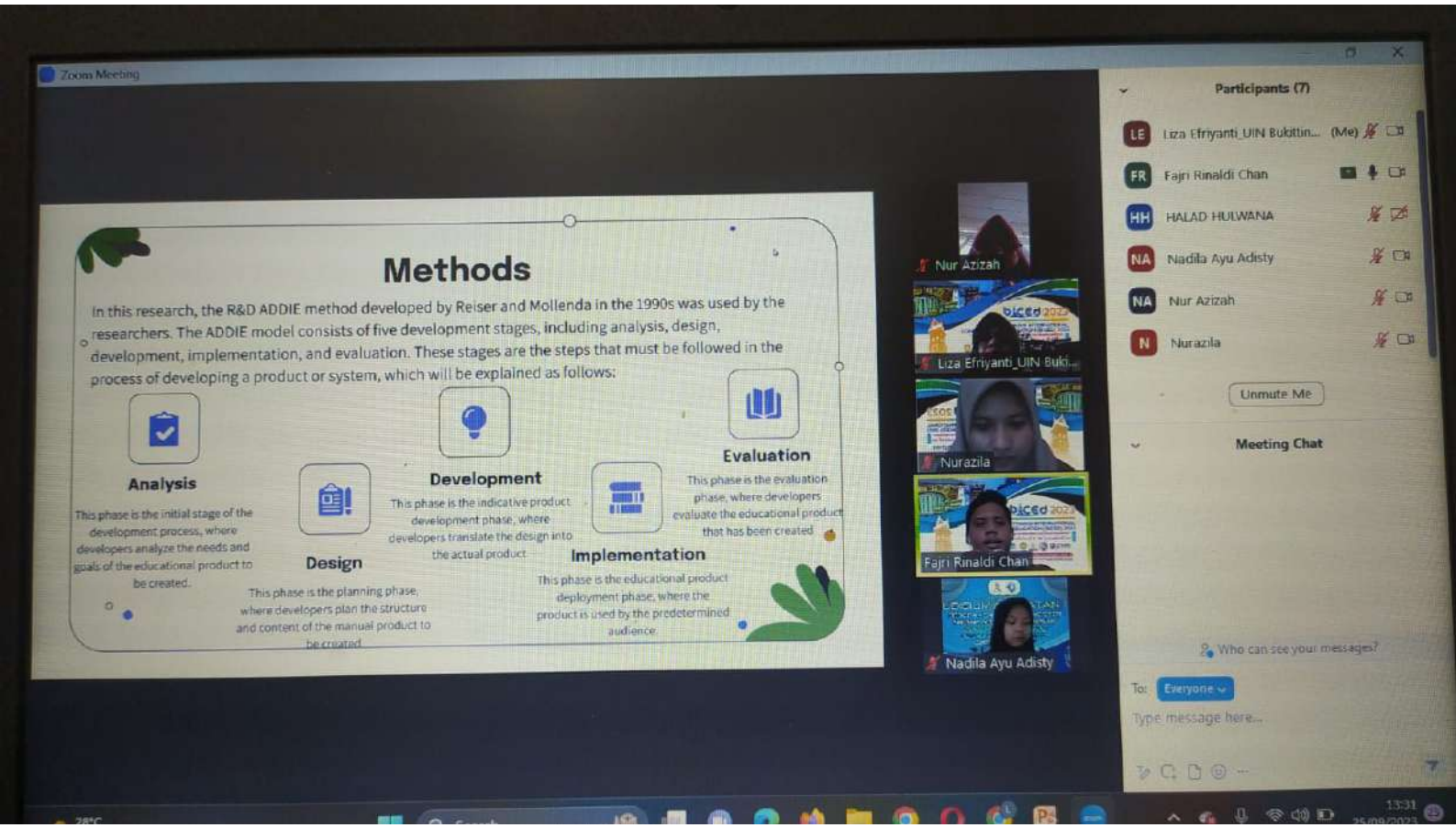
The Development of Interactive Artificial Intelligence-Based Learning Media Using Natural Language Processing Methods In the Subject of Informatics

Fajri Rinaldi Chan
UIN Sjech M. Djamil Djambek Bukittinggi


Zoom Meeting
Methods
In this research, the R&D ADDIE method developed by Reiser and Mollenda in the 1990s was used by the researchers. The ADDIE model consists of five development stages, including analysis, design, development, implementation, and evaluation. These stages are the steps that must be followed in the process of developing a product or system, which will be explained as follows:
Analysis
This phase is the initial stage of the development process, where developers analyze the needs and goals of the educational product to be created.
Design
This phase is the planning phase, where developers plan the structure and content of the manual product to be created.
Development
This phase is the indicative product development phase, where developers translate the design into the actual product.
Implementation
This phase is the educational product deployment phase, where the product is used by the predetermined audience.
Evaluation
This phase is the evaluation phase, where developers evaluate the educational product that has been created.
Nur Azizah
Liza Efriyanti_UIN Bukit...
Nurazila
Fajri Rinaldi Chan
Nadila Ayu Adisty
Participants (7)
Liza Efriyanti_UIN Bukittin... (Me)
Fajri Rinaldi Chan
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Nadila Ayu Adisty
Nur Azizah
Nurazila
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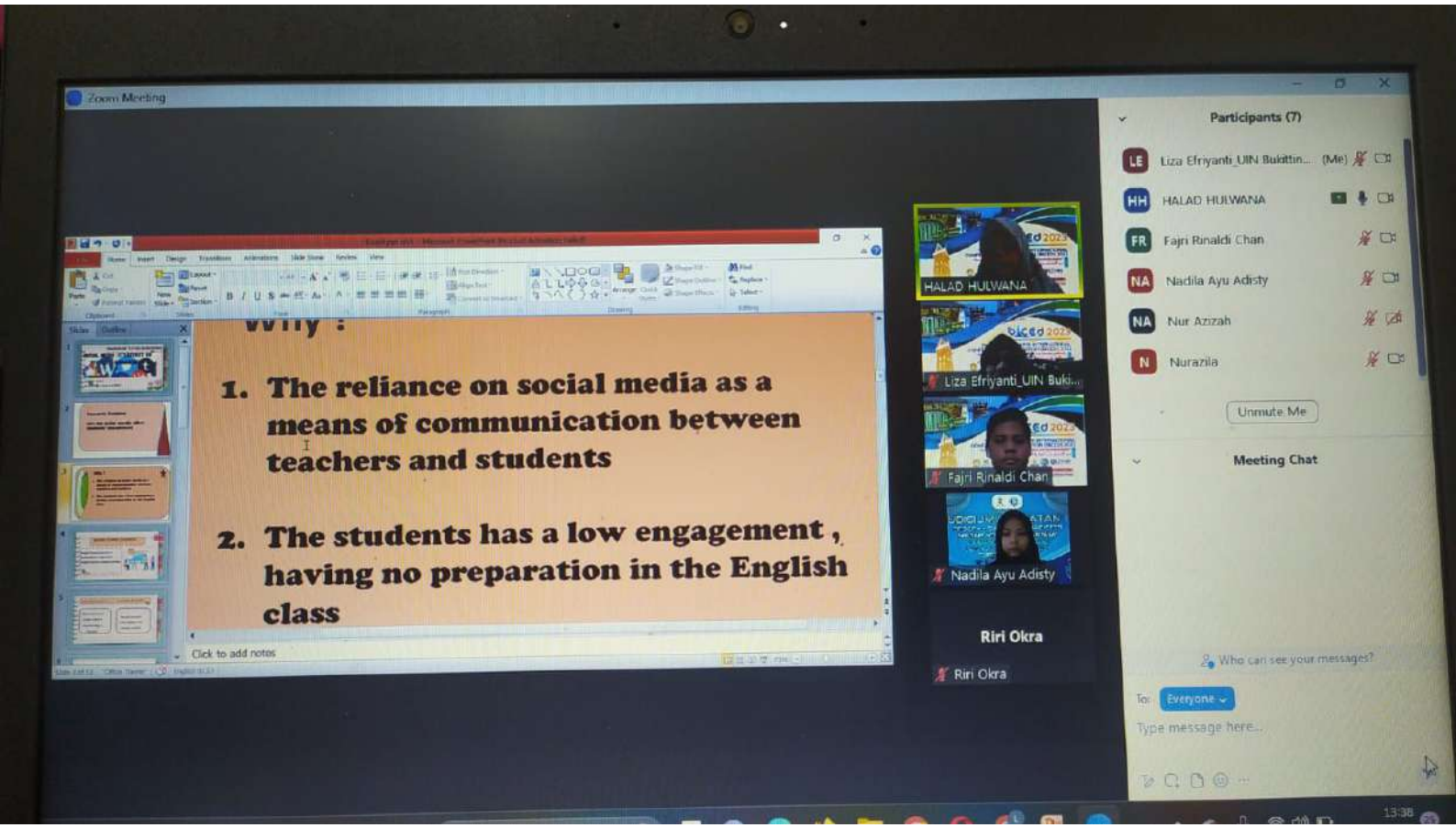
Zoom Meeting
Why :
1. The reliance on social media as a means of communication between teachers and students
2. The students has a low engagement , having no preparation in the English class
Click to add notes
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Fajri Rinaldi Chan
Nadila Ayu Adisty
Riri Okra
Riri Okra
Participants (7)
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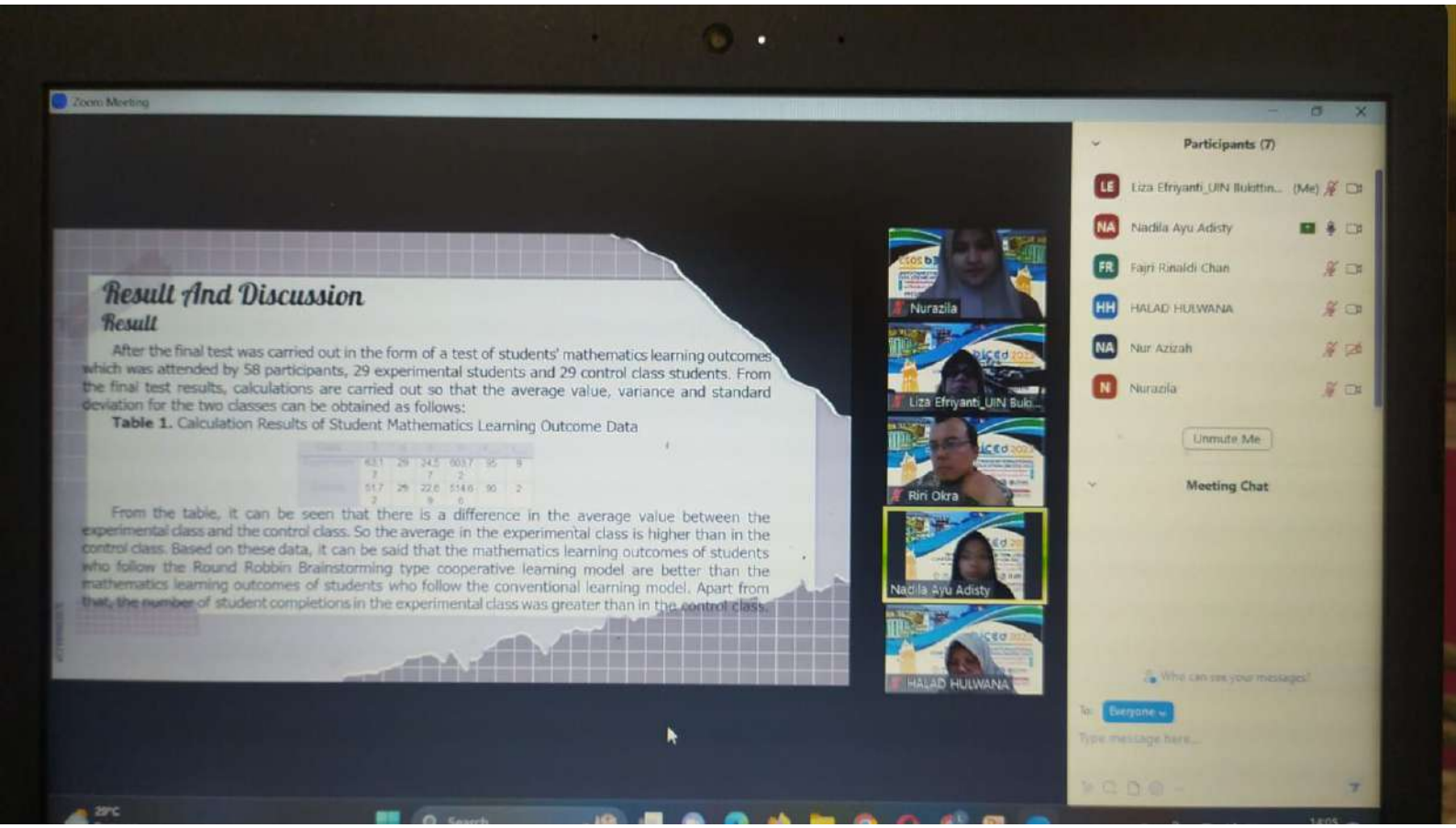
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Result And Discussion
Result
After the final test was carried out in the form of a test of students' mathematics learning outcomes which was attended by 58 participants, 29 experimental students and 29 control class students. From the final test results, calculations are carried out so that the average value, variance and standard deviation for the two classes can be obtained as follows:
Table 1. Calculation Results of Student Mathematics Learning Outcome Data
From the table, it can be seen that there is a difference in the average value between the experimental class and the control class. So the average in the experimental class is higher than in the control class. Based on these data, it can be said that the mathematics learning outcomes of students who follow the Round Robbin Brainstorming type cooperative learning model are better than the mathematics learning outcomes of students who follow the conventional learning model. Apart from that, the number of student completions in the experimental class was greater than in the control class.
Nurazila
Liza Efriyanti_UIN Bukit...
Riri Okra
Nadila Ayu Adisty
HALAD HULWANA
Participants (7)
Liza Efriyanti_UIN Bukittin... (Me)
Nadila Ayu Adisty
Fajri Rinaldi Chan
HALAD HULWANA
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Zoom Meeting

Liza Efriyanti_UIN Buki... | Nurazila | Nadila Ayu Adisty | Riri Okra | Nur Azizah

Nur Azizah

BACKGROUND OF THE PROBLEM

This research was motivated by problems found after direct interviews with ICT subject teachers at SMA N 1 Kapur IX Mr. Diki Putra Indri S.Kom on November 26, 2022 and 11 students. Based on these interviews, the authors identified problems, namely the disruption of the learning process due to power outages, many students already have an android but its utilization in the field of education is still limited, there is no android-based learning media at SMA N 1 Kapur IX

Participants (7)

- LE Liza Efriyanti_UIN Bukittin... (Me)
- N Nurazila
- FR Fajri Rinaldi Chan
- HH HALAD HULWANA
- NA Nadila Ayu Adisty
- NA Nur Azizah

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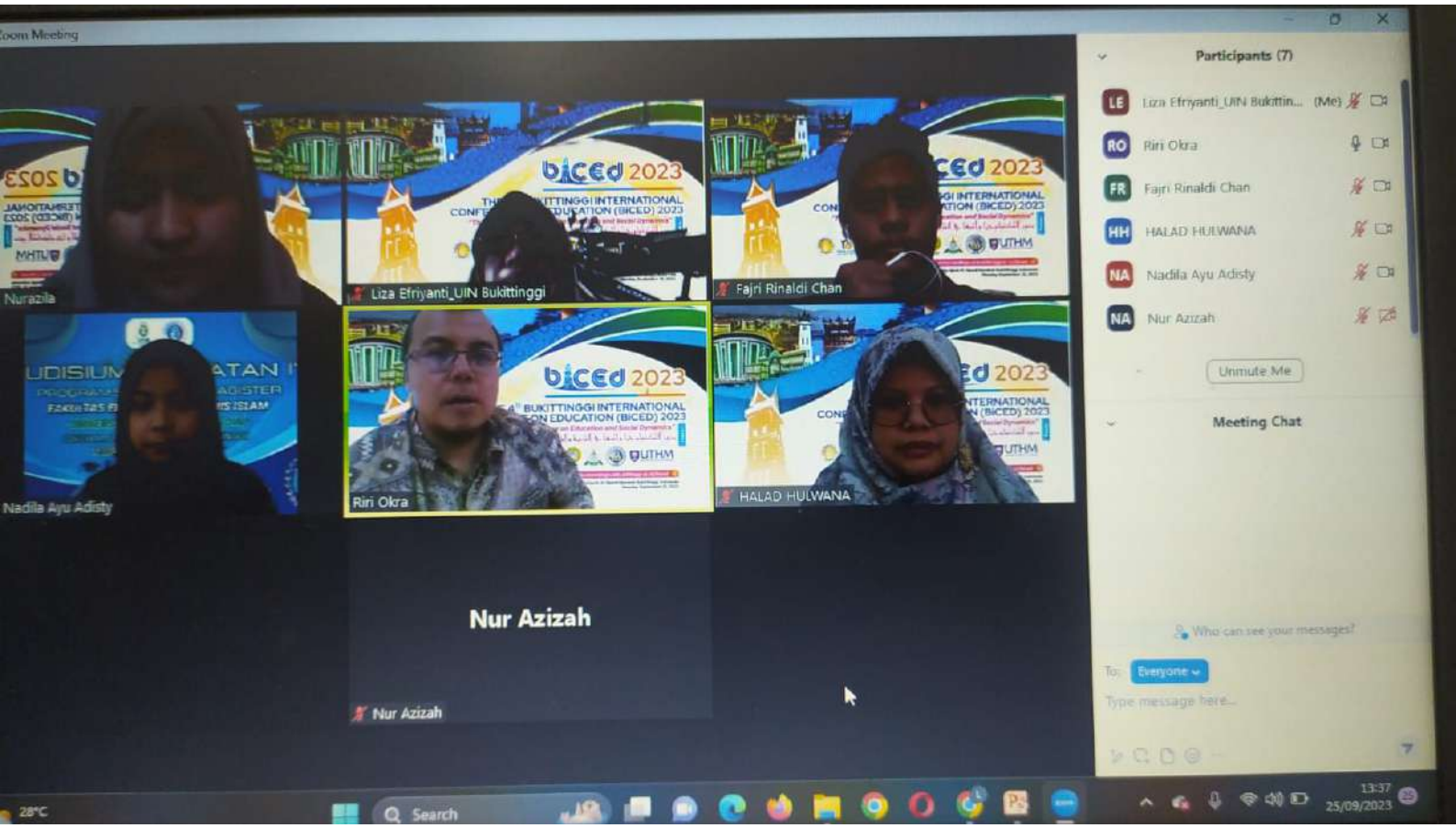
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Monday, September 25, 2023

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Faculty of Tarbiyah and Teacher Training

Dr. Iswantir M, M. Ag.

Chairman of the Committee

Dr. Rusdi, S. Pd., M. Si.

CERTIFICATE

No : B-4338/Un.26.1/KP.01.2/09/2023

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Theme :

Abstract Receipt Letter

Dear corespondence author,
Liza Efriyanti
UIN Sjech M.Djamil Djambek Bukittinggi

Thank you for your contribution by submitting an abstract to our conference. At the same time, we gladly inform you that your paper entitled **"Designing an OBE-Based Learning Model Using Fuzzy Logic in the Master of Islamic Education Management Study Program at UIN Bukittinggi"** for which you are the correspondence author, was **accepted** for presentation at a parallel session on The 4th Bukittinggi International Conference on Education BICED) 2023 will be conducted on September 25, 2023.

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DESIGNING AN OBE-BASED LEARNING MODEL USING FUZZY LOGIC AT THE UIN BUKITTINGGI POSTGRADUATE PROGRAM

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Kata Kunci : kecerdasan buatan, model pembelajaran, model pembelajaran berbasis OBE

Abstract

Higher education, especially in the context of the Master of Islamic Education Management Study Program at UIN Bukittinggi, is increasingly approaching the global challenge of preparing graduates who are competent and adaptive in the 21st century. One approach that has received attention is Outcome-Based Education (OBE) which emphasizes the achievement of results. learning. This article discusses the design of an OBE-based learning model that utilizes fuzzy logic as a tool to improve the quality of the learning process in the Master of Islamic Education Management Study Program at UIN Bukittinggi. The proposed learning model integrates the OBE concept with fuzzy logic to measure and analyze student learning outcomes more accurately. The research methodology is system modeling using the stages of the Mamdani method of fuzzy logic using the Matlab application. Input variables consist of: Student Learning Outcome Data, Competency Standards and Learning Achievements, Environmental Factor Data. Meanwhile, the output variables consist of: Assessment-Centered Learning (ACL), Backward Design, Project-Based Learning (PBL), Problem-Based Learning (PBL) and Inquiry-Based Learning. Rules in fuzzy logic consist of 78 rules. Based on the design obtained, lecturers can choose an appropriate and effective learning model in order to increase the effectiveness and efficiency of the learning process in the Master of Islamic Education Management Study Program at UIN Bukittinggi, as well as providing deeper insight into student competency achievement .

Abstract

Pendidikan tinggi, khususnya dalam konteks Program Studi S2 Manajemen Pendidikan Islam di UIN Bukittinggi, semakin mendekati tantangan global dalam mempersiapkan lulusan yang kompeten dan adaptif pada abad 21. Salah satu pendekatan yang telah mendapatkan perhatian adalah Outcome-Based Education (OBE) yang menekankan pencapaian hasil pembelajaran. Artikel ini membahas perancangan sebuah model pembelajaran berbasis OBE yang memanfaatkan logika fuzzy sebagai alat untuk meningkatkan kualitas proses pembelajaran di Prodi S2 Manajemen Pendidikan Islam UIN Bukittinggi. Model pembelajaran yang diusulkan mengintegrasikan konsep OBE dengan logika fuzzy untuk mengukur dan menganalisis pencapaian hasil pembelajaran mahasiswa secara lebih akurat. Metodologi penelitian berupa pemodelan system dengan menggunakan tahap-tahap pada metode mamdani dari logika fuzzy dengan menggunakan aplikasi matlab.Variabel input terdiri atas: Data Hasil Pembelajaran Mahasiswa, Standar Kompetensi dan Capaian Pembelajaran, Data Faktor Lingkungan. Sementara variable output terdiri atas: Assessment-Centered Learning (ACL), Backward Design, Project-Based Learning (PBL), Problem-Based Learning (PBL) dan Inquiry-Based Learning. Rules pada logika fuzzy terdiri atas 78 buah rules. Berdasarkan rancangan yang diperoleh maka dosen dapat memilih model pembelajaran yang tepat dan efektif agar dapat meningkatkan efektivitas dan efisiensi proses pembelajaran di Prodi S2 Manajemen Pendidikan Islam UIN Bukittinggi, serta

memberikan wawasan yang lebih mendalam tentang pencapaian kompetensi mahasiswa. Dengan demikian, artikel ini menyumbangkan pandangan baru terkait dengan pengembangan kurikulum berbasis OBE dengan pendekatan logika fuzzy di tingkat pendidikan tinggi, khususnya dalam konteks pendidikan Islam di Indonesia.

INTRODUCTION

Improving the quality of higher education, especially at postgraduate level, is one of the key elements in developing quality human resources(Asmuni, 2021) (Damanik, 2020). UIN Sjech M.Djamil Djambek Bukittinggi (UIN Bukittinggi) as one of the tertiary institutions in Indonesia needs to continue to improve the quality of its education so that it can compete globally. Current curriculum changes focus more on outcome-based education. This has a tremendous impact on educators and students in participating in the lecture process at higher education. Curriculum changes are in accordance with a shift in educational paradigms that are in line with technological developments and global society's way of thinking and market needs in order to improve human welfare(Efriyanti & Annas, 2020) (Nafiati, 2021).

OBE-Based Education (Outcome-Based Education) is an educational approach that focuses on achieving learning outcomes by students. By implementing this approach, universities can ensure that their graduates have competencies that match the needs of the job market(Ally, 1999). The Industrial Revolution 4.0 emphasizes the importance of producing graduates who have competencies that are relevant to the changing demands of the job market(Simanjuntak, 2019) (Damanik, 2020) (Efriyanti & Annas, 2020). The OBE (Outcome-Based Education) based learning model is very relevant in this context because it focuses on learning outcomes that can be measured and are relevant to industry needs.(Angga et al., 2022).

The learning process at postgraduate level is often more complex than at other levels of education. Students at this level are expected to have analytical skills and a deeper understanding in various disciplines. Islamic Education Management Masters students need to acquire competencies that cover various aspects, including theoretical knowledge, practical skills, and attitudes necessary to succeed in this field. The following are several competencies that Master of Islamic Education Management students must have: theoretical knowledge, analytical and research skills, managerial abilities, communication skills, understanding of educational policies, critical thinking skills, adaptability and innovation, professional ethics, multicultural skills and collaboration skills(Ripani, 2020) (Asmuni, 2021) (Nurhayani et al., 2022).

Fuzzy Logic is a tool that can be used to overcome uncertainty and complexity in decision making. By applying this logic in designing learning models, the process of evaluating student learning outcomes can be more adaptive and flexible (Pranolo, 2014) (Teddy Nasastra, 2021) (Dini & Adri, 2021). Industrial Revolution 4.0 emphasizes the need to adapt quickly to changes in technology and society(Widodo & Wardani, 2020). Using fuzzy logic in designing learning models can make the education system more adaptive and able to handle uncertainty.

Society 5.0 is a concept that combines advanced technology with a society that focuses on welfare and improving the quality of life. Designing a learning model based on OBE and using fuzzy logic can help create graduates who can contribute to this technology-based society. Society 5.0 emphasizes the importance of connectivity and collaboration between individuals, companies and educational institutions. The OBE-based learning model can promote collaboration and interaction between students, lecturers and the industrial sector(Damanik, 2020) (Kristiana et al., 2020).

There is a need for applied research in the form of designing an OBE-based learning model that utilizes fuzzy logic as a tool to improve the quality of the learning process in the

Master of Islamic Education Management Study Program at UIN Bukittinggi. This kind of research can make a significant contribution in improving the quality of higher education at UIN Bukittinggi and its surroundings, because educators, especially lecturers, can quickly and accurately make decisions on learning models that are suitable for OBE from the courses taught according to the input that influences decisions. which is taken based on the decision system that the author will design in this article, using the fuzzy logic method (Mamdani model type 1).

METHODS

The research methodology is in the form of system modeling using the stages of the Mamdani method of fuzzy logic using the Matlab application(Pakyürek et al., 2019).Input variables consist of: Data on Student Learning Outcomes, Competency Standards and Learning Achievements, Data on Environmental Factors. Meanwhile, the output variables consist of: Assessment-Centered Learning (ACL), Backward Design, Project-Based Learning (PBL), Problem-Based Learning (PBL) and Inquiry-Based Learning.

Fuzzy logic is a decision-making method that overcomes uncertainty and complexity by generalizing inexact information into fuzzy (linguistic) values. In the context of designing a learning model, there are general stages that can be carried out(Pakyürek et al., 2019) (Nasution & Prakarsa, 2021) (Dini & Adri, 2021) (Dutta, 2018):

1. Determination of Input and Output Variables:
   Determine the input and output variables that will be used in your fuzzy logic system. For example, input variables could be "Student Learning Outcome Data," "Competency Standards and Learning Outcomes," and "Environmental Factor Data," while output variables could be "Assessment-Centered Learning (ACL)," "Backward Design," "Project -Based Learning (PBL)," "Problem-Based Learning (PBL)," and "Inquiry-Based Learning."
2. Fuzzification of Input Variables:
   Convert input data into fuzzy values using appropriate membership functions. For example, "Student Learning Outcome Data" can be converted into fuzzy values such as "Good," "Adequate," and "Poor."
3. Fuzzy Rule Development:
   Determine the rules that connect input variables with output variables. These rules can take the form of fuzzy logic statements such as "If Student Learning Outcome Data is 'Good,' and Competency Standards are 'High,' then Assessment-Centered Learning (ACL) is 'High.'"
4. Fuzzy Rule Merging:
   Combine the fuzzy rules that have been created to get a whole fuzzy logic system.
5. Fuzzy Inference Process:
   This process involves the use of fuzzy rules that have been combined to carry out inference or draw conclusions related to output variables. This involves calculations involving fuzzy values.
6. Defuzzification:
   The results of the inference process are fuzzy values in the output variables. Defuzzification is the process of turning these fuzzy values back into concrete values or actions that can be taken. For example, changing the fuzzy value "High" on "Assessment-Centered Learning (ACL)" to a concrete level such as "85."
7. Evaluation and Adjustment:
   After getting the defuzzification results, you can evaluate whether the results are in accordance with the objectives of the designed learning model. If

necessary, adjustments are made to the fuzzy rules or other parameters in the fuzzy logic system.

8. Implementation:

   Finally, the fuzzy logic-based learning model that has been designed can be implemented in the educational context at the UIN Bukittinggi Postgraduate School.

RESULTS AND DISCUSSION

RESULT

In artificial intelligence in solving cases using fuzzy logic, the input and output variables are first determined. As for the design of an OBE-based learning model using fuzzy logic in the Master of Islamic Education Management Study Program at UIN Sjech M.Djamil Djambek Bukittinggi (UIN Bukittinggi), it consists of input variables, which consist of: Student Learning Outcomes Data, Competency Standards and Learning Achievements, Data Environmental factor. Meanwhile, the output variables consist of: Assessment-Centered Learning (ACL), Backward Design, Project-Based Learning (PBL), Problem-Based Learning (PBL) and Inquiry-Based Learning. The membership function table for the input and output variables is in the table 1 to 3 are input variables, while tables 4 to 8 are output tables.

Table 1. Input Variable: Student Learning Outcome Data

Label	Membership Functions
Bad	[0, 0, 50]
Enough	[40, 50, 60]
Good	[50, 100, 100]

Table 2. Input Variables: Competency Standards and Learning Outcomes

Label	Membership Functions
Low	[0, 0, 50]
Currently	[40, 50, 75]
Tall	[50, 100, 100]

Table 3. Input Variables: Environmental Factor Data

Label	Membership Functions
Does not support	[0, 0, 45]
Neutral	[40, 50, 65]
Support	[60, 100, 100]

Table 4. Output Variable: Assessment-Centered Learning (ACL)

Label	Membership Functions
Low	[0, 0, 50]
Currently	[40, 50, 60]
Tall	[50, 100, 100]

Table 5. Output Variables: Backward Design

Label	Membership Functions
Low	[0, 0, 50]
Currently	[40, 50, 60]
Tall	[50, 100, 100]

Table 6. Output Variable: Project-Based Learning (PBL)

Label	Membership Functions
Low	[0, 0, 50]
Currently	[40, 50, 60]
Tall	[50, 100, 100]

Table 7. Output Variable: Problem-Based Learning (ProblemBL)

Label	Membership Functions
Low	[0, 0, 50]
Currently	[40, 50, 60]
Tall	[50, 100, 100]

Table 8. Output Variable: Inquiry-Based Learning

Label	Membership Functions
Low	[0, 0, 50]
Currently	[40, 50, 60]
Tall	[50, 100, 100]

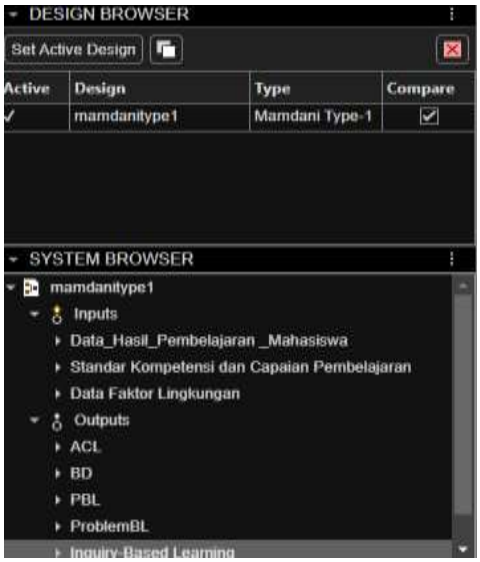

Figure 1. Designing Input and Output Variables using Fuzzy Logic Designer

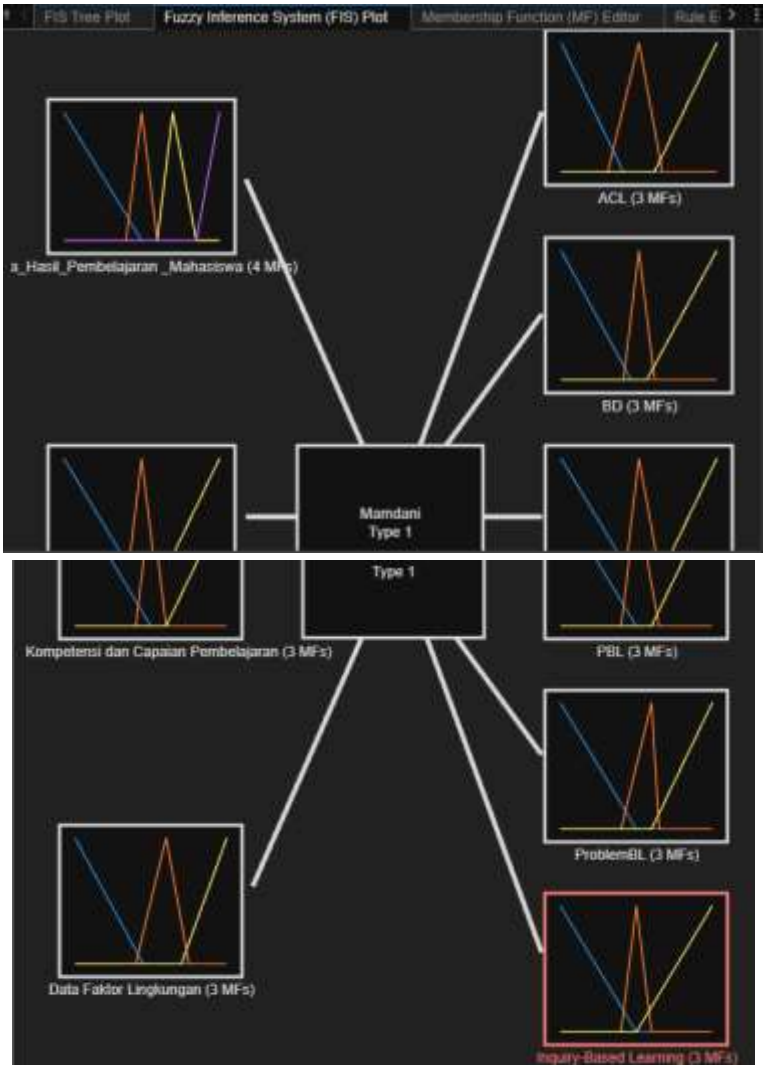

Figure 2. Design of a Fuzzy Inference System OBE-based Learning Model in the Master of Islamic Education Management Study Program at UIN Bukittinggi

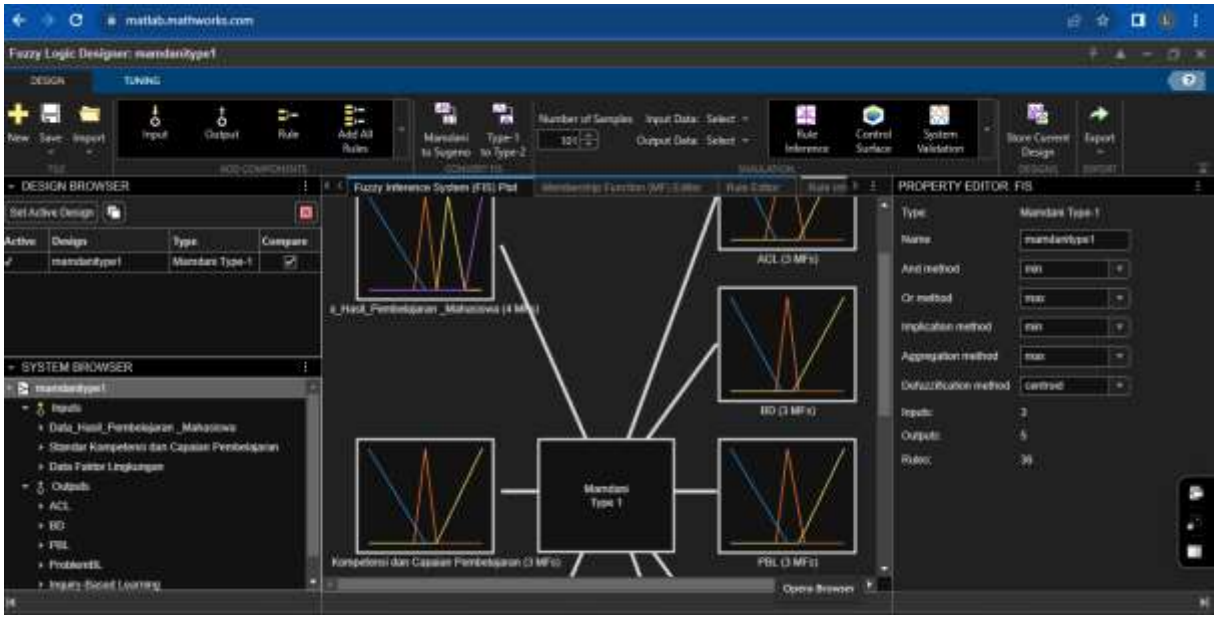

Figure 3. Matlab Application Display: Designing an OBE-based Learning Model for the Master of Islamic Education Management Study Program at UIN Bukittinggi using the Mamdani Type 1 Model

For each input and output variable, a membership function graph is created using the Matlab application. The following is a graph of the input variables for designing an OBE-based learning model:

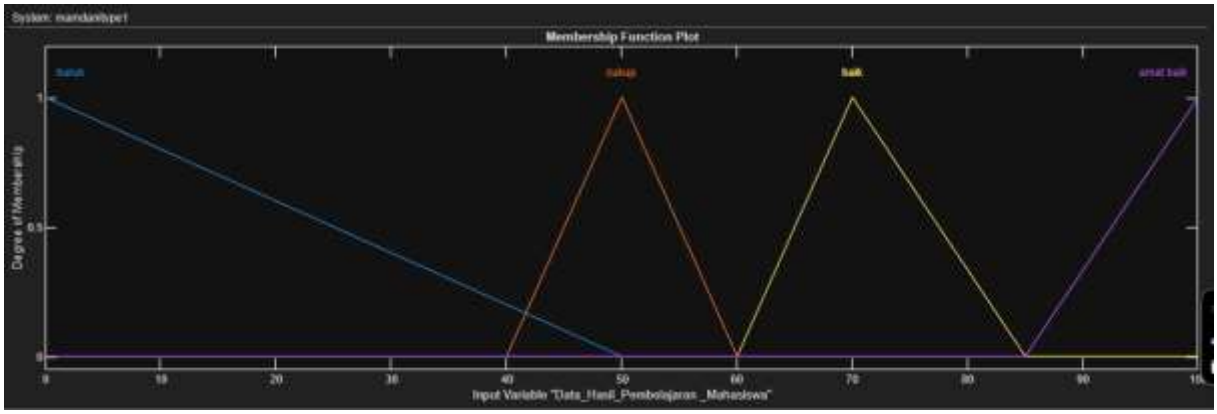

Figure 4. Membership Function Student Learning Outcome Data

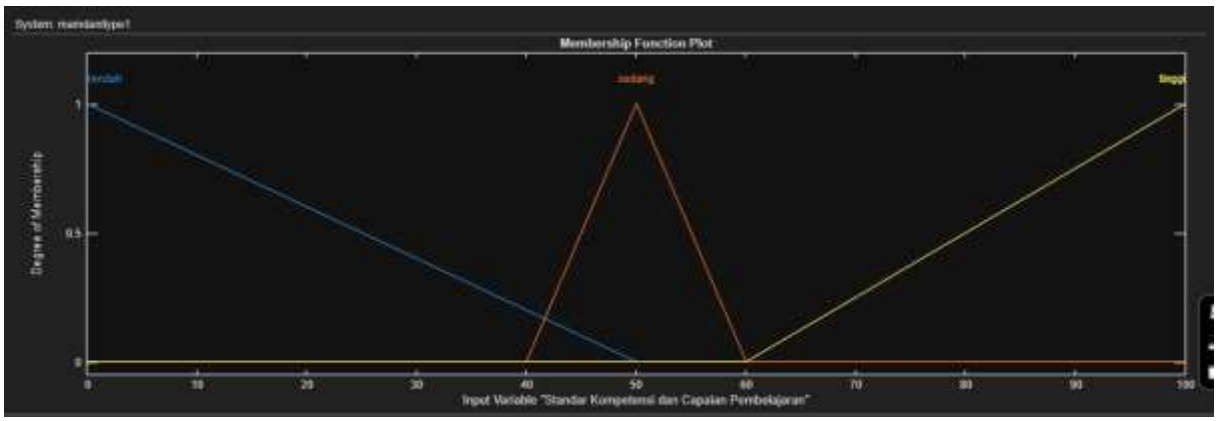

Figure 5. Membership Function Competency Standards and Learning Outcomes

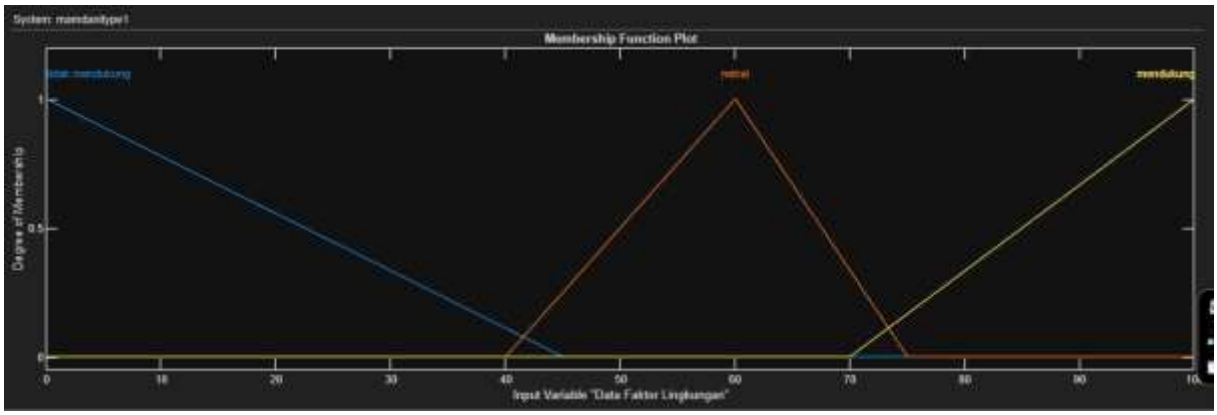

Figure 6. Membership Function Environmental Factor Data

Meanwhile, the graph of the output variable for designing an OBE-based learning model:

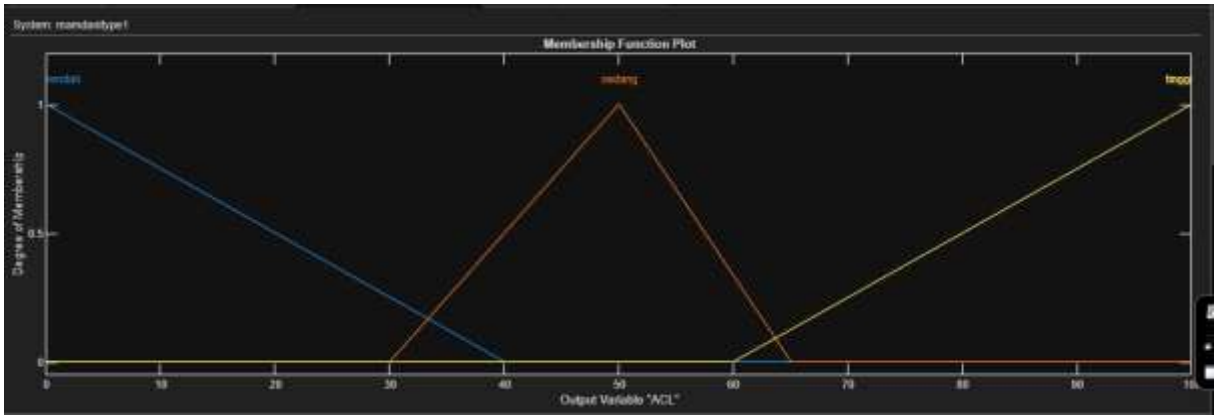

Figure 7. Membership Function ACL Learning Model

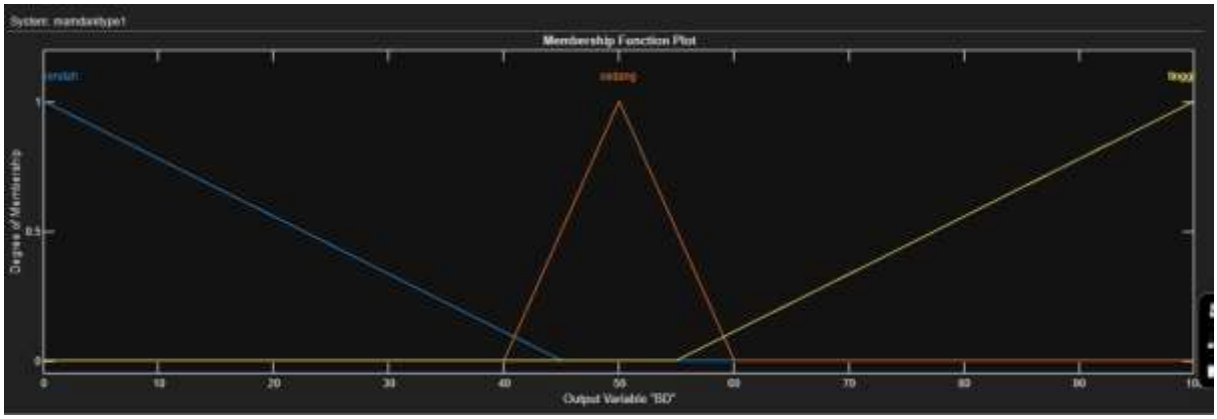

Figure 8. Membership Function BD

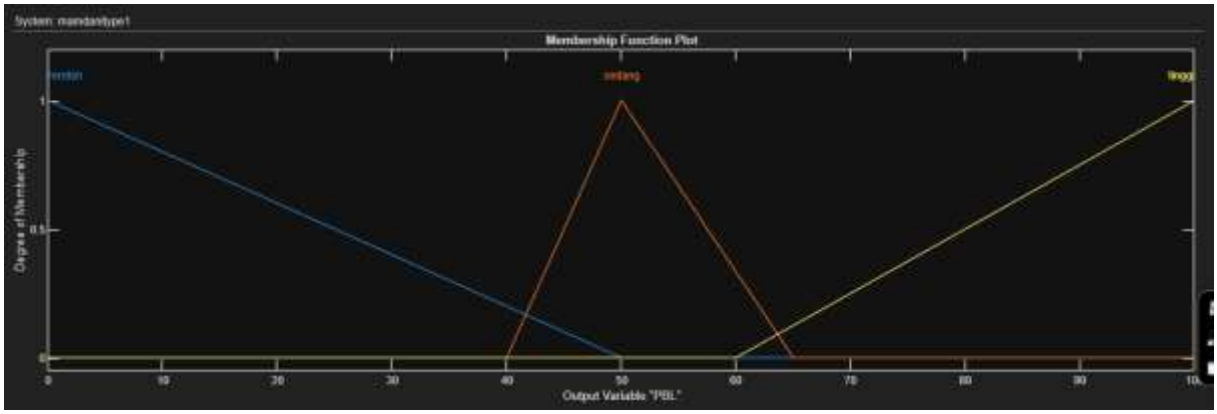

Figure 9. Membership Function PBL

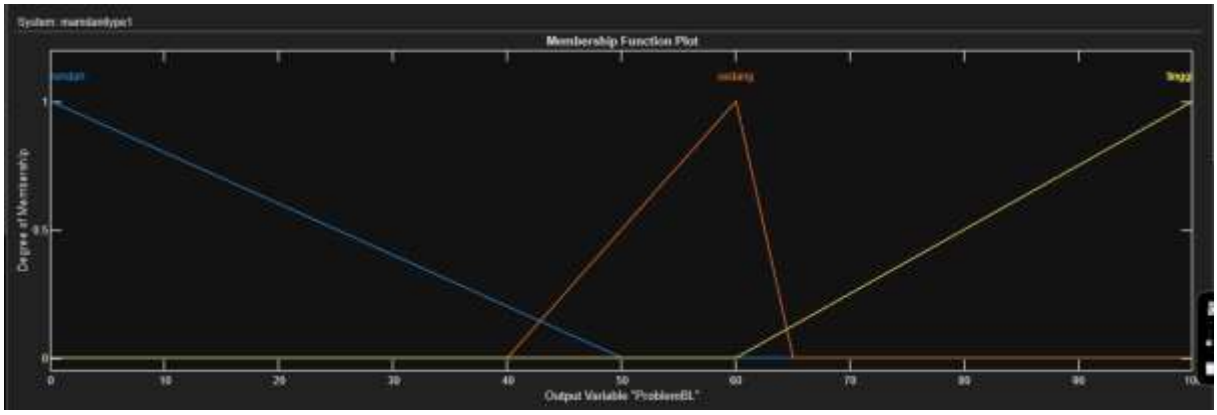

Figure 10. Membership Function Problem Based Learning

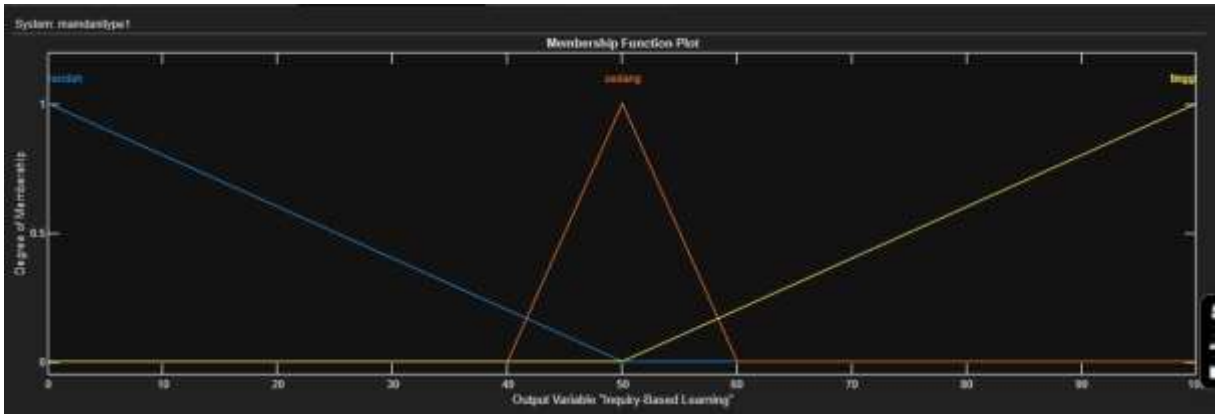

Figure 11. Membership Function Inquiry Based Learning

There are 38 rules generated from the fuzzy logic method using the Matlab application (fuzzy logic designer: mandanitype1), according to the picture:

1. If Student Learning Results Data is poor and Competency Standards and Learning Achievements are low and Environmental Factor Data is not supportive then ACL is low, BD is low, PBL is low, ProblemBL is low, Inquiry-Based Learning is low
2. If Student Learning Results Data is sufficient and Competency Standards and Learning Achievements are low and Environmental Factor Data is not supportive then ACL is low, BD is low, PBL is low, ProblemBL is low, Inquiry-Based Learning is low
3. If Student Learning Results Data is good and Competency Standards and Learning Achievements are low and Environmental Factor Data is not supportive then ACL is low, BD is low, PBL is low, ProblemBL is low, Inquiry-Based Learning is low

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36. If Student Learning Results Data is very good and Competency Standards and Learning Achievements are high and Environmental Factor Data is supportive then ACL is low, BD is low, PBL is low, ProblemBL is low, Inquiry-Based Learning is low
37. If Student Learning Results Data is poor and Competency Standards and Learning Achievements are low and Environmental Factor Data is not supportive then ACL is low, BD is low, PBL is low, ProblemBL is low, Inquiry-Based Learning is low
38. If Student Learning Results Data is sufficient and Competency Standards and Learning Achievements are low and Environmental Factor Data is not supportive then ACL is low, BD is low, PBL is low, ProblemBL is low, Inquiry-Based Learning is low

Figure 12. Rules for Designing an OBE-based Learning Model in the Master of Islamic Education Management Study Program at UIN Bukittinggi using the Mamdani Type 1 Model

Based on the results of designing an OBE-based learning model in the Master of Islamic Education Management Study Program at UIN Bukittinggi using the Mamdani type 1 model, the design results obtained can be implemented in decision support by the course lecturer, based on the input that has been determined by the system. For example, it is known that student learning outcome data is: 50; competency standards and learning outcomes: 50 and environmental factor data: 50. So based on this input, the following results are obtained, as in Figure 13:

1. ACL Learning Model = 16.3
2. Learning Model BD = 17.2
3. PBL Learning Model = 19.2
4. Problem Based Learning Model = 19.2
5. Inquiry Based Learning Model = 19.2

So there are 3 choices of appropriate learning models, namely: PBL Learning Model or Problem Based Learning Model or Inquiry Based Learning Model. The choice of model is handed over to the lecturer in charge of the course by taking into account the learning style and expected learning outcomes in the course.However, the membership value of each learning model will vary depending on the input values and fuzzy rules used.

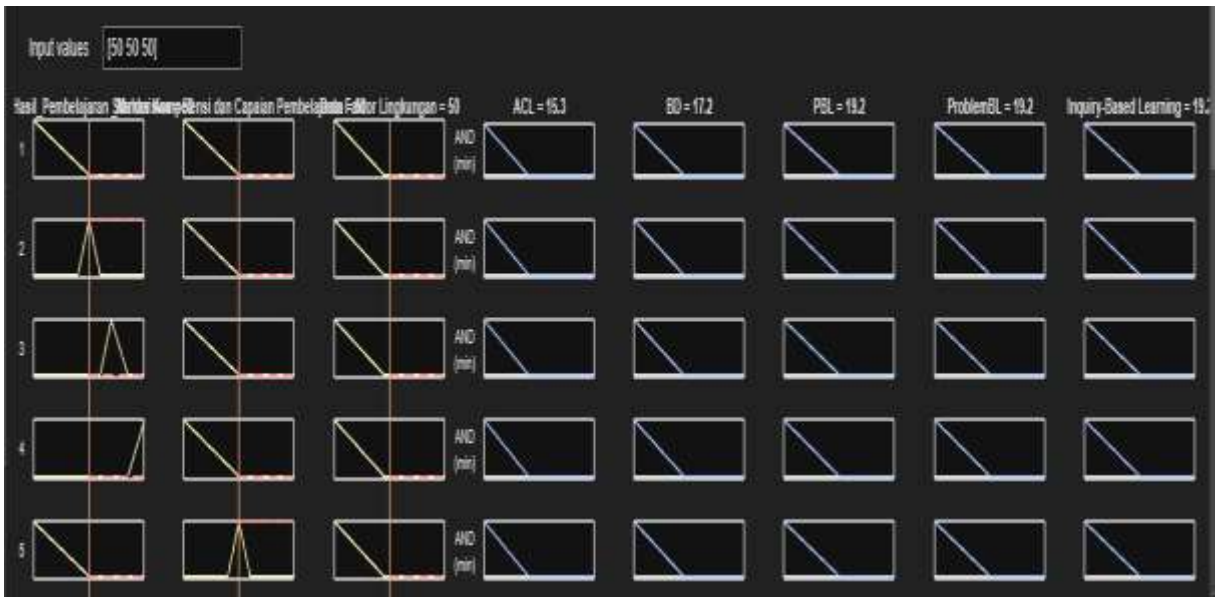

Figure 13. Inference Engine (Decision) Designing an OBE-based Learning Model in the Master of Islamic Education Management Study Program at UIN Bukittinggi using Mamdani Type 1 model

DISCUSSION

The OBE theory developed by William Spady has influenced learning approaches and curricula in many educational institutions around the world. This approach aims to increase the relevance and effectiveness of education by clearly measuring and achieving desired learning outcomes. The OBE theory developed by Spady provides an important conceptual foundation in curriculum design and learning approaches. The following are some of the main concepts in the OBE theory developed by William Spady(Rasyid et al., 2022) (Dewi, 2023) (KN Karyawati et al., 2022): 1) Outcome (Results) as the Main Focus: OBE theory emphasizes that education must focus on the desired results of the educational process, not just on what is taught or how it is taught. These results are often referred to as "outcomes." These outcomes include the knowledge, skills, attitudes, and understanding that students are expected to achieve after completing an educational program; 2) Determining Clear Outcomes: OBE emphasizes the need to determine clear and measurable outcomes for each stage of education. These outcomes must be specific, measurable, and observable. In the context of the curriculum, these outcomes are often referred to as "learning outcomes" or "competency standards." 3) Achievement of Outcomes by All Students: OBE theory supports the concept that all students should have the opportunity to achieve predetermined outcomes, regardless of their background. This implies differentiation in teaching and assessment methods to help each student reach his or her potential; 4) Student Involvement in the Learning Process: OBE encourages active involvement of students in the learning process. Students are not only recipients of information, but also active in taking a role in

achieving their outcomes. This can involve projects, assignments, and problem-based learning; 5) Curriculum Continuity and Coherence: OBE theory emphasizes the importance of continuity and coherence in the curriculum from one level to the next. The outcomes established at each educational level must be logically connected to the next stage; 6) Valid Measurement and Assessment: OBE requires the use of valid and reliable measurement and assessment tools to measure outcome achievement. This may include the use of tests, assignments, portfolios, or other assessment methods; 7) Adjustment Based on Outcomes: In the context of OBE, teaching and learning approaches can be adjusted based on student progress towards achieving outcomes. This allows flexibility in meeting individual needs; 8) Accountability and Reporting of Results: OBE emphasizes accountability in achieving set outcomes. Education must be able to measure and report student progress in achieving outcomes to all stakeholders, including students, teachers, parents, and educational institutions; 9) Change in School Culture: Implementation of OBE often requires a change in culture in schools and educational institutions. This includes changes in teaching approaches, assessment, school management, and relationships between all stakeholders.

The results of designing using fuzzy logic reflect the use of methods that are useful in overcoming uncertainty and complexity in decision making. This is consistent with the concepts of fuzzy logic in decision making that have been developed by researchers such as Lotfi Zadeh(Nurmantika, 2022) (Nasution & Prakarsa, 2021) (Gentili, 2022). Fuzzy logic allows for more flexible and nuanced judgments based on uncertain information.

Fuzzy logic has several significant benefits in making decisions in the case of designing an OBE-based learning model which was explained previously. Following are some of the benefits of fuzzy logic in this context(Nurmantika, 2022):

1. Uncertainty Handling:
   Fuzzy logic allows handling uncertainty and complexity in the decision-making process. In the case of designing learning models, there are various input variables (such as student learning outcomes, competency standards, and environmental factors) that may have uncertain or ambiguous values. Fuzzy logic allows these variables to be expressed as fuzzy values, which reflect the level of uncertainty better than binary (true/false) models.
2. Ability to Include Inexact Information:
   In the educational context, it is often difficult to measure parameters precisely. Fuzzy logic allows the use of fuzzy values to better express inexact information. For example, "good" or "fair" levels of input variables cannot always be precisely measured, and fuzzy logic allows for more nuanced assessments.
3. Flexibility in Decision Making:
   Fuzzy logic provides flexibility in making decisions based on the resulting fuzzy values. This means that in the case of designing learning models, the results of decision making can include various alternative learning models that suit certain input conditions.
4. Explainable Model:
   The results of decision making using fuzzy logic can be explained clearly and interpretively. This allows stakeholders, such as course lecturers, to understand the reasons behind the recommendations provided by the model.
5. Improving Learning Quality:
   By considering many relevant factors and generating recommendations based on complex input, fuzzy logic can help improve the quality of learning. This model can help in adapting learning methods to student needs and changing environmental conditions.
6. Time and Resource Savings:

Fuzzy logic can facilitate decision making quickly and efficiently. This can save time and resources that would otherwise be required to collect, integrate, and analyze data manually.

7. Flexibility in Learning Models:

   By generating recommendations based on diverse inputs, fuzzy logic allows flexibility in selecting a learning model that suits a particular situation. This can help educational institutions to adapt learning approaches according to student needs.

CONCLUSION

In the case of designing an OBE-based learning model, the use of fuzzy logic can help produce recommendations that are more accurate and responsive to changing conditions in educational institutions. This can strengthen the effectiveness of learning and the quality of education provided by the institution. Lecturers are given the convenience of quickly making decisions, appropriate and effective learning models are used in a course so that learning outcomes are maximized.

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SURAT TUGAS

Nomor : B-421C /Un.26/KP.01.2/10/2023

Menimbang
1. Bahwa dalam rangka memenuhi Tri Dharma Perguruan Tinggi pada UIN Sjech M. Djamil Djambek Bukittinggi
2. Maka Perlu diutus Dosen UIN Sjech M. Djamil Djambek Bukittinggi untuk melaksanakan Penelitian

Dasar
1. Surat Izin Penelitian dari Lembaga Penelitian dan Pengabdian Masyarakat (LP2M) UIN Sjech M. Djamil Djambek Bukittinggi No: B-1725/Un.26.6/TL.00/10/2023 tanggal 11 Oktober 2023
2. Instruksi Pimpinan UIN Sjech M.Djamil Djambek Bukittinggi

Memberi Tugas

Kepada Dr. Liza Efriyanti, S. Si, M. Kom / NIP/NIDN.197501282008012012 / Dosen
Dengan Anggota sebagai berikut :

No.	NIP/NIDN	Nama	Jabatan
1	197608252000121001	Syamsurizal, SH	Pengembang Teknologi Pendidikan

Untuk
1. Melaksanakan Penelitian dengan Judul "DESIGNING AN OBE-BASED LEARNING MODEL USING FUZZY LOGIC AT THE UIN BUKITTINGGI POSTGRADUATE PROGRAM", pada tanggal 01 Agustus 2023 s/d 24 September 2023 dengan Jumlah Dana Rp.3,412,000,- .
2. Menulis laporan setelah melaksanakan kegiatan dimaksud.

Bukittinggi, 31 Oktober 2023
A.n. Rektor,
Kepala Biro UAPK

Drs. H. Eramli Jantan Abdullah. MM
NIP.196701041994021001