organizing data: the ability possessed is to distinguish or mention what is known from a question or problem from what is being asked.
d. Make use of symbols, tables, graphs and create them; The ability possessed is to use symbols, tables, graphs to show a change or trend and make it happen.
e. Recognizing and finding patterns: these abilities include: recognizing patterns of number arrangement and geometric patterns.
f. Draw a conclusion; These abilities include: the ability to draw conclusions from a calculation result or prove a formula.
g. Make sentences or mathematical models; These abilities include: the ability to simply translate phenomena in everyday life into mathematical models or vice versa. This model is expected to facilitate the completion.
h. Making interpretations of geometric shapes; These abilities include: the ability to express parts of basic geometric shapes and spaces and understand the position of those parts.
i. Understand measurements and their units; These capabilities include, among others; the ability to choose the right unit of measure, make estimates, change units of measure to other units.
j. Use calculators and other tools in math, such as math tables, calculators, and computers.

From some of the descriptions above, it is clear to us that Mathematics is a tool that can clarify and simplify a situation or situation through abstraction, idealization, or generalization for a study or problem solving. The importance of mathematics cannot be separated from its role in all kinds of dimensions of life.

Therefore, the purpose of this study is to reconstruct and find out the thinking patterns of educators in carrying out scientific studies properly, while the purpose of this research is to gain knowledge that allows educators to be able to solve everyday problems using logic. In this case, the means of scientific thinking is a tool for branches of knowledge to develop their knowledge material based on the scientific method, or more simply, the means of scientific thinking is a tool for the scientific method in carrying out its functions properly. Scientific tools are basically tools that help scientific activities in various steps that must be taken. To be able to carry out scientific thinking activities properly, it requires facilities in the form of logic, language, mathematics and statistics, so that scientific activities can run well, regularly and carefully.

2. METHODOLOGY

As explained in the introduction, the purpose of this research is to reconstruct and find out the thinking patterns of educators in carrying out scientific studies properly, and to gain knowledge that allows educators to be able to solve everyday problems using teaching logic. In accordance with the above objectives, the method to be used is a qualitative method with a descriptive approach.

This method is used to first collect the required data as much as possible, then the researcher describes the

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data systematically and accurately and interprets the object according to what it is based on connecting between variables. In this study, the research describes an analysis of the teaching and learning system of an educator in the classroom and outside the classroom which aims to a. Collect actual information in detail that describes the attitudes and behavior of educators b. Identify the problem of reaction and behavior of educators by examining data that shows existing conditions.

3. RESULTS AND DISCUSSION

The description of this study will analyze the means of thinking of educators on the use of Logic, Language and Mathematics. The main purpose of the analysis process is focused on the pattern of thinking that uses like a new building that is also new as the estuary of the reconstruction of a real and actual situation from the results of this study, namely the means of thinking of educators in the classroom. The educator's means of thinking can be likened to a axis that refers to philosophy (Gunawan at.all 2021). This will make the point of rotation or starting point related to science to focus on the meaning of the cycle of human life itself. So that philosophy does not question the symptoms or phenomena but looks for the nature of the phenomenon (Nasution & Haris, 2017).

Results

Educators Thinking Patterns against Students with Logical Thinking

The following is data regarding the use of logic for educators/lecturers obtained from interviews with 35 students/I at the Polimedia campus from 50 students in 1 level of semester 2, with 6 lecturers entering that class.

Table 1. Lecturer Logic Usage Data

NO	Submission Type	Number of Student Responses to Lecturers						Information
		1	2	3	4	5	6	
1	Lecturer who says the word "Using Logic"	10	4	5	5	4	7	
2	Tasks With Logic completion	6	3	7	5	10	3	1 Not submit
3	Explaining Logic Answers	5	5	7	4	4	15	
4	Material with Logic	5	4	5	5	4	10	2 Not submit

From the data above (table 1) taken using Google Form, it shows that the intensity of lecturers who use logical thinking in class is relatively frequent, so that the applied mindset also demands logical thinking.

Educators Thinking Patterns against Students Using Good Languange

Table 2. Data on Lecturer's Language Usage

NO	Submission Type	Number of Student Responses to Lecturers						Information
		1	2	3	4	5	6	
1	Say polite words	10	4	5	5	4	7	
2	Speak good words in calling	4	3	5	9	10	4	
3	Give assignments in plain language	3	7	7	4	4	15	
4	Delivering material explanations in easy-to-understand language	4	5	5	5	4	12	

In table 2, the use of language that is good and easy to understand and has good speech is also conveyed with a fairly good intensity, so that the material in class can be presented by educators / lecturers easily and understandably. This data was also taken using a google form given to Polimedia students in 1 major level, totaling 35 students.

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Educators Thinking Patterns against Students with Mathematical Thinking

Table 3. Data on the Use of Lecturer's Mathematical Thinking Logic

NO	Submission Type	Number of Student Responses to Lecturers						Information
		1	2	3	4	5	6	
1	Giving Tasks systematically	10	4	5	5	4	7	
2	Teach counting system	4	3	5	9	10	4	
3	Provide tips and tips for learning creatively	3	7	7	4	4	15	
4	Explaining the material using an analysis system and solutions	4	5	5	5	4	12	

The delivery of lecturers in class as educators is carried out in mathematical stages, namely having a strong desire to apply them, and developing competencies and equipping themselves with all available resources.

Discussion

The use of logic, language and mathematics is very effective as a reference and approach to the teaching and learning process between lecturers/educators and students in higher education. In this study, it has been proven by the implementation of the teaching and learning process in universities, especially at the Creative Media State Polytechnic, so this research is important because disciplinary theory is a benchmark for the development of lecture methods in the classroom and in the laboratory. The process of understanding, using and applying logical, linguistic and mathematical theory is very effective as a basis for thinking and behaving in determining the model of lectures in universities.

From tables 1, 2 and 3 the results shown by lecturers in teaching in class in logic, language and mathematical-based lectures show a systematic thinking pattern, so that this kind of thinking pattern is much needed by novice lecturers / educators in carrying out the teaching and learning process in the classroom. . The data in tables 1, 2 and 3 were not engineered and carried out under the conditions that actually occurred in the teaching and learning process/delivering material for a lecturer/educator in the classroom.

In addition, the data mentioned above can be used as the basis that logic, language and mathematical-based lectures can be categorized as effective in developing learning awareness with academic character of students including thoroughness of thinking, critical attitude, and responsibility. After conducting the study, it turned out that the lecture model based on logic, language and mathematics can collaborate on cognitive learning theory, communicative learning theory, cooperative learning theory, student active learning theory, and behavioristic learning theory. This finding supports one of the assumptions of learning theory which states that in the learning process, teachers/lecturers should be able to collaborate with many learning theories that are tailored to their needs.

Not a few in the teaching process in the classroom, an educator / lecturer conducts learning that is categorized as one-way learning, only the wishes of the lecturer / educator must be carried out, there is no interaction, so that the class seems to be conditioned by the authoritarian system of an educator. If this condition is met, then the teaching and learning process does not occur scientifically but at the discretion of the lecturer/educator. As stated by behavioristic theory combines logic, language and mathematics so that the class conditions created will be more interesting and well structured.

Therefore, the researcher wishes to conduct research on the use of logic, language and mathematics in the classroom by lecturers/educators. In this study, the researcher tried in a structured way to find out whether an educator/lecturer in the class contained elements of logic, language and mathematics in teaching in the classroom. The stages that the researcher did were providing an explanation to the class members so that they did not mis understand, and did not contain elements of coercion and coercion so that the results of this study were not made up. The diversity of teaching in the classroom by lecturers / educators will create collaborative classroom conditions that provide new nuances created by educators / lecturers who demand not only use 1 method of thinking but also do collaborative thinking. This is in accordance with several previous researchers who conducted research on collaborative learning with different methods, for example: argues in his article that collaborative classroom learning can help lecturers in teaching directly both in conventional and collaborative classes. also argues that if you don't use methods to improve the quality of the teaching and learning process, it will seem more difficult to teach to large groups or small classes if you don't use collaborative methods, because the use of this method is very helpful for educators in the classroom. There are still many opinions that support

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the collaborative learning process in the classroom, especially the methods used are collaborative methods based on logic, language and mathematics.

In general, the results of this study indicate that the lecture model based on logic, language and mathematics is very well conveyed and applied to the class of students at the tertiary level. Meanwhile, if it is intended for education with high school level and below, further research and handling still needs to be done..

4. CONCLUSION

From the discussion that has been reviewed above, the authors can conclude that: The application of classroom learning carried out by educators/lecturers using logical, language and mathematical-based thinking patterns will result in conducive, directed and interesting classroom conditions, this will increase the enthusiasm of learning that is conducive to learning, boils down to the competence of expertise possessed at the Creative Media State Polytechnic. This mindset also has a good impact on higher education in the Vocational Classroom which requires analysis and systematic logic and is systematic in understanding the competency skills required of students by the educational institution itself. The pros and cons of applying the logic, language and mathematical thinking patterns of educators can more or less make a good contribution for the sustainability of understanding the material provided.

From the whole discussion, the author gives suggestions about the Educator's Mindset on Logic, Language and Mathematics at the Keatif Media State Polytechnic.

1) Pay attention to good teaching patterns by collaborating the learning process between logic, language and good thinking.
2) Making a habituation in the teaching and learning process for students in creating a harmonious learning climate.
3) Synchronization between a good mindset, logic and systemic mathematics has always been character education in the world of education.

5. REFERENCES

Jujun S. Suriasumantri, Filsafat Ilmu: Sebuah Pengantar Populer. Jakarta: Pustaka Sinar Harapan, 1995.

D. N. R. I Gusti Ngurah Puger, “PENERAPAN KEMAMPUAN BERPIKIR MANTIK DALAM PEMBELAJARAN SAINS,” Daiwi Widya J. Pendidik. FKIP UNIPAS, vol. 6, no. 2, 2019.

I. S. Muhammad Rijal, “Sarana Berpikir Ilmiah,” Biosel Biol. Sci. Educ., vol. 6, no. 2, 2017.

N. P. Putri, “EKSISTENSI BAHASA INDONESIA PADA GENERASI MILLENNIAL,” Widyabastra J. Ilm. Pembelajaran Bhs. Dan Sastra Indones., vol. 5, no. 1, 2017.

J. W. Santrock, Psikologi Pendidikan. Jakarta: Kencana, 2008.

Komaruddin Hidayat, Memahami Bahasa Agama: Sebuah Kajian Hermeneutik. Jakarta: Paramadina, 1996.

Farah Indrawati, “Pengaruh Kemampuan Numerik dan Cara Belajar terhadap Prestasi Belajar Matematika,” Form. J. Ilm. Pendidik. MIPA, vol. 3, no. 3, 2015.

H. SA’DIYAH, “PENINGKATAN HASIL BELAJAR MATEMATIKA PADA MATERI BANGUN DATAR DENGAN MENGGUNAKAN MODEL PEMBELAJARAN INKUIRI (PTK di Kelas III SDN Tanara 2),” Universitas Islam Negeri “Sultan Maulana Hasanuddin” BANTEN, 2017.

A. J. Ahmad Afandi, “PENGEMBANGAN LKM DENGAN PENDEKATAN OPEN-ENDED UNTUK MENINGKATKAN KEMAMPUAN BERPIKIR KREATIF PADA MATA KULIAH GEOMETRI,” Delta-Pi J. Mat. dan Pendidik. Mat., vol. 6, no. 2, 2015.

A. B. K. Nanda Tri Setiani, “PEMANFAATAN COMIC MATH PADA PEMBELAJARAN MATEMATIKA,” Pros. Sendika, vol. 5, no. 1, 2019.

Sugiyono, Metodologi Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung, 2016.

S. S. Gunawan Gunawan, Muhammad Adyan Simanjuntak, Amroeni Drajat, “Interpretation of Ibn Sina’s Metaphysics on Islamic Teology and Islamic Education Axiology for Politeknik Negeri Media Kreatif Studies in Medan,” AT-TURAS J. Stud. Keislam., vol. 8, no. 2, pp. 117–133, 2021.

L. Isnaini, M., Wardani, D. K., & Noviani, “engaruh kompetensi dosen dan fasilitas belajar terhadap kepuasan mahasiswa pendidikan ekonomi fkip uns,” J. Pendidik. Bisnis dan Ekon., vol. 1, no. 2, 2016.

S. H. Wijayanti, “Efektivitas Metode Kolaboratif dalam Pembelajaran Menulis. Bahasa dan Seni,” J. Bahasa, Sastra, Seni, dan Pengajarannya, vol. 40, no. 2, 2012.

N. Suryani, “Implementasi model pembelajaran kolaboratif untuk meningkatkan ketrampilan sosial siswa.,” Maj. Ilm. Pembelajaran, vol. 8, no. 2, 2010.