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Abstrak

Learning is an activity that give students education wich is integrated with considering environmental factors such as studied, student characteristics, characteristics of the field of study, as well as a good variety of learning strategies delivery, management, and organization of learning. Learning can be done individually or as a group (cooperative). Both types of learning are equally important, but often learning group (cooperative) are applied in the learning process. Cooperative learning is more emphasis on the process of cooperation within the group. The main purpose is not only academic ability in the sense of mastery learning materials, but also the element of cooperation for mastering the materials. There are several approaches or methods in cooperative learning, one of this is a Jigsaw method. Learning model Jigsaw method, which is a method of learning that conditioned the students learn in a

group, are responsible for mastering the learning material that is assigned to him, then teach that section to the other group members. Learning often requires media in its delivery, to facilitate the learning itself. One of this is by utilizing web-based technologies. Jigsaw cooperative learning method was also aided by the technology. The final results of this study is a web-based learning media that will facilitate the learning process.

Keywords: e-learning, cooperative, jigsaw, learning media

1. Introduction

Learning is an activity that give students education wich is integrated with considering environmental factors such as studied, student characteristics, characteristics of the field of study, as well as a good variety of learning strategies delivery, management, and organization of learning. Learning can be done individually or in groups. The types of learning are equally important, but there are two reasons the importance of group learning or cooperative learning is used in education. First, some studies show that the use of cooperative learning can improve student achievement, as well as to improve social relationships, fostering acceptance shortage of self and others,

and can increase self-esteem. Second, cooperative learning can realize the need for students to learn to think, solve problems, and integrate knowledge with skills.

Cooperative learning is more emphasis on the process of cooperation within the group. The main purpose is not only academic ability in the sense of mastery learning materials, but also the element of cooperation for the mastering the materials. The cooperation that is the characteristic of cooperative learning. There are several approaches or methods in cooperative learning, one of which is a method of Jigsaw. Jigsaw learning method is a method of learning that conditioned the students learn in a group, are responsible for mastering the learning material that is assigned to him, then teach that section to the other group members. As proposed by Rusman (2012):

"In a cooperative model Jigsaw, students have many opportunities to express opinions and to process information obtained and can improve communication skills. Members of the group responsible for the success of the group and completeness parts of the material being studied and can deliver information to another group"

Learning often requires media in its delivery, as a means to facilitate the learning itself. One of them by utilizing web-based technologies. Jigsaw cooperative learning method was also using the technology, so that is not limited by distance in learning process.

With the use of high quality web-based learning media , students are expected to more active in participating in the learning process. Based on the problems that have been described previously, it is considered necessary to undertake the development of instructional media with the adoption of Jigsaw method. Based on the background which has been described previously, obtained formulation of the problem to conduct research on the design of instructional media with the adoption of Jigsaw, it's how to build a website with the application of the type of cooperative learning model, the method of Jigsaw and how to facilitate teachers to provide learning groups with a web-based learning media.

2. Research Method

2.1 Flow Analysis

Stages in detail the activities of the research is as follows:

- a. Analysis and design of instructional media with Jigsaw method.
- b. Documentation of software design with the arrangement SKPL documents.
- c. Documentation of software design with the arrangement DPPL documents.

Research flow analysis can be seen in Figure 1.

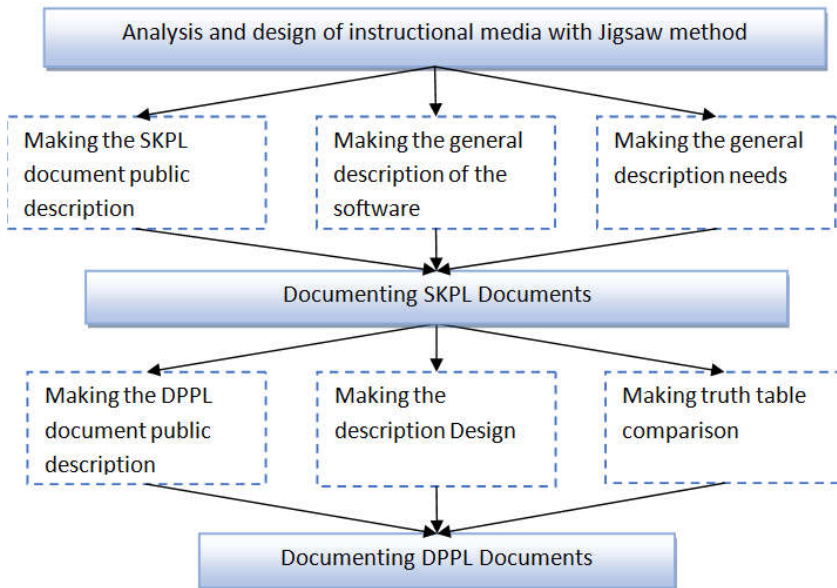


Figure 1. Research Flow Analysis

2.2 Document Structure

Results of analysis and design will be documented in a report SKPL and DPP. Here are the composition of documents in it.

2.3 SKPL Document Structure

The composition of the document that will be the standard documentation software requirements specification that will be carried out.

1. Introduction is the part that will explain the initial information about the SKPL document. The introduction consists of:
 - a. Purpose Document
 - b. Scope of Problem
 - c. Definitions, Glossary and Acronyms
 - d. Numbering and Naming Rules
 - e. Reference
 - f. General Description Document
2. A general description of software is the part that will explain the general description of the software to be analyzed. Part of the general description of the software consists of:
 - a. General Description System
 - b. Product Function
 - c. User Characteristics
 - d. Limitations

- e. Operating Environment
- 3. A general description is the part that needs to be explained about the general description of the software needs to be analyzed. Part of the general description needs consist of:
 - a. External Interface Requirement
 - b. Functional Requirements
 - c. Data Requirement
 - d. Requirement Description nonfunctional
 - e. The design limits
 - f. Truth Comparison
 - g. Summary

2.4 DPPL Document Structure

The composition of the document that will be the standard documentation software design description that will be carried out, namely:

1. Introduction, is the part that will explain the initial information about the document DPPL be made. The introduction taken from the SKPL that have been made previously, which consists of:
 - a. The purpose of writing the document
 - b. Scope of the problem
 - c. Definitions and terms
 - d. Numbering and naming rules
 - e. Reference
 - f. General description document
2. Description Design
Description of the design consists of:

- a. The design implementation environment
Consist of *Operating system, DBMS, development tools, filing system*, as well as the programming language used.
- b. Data description
Contains a description of the tables of data if the data based applications. Start with a list of tables and a description of its contents. For each table, the table must contain the name, type, volume, rate, primary key, integrity constraint with another table (if any). Volume and rate must contain a minimum of guesstimate. Description of data consists of:
 - 1) Definition domain / type
 - 2) Conceptual models of data
 - 3) Physical Data models
 - 4) List of tables
- c. Functional decomposition module
Contains decomposition logic of the module. Minimal contains a table consisting of columns: Module, Process Specification. Information column is only required if the process is not represented in the DFD. Eg for processes that represent a common library
- d. A detailed description of the module
A detailed description of the modules is made in accordance with the type of process. The algorithm is written to be clear enough to be programmed,

but not the program code. The most important thing in this design is that the program code can be made. Here is a section from the detailed description of the module

- 1) Detailed description table
- 2) Functional description in detail
 - a) Input Table Specifications
 - b) Specifications Table Output
 - c) Main Screen Specifications
 - d) Query Specifications
 - e) Specifications Field Data on Screen
 - f) Key Function Specifications / Key / Objects on Display
 - g) Message Display Specifications
 - h) Process / Algorithms Specifications
 - i) Reports Specifications

e. Physical decomposition module

Contains decomposition "physical" of the module. There are at least a table with columns: Sub Applications, Modules, File Name, Input, Output. Sub Applications are usually made per user.

3. Truth Table Comparison

Truth Table Comparison made to match the list of needs that the functions / processes are designed.

3. Results and Discussion

Results and discussion will be described in detail based on the flow of analysis that have been made previously. Software development outcomes media with jigsaw method (MEDANTOJI) will be documented in SKPL document format (Software Requirements Specification) and DPPL (Software Design Description).

3.1 SKPL Document

SKPL document is a document that is used to document the software requirements specification. Results of the analysis in this section, will be used as a reference for the next stage, the design stage. The design phase will also be fully documented so that it can be used as a reference in the manufacture of the system, namely the implementation phase of the system.

3.1.2 General Description of Software

A general description of software is the part that will explain the general description of the software to be analyzed. Part of the general description of the software consists of:

a. General system Description

The system will provide facilities to make learning with Jigsaw learning model used in face-to-face class. Illustration Jigsaw learning model can be seen in Figure 2.

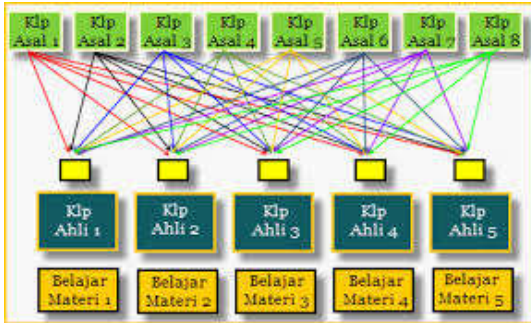


Figure 2. Illustration of Jigsaw Learning Model

The system flow will be described by using a flowchart as shown in Figure 3.

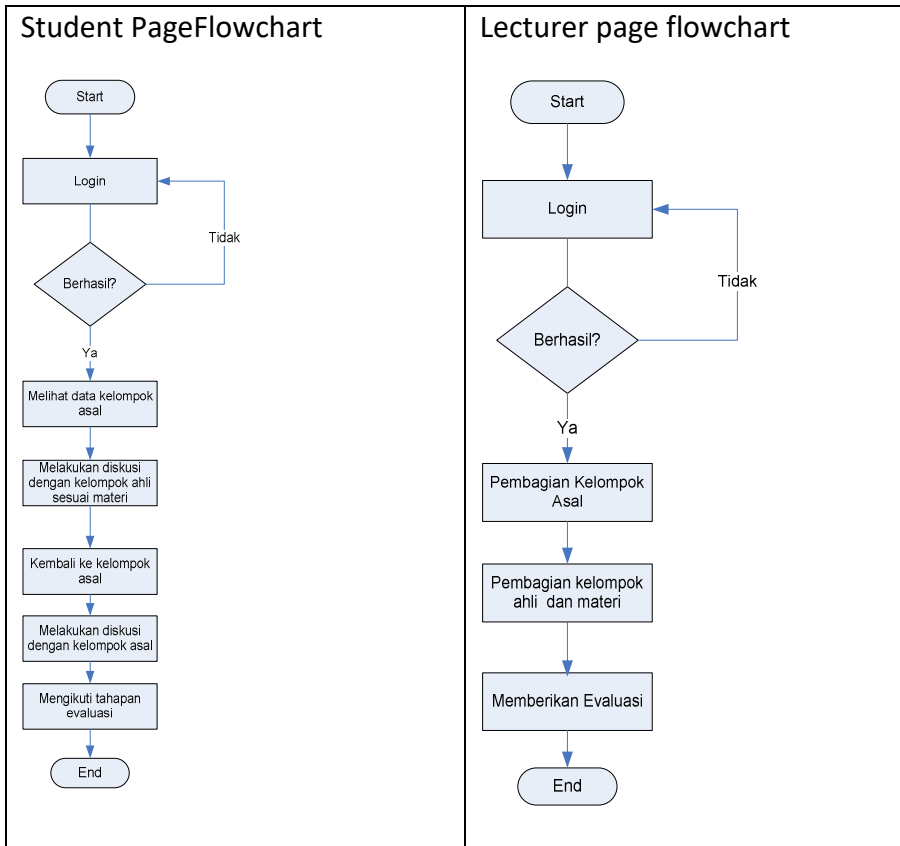


Figure 3. Flowchart system

b. Fungsi Produk

The function of the product is the entire functionality in the software to be developed. In Table 5.1 outlined some specific functional needs.

Table 1 Functional Requirements

No. Requirements	Functional	Functional Requirements
SKPL-F-01.0	MEDANTOJI	Doing Login
SKPL-F-02.0	MEDANTOJI	Student Data Manipulation
SKPL-F-03.0	MEDANTOJI	Lecturer data manipulation
SKPL-F-04.0	MEDANTOJI	Material data manipulation
SKPL-F-05.0	MEDANTOJI	Question data manipulation
SKPL-F-06.0	MEDANTOJI	Creating origin Group
SKPL-F-07.0	MEDANTOJI	Creating Expert Group
SKPL-F-08.0	MEDANTOJI	Expert Group Discussion
SKPL-F-09.0	MEDANTOJI	Origin Group Discussion
SKPL-F-10.0	MEDANTOJI	Evaluation Proseses

c. User Characteristic

User characteristics is the list of types of users who will use the software, which can be seen in Table 2.

Tabel 2 Karakteristik Pengguna

Users	Description	Access Rights
Lecturer	Lecturer is the teacher who once served as the holder full access to the system..	SKPL-F-01.0 MEDANTOJI SKPL-F-02.0 MEDANTOJI SKPL-F-03.0 MEDANTOJI SKPL-F-04.0 MEDANTOJI SKPL-F-05.0 MEDANTOJI SKPL-F-06.0 MEDANTOJI SKPL-F-07.0 MEDANTOJI SKPL-F-08.0 MEDANTOJI SKPL-F-09.0 MEDANTOJI
Student	Lecturer is the	SKPL-F-01.0

	teacher who once served as the holder full access to the system.	MEDANTOJI SKPL-F-08.0 MEDANTOJI SKPL-F-09.0 MEDANTOJI SKPL-F-10.0 MEDANTOJI
--	------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------

3.1.3 General Description of Requirement

A general description is the part that needs to be explained about the general description of the software needs to be analyzed. Part of the general description needs consist of:

a. Data Requirement

Data requirements were analyzed using entity relationship diagrams, which can be seen in Figure 3.

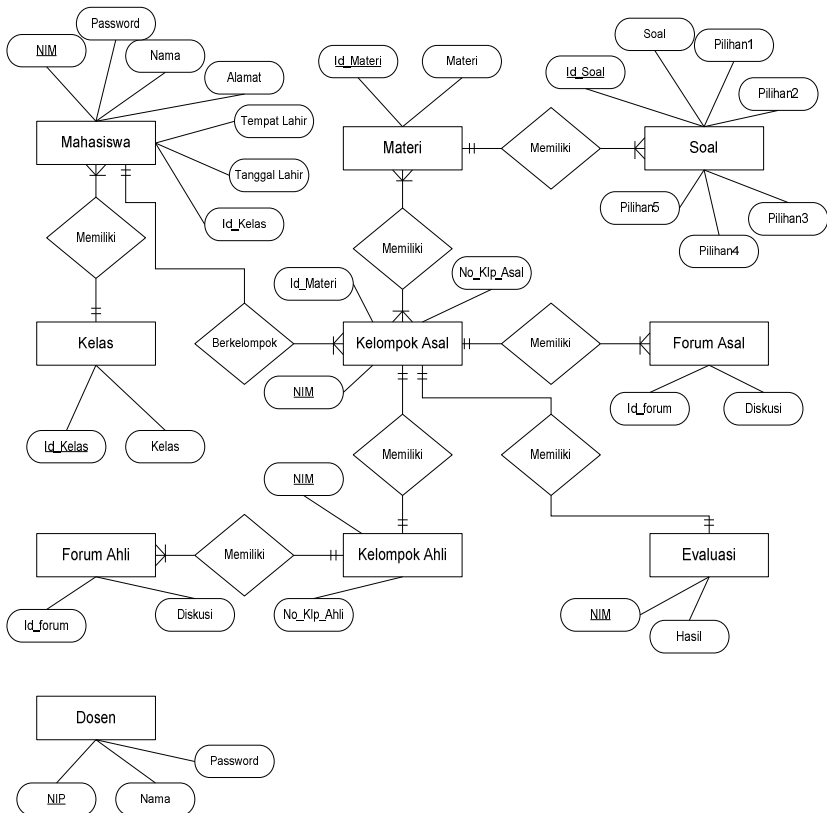


Figure 4 Entity Relationship Diagram

b. The design limits

The design will be done in accordance with the results of the analysis will be documented in the software requirements specification.

3.2 DPPL Documents

DPPL consists of several main parts, namely:

1. Introduction, is the part that will explain the initial information about the document DPPL be made.
2. Description Design, part of the description of software design.
3. Truth table comparison, made to match the list of needs that the functions / processes are designed.

3.2.1 Introduction

3.2.1.1 Scope of Problem

Information system software to be developed is named MEDANTOJI. MEDANTOJI information system software was developed as a learning medium that can help the learners to perform cooperative learning or group with Jigsaw method. MEDANTOJI is expected to have the facility to become media support to teachers in implementing the learning.

Rule 3.2.1.2 Numbering and Naming

Here are the rules of numbering and naming used in the document DPPL.

1. Numbering and Naming Rules Requirement Specification

Each software requirements in this document will be given numbering format:

DPPL-JK-XX.Y MEDANTOJI, with:

- JK is a kind of necessity. JK can be filled with:
- F for the type of functional requirements
- NF for this type of non-functional requirements
- XX is the number needed function (two digits) starting from 00, 01, 02, ...
- Y is the number of detailed functions, are derived from the needs of XX number. If a requirement is not derivative, the value Y stuffed 0.

2. Numbering and Naming Rules Table

Table named prefix letter T capital, followed by the name of the entity that table. Each character beginning of a word in the name of the entity table, starting with capital letters, without spaces between words when the name of the entity is more than one word. The numbering follows the format table TAB-X, with X represents the serial number tables.

3. Numbering and Naming Rules Function / Process

The numbering function according to FS-X format, FS-XY, FS-XYZ, and so on, with X, Y, Z stated degree level functions / processes on *Data Flow Diagrams* (DFD) in accordance with the depth of functionality. Each function is named according to its description.

4. Numbering and Naming Rules Query

Naming the query tailored to its function. Numbering follows the format QUE-X, with X represents the serial number query.

5. Numbering and Naming Rules Screen Message

Each screen messages are named according to the message displayed. Numbering follows the format of LP-X, with X represents the serial number of the message screen.

6. Numbering Rules Algorithm

Algorithms are named according to the purpose of the algorithm. Numbering follows the format ALGO-X, with X represents the serial number of the algorithm.

7. Numbering and Naming Rules Testing

Numbering and naming of testing activities tailored to the type of needs with the following format:

PDHUPL-JK-XXY <Name Activity Testing>, with:

- JK is a kind of necessity. JK can be filled with:
- F for the type of functional requirements

- NF for this type of non-functional requirements
- XX is the serial number of the test class (two digits) according to the type of needs, starting from 01, 02, ...
- Y is the serial number of test items in the test class
Example: PDHUPL-F-011 User Validation.

3.2.3 Description of Design

Description of the design consists of:

4.1.1.1 3.2.3.1 *The design implementation environment*

Operating system consists of information, DBMS, *development tools, filing system*, as well as the programming language used.

3.2.3.2 Description of the data

In the description of the data tables containing descriptions of data if the data based applications. Start with a list of tables and a description of its contents. For each table, the table must contain the name, type, volume, rate, primary key, integrity constraint with another table (if any). Description of data consists of:

A. *Conceptual models of data*

Here is a depiction of the flow of data in the software to be developed. The design was made in the form of data flowusing data flow diagram (DFD) as shown p there Figure 5.

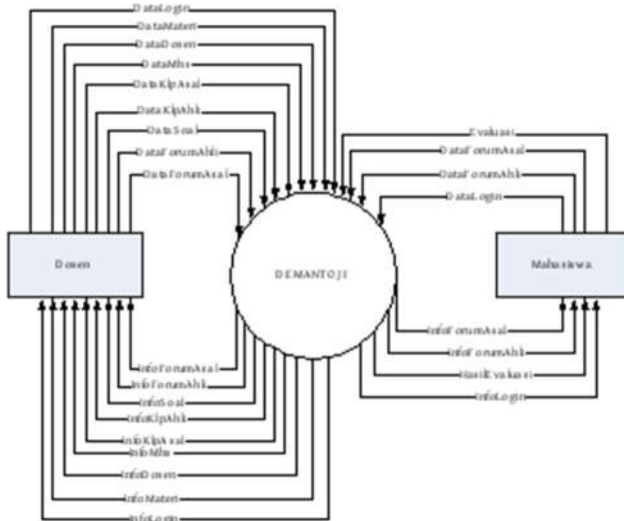


Figure 5 DFD Level 0

B. *Physical Data models*

Physical data model that will be formed from the results of the analysis at the entity relationship diagram, can be seen in Figure 6.

1) Specifications Functions Distribution Group Home FS-5

a) Input Specifications

Table 3 List of Tables Input for

Function / Process Division Group Home FS-5

No.	Code Input	Name Input
1.	TAB-3	Student
2.	TAB-4	Matter
3.	TAB-5	KelompokAsal

b) Specifications Table Output

Table 4 List of Tables Input for

Function / Process Division Group Home FS-5

No.	Code Table Output	Output Table Name
1.	TAB-3	Student
2.	TAB-4	Matter
3.	TAB-5	KelompokAsal

c) Main Screen Specifications

Figure 7 Main Screen Specifications

d) Specifications *Query*

Table 5 Specifications *Query* FS-5

Query ID	Description	Query Expression
QUE-14	Displaying student data	SELECT * FROM TMahasiswa
QUE-15	Displaying material data	SELECT * FROM Matter
QUE-16	Add data origin groups	Into TPenilaian INSERT VALUES (\$ value1, \$ value2,)

e) Specifications *Field* Data on Screen

Id_Objek	Kind	Description
btnPenilaian	Button	If clicked will run the algorithm ALGO-14
btnTambah	Button	If clicked will run the algorithm ALGO-15

Table 6 Specifications Data *Field* on Screen FS-5

Label	Field	Table / Query	I / O	Form at	Validati on	Descript ion
cmbNIM	NIM	TMahasi swa	Inp ut	-	NOT NULL	Student ID Number
cmbKriteria	Crite ria	TKriteria	Inp ut	-	NOT NULL	Assessm ent criteria
txtNilai	Valu e	TPenilaian	Inp ut	-	NOT NULL	The value of each criterion assessment

f) Specifications *Function Key / Objects on Display*

Table 7 *Function Specifications Key / Objects on the Screen FS-5*

g) Specifications Display Message

Table 8 Specifications Display Messages FS-5

Id_Pesan	Time Occurrences	Message content
LP-16	BtnTambah when clicked but data is incomplete or still empty	Please complete the data in advance!
LP-17	When btnTambah dklik and all the criteria have been charged to a student	Student assessment please do next!
LP-18	When btnPenilaian dklik and no students were assessed	Please fill in the criteria for student assessment data in advance!

h) Specifications Process / Algorithms

a.

Process Id: ALGO-14

Related objects: cmbNIM, cmbKriteria, txtNilai

Initial State (IS):

Table Student, Content, and Origin Group has been created and the data is filled

Final State (FS):

If btnTambah clicked it will enter the data into Origin group, and if there is data that is not complete then it will bring up the LP-16, LP-17 then displays when the assessment is complete for a student

Specifications Process / Algorithms:

Number of Criteria = Calculate the number of criteria

While \$ loop <> JumlahKriteria

IF (IsEmpty (cmbNIM) AND (IsEmpty (cmbKriteria)) THEN

 Run QUE-14

 Run QUE-15

 \$ loop ++

ELSE

Show display messages LP-16

While END

Show display messages LP-17

Event: btnTambah onClick

b.

Process Id: ALGO-15

Objects related to: -

Event: btnPenilaian onClick

Initial State (IS):

TPenilaian table has been created and the data is filled

Final State (FS):

If btnPenilaian clicked it will enter the process of calculating TOPSIS and incorporate the results into TPenilaian, and will display the LP-18 when an assessment to a student yet

Specifications Process / Algorithms:

IF (TPenilaian <> blank) THEN

 Run the calculation phase TOPSIS

 Run QUE-16

ELSE

 Show display messages LP-18

i) Specifications Reports

Nothing.

2) Distribution Function Specifications Expert Group FS-6

a) Input Specifications

Table 9 List of Tables Input for

Function / Process Expert Group division FS-6

No.	Code Input	Name Input
1.	TAB-3	Student

2.	TAB-4	Matter
3.	TAB-5	KelompokAhli

b) Specifications Table Output

Table 10 List of Tables Output to

Function / Process Expert Group division FS-6

No.	Code Table Output	Output Table Name
1.	TAB-3	Student
2.	TAB-4	Matter
3.	TAB-5	KelompokAhli

c) Main Screen Specifications

The image shows a software interface titled "Pembagian Kelompok Ahli". It features two input fields: "No. Kelompok" and "Materi", each with a dropdown arrow. Below these is a table with two columns: "No. Kelompok" and "Materi". The table has three rows, with the first row being a header and the subsequent two rows being empty data rows.

Figure 8 Main Screen Specification FS-6

d) Specifications *Query*

Table 11 Specifications *Query* FS-6

Query ID	Description	Query Expression
QUE-14	Displaying student data	SELECT * FROM TMahasiswa
QUE-15	Displaying material data	SELECT * FROM Matter
QUE-16	Add data origin groups	Into TPenilaian INSERT VALUES (\$ value1, \$ value2,)

e) Specifications *Field* Data on Screen

Table 12 Specifications *Field* Data on Screen FS-6

Label	Field	Table / Query	I / O	Form at	Validati on	Descript ion
cmbNIM	NIM	TMahasi swa	Inp ut	-	NOT NULL	Student ID Number
cmbKrit eria	Crite ria	TKriteria	Inp ut	-	NOT NULL	Assessm ent criteria
txtNilai	Valu e	TPenilaian	Inp ut	-	NOT NULL	The value of each criterion assessment

f) Specifications *Function Key / Objects* on Display

Table 13 *Function* Specifications *Key / Objects* on the screen FS-6

Id_Objek	Kind	Description
btnPenilaian	Button	If clicked will run the algorithm ALGO-14
btnTambah	Button	If clicked will run the algorithm ALGO-15

g) Specifications Display Message

Table 14 Specifications Display Messages FS-6

Id_Pesan	Time Occurrences	Message content
LP-16	BtnTambah when clicked but data is incomplete or still empty	Please complete the data in advance!
LP-17	When btnTambah dklik and all the criteria have been charged to a student	Student assessment please do next!
LP-18	When btnPenilaian dklik and no	Please fill in the criteria for student assessment data in

	students assessed	were	advance!
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h) Specifications Process / Algorithms

Process Id: ALGO-14

Related objects: cmbNIM, cmbKriteria, txtNilai

Event: btnTambah onClick

Initial State (IS):

Table TMahasiswa and TKriteria been created and the data is filled

Final State (FS):

If btnTambah clicked it will enter data into TPenilaian, and if there is data that is not complete then it will bring up the LP-16, LP-17 then displays when the assessment is complete for a student

Specifications Process / Algorithms:

Number of Criteria = Calculate the number of criteria

While \$ loop <> JumlahKriteria

```
IF (IsEmpty (cmbNIM) AND (IsEmpty (cmbKriteria))  
THEN
```

```
    Run QUE-14
```

```
    Run QUE-15
```

```
    $ loop ++
```

```
ELSE
```

```
    Show display messages LP-16
```

```
While END
```

```
Show display messages LP-17
```

i) Specifications Reports

Nothing.

3) Specifications Functions Conducting Focus Group Expert FS-7

a) Input Specifications

Table 15 List of Tables Input to Function / Process
Conducting Focus Group Expert FS-7

No.	Code Input	Name Input
1.	TAB-2	Student
2.	TAB-7	ForumAhli

b) Specifications Table Output

Table 16 List of Tables Output for Function / Process
Conducting Focus Group Expert FS-7

No.	Code Table Output	Output Table Name
1.	TAB-2	Student
2.	TAB-7	ForumAhli

c) Main Screen Specifications



Figure 9 Main Screen Specifications FS-7

d) Specifications *Query*

Table 17 *Query* Specifications FS-7

Query ID	Description	Query Expression
QUE-14	Displaying student data	SELECT * FROM TMahasiswa
QUE-15	Display data criteria	SELECT * FROM TKriteria
QUE-16	Adding fuzzy set of	Into TPenilaian INSERT VALUES (\$ value1, \$ value2,

	data)
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e) Specifications *Field* Data on Screen

Table 18 Specifications *Field* Data on Screen FS-7

Label	Field	Table / Query	I / O	Form at	Validati on	Descript ion
cmbNIM	NIM	TMahasi swa	Inp ut	-	NOT NULL	Student ID Number
cmbKrit eria	Crite ria	TKriteria	Inp ut	-	NOT NULL	Assessm ent criteria
txtNilai	Valu e	TPenilaia n	Inp ut	-	NOT NULL	The value of each criterion assessm ent

f) Specifications *Function Key / Objects* on Display

Table 19 Specifications *Function Key / Objects* on the screen FS-7

Id_Objek	Kind	Description
btnPenilaian	Button	If clicked will run the algorithm ALGO-14
btnTambah	Button	If clicked will run the algorithm ALGO-15

g) Specifications Display Message

Table 20 Specifications Display Messages FS-7

Id_Pesan	Time Occurrences	Message content
LP-16	BtnTambah when clicked but data is incomplete or still empty	Please complete the data in advance!
LP-17	When btnTambah dklik and all the criteria have been charged to a student	Student assessment please do next!

LP-18	When btnPenilaian dklik and no students were assessed	Please fill in the criteria for student assessment data in advance!
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h) Specifications Process / Algorithms

Process Id: ALGO-14

Related objects: cmbNIM, cmbKriteria, txtNilai

Event: btnTambah onClick

Initial State (IS):

Table TMahasiswa and TKriteria been created and the data is filled

Final State (FS):

If btnTambah clicked it will enter data into TPenilaian, and if there is data that is not complete then it will bring up the LP-16, LP-17 then displays when the assessment is complete for a student

Specifications Process / Algorithms:

Number of Criteria = Calculate the number of criteria

```
While $ loop <> JumlahKriteria
```

```
    IF (IsEmpty (cmbNIM) AND (IsEmpty (cmbKriteria)))
```

```
    THEN
```

```
        Run QUE-14
```

```
        Run QUE-15
```

```
        $ loop ++
```

```
    ELSE
```

```
        Show display messages LP-16
```

```
While END
```

```
Show display messages LP-17
```

i) Specifications Reports

Nothing.

4) Specifications Functions Conduct Discussion Group Home FS-8

a) Input Specifications

Table 21 List of Tables Input to Function / Process
Conducting Focus Group Home FS-8

No.	Code Input	Name Input
1.	TAB-2	Student
2.	TAB-7	ForumAsal

b) Specifications Table Output

Table 22 List of Tables Output for Function / Process Conducting Focus Group Home FS-8

No.	Code Table Output	Output Table Name
1.	TAB-2	Student
2.	TAB-7	ForumAsal

c) Main Screen Specifications

Figure 10 Main Screen Specifications FS-8

d) Specifications *Query*

Table 23 Specifications *Query* FS-8

Query ID	Description	Query Expression
QUE-14	Displaying student data	SELECT * FROM TMahasiswa
QUE-15	Display criteria data	SELECT * FROM TKriteria

QUE-16	Adding fuzzy set of data	Into TPenilaian INSERT VALUES (\$ value1, \$ value2,)
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e) Specifications *Field* Data on Screen

Table 24 Specifications *Field* Data on Screen FS-8

Label	Field	Table / Query	I / O	Format	Validation	Description
cmbNIM	NIM	TMahasiswa	Input	-	NOT NULL	Student ID Number
cmbKriteria	Kriteria	TKriteria	Input	-	NOT NULL	Assessment criteria
txtNilai	Value	TPenilaian	Input	-	NOT NULL	The value of each criterion assessment

f) Specifications *Function Key / Objects on Display*

Table 25 Specifications *Function Key / Objects on the screen FS-8*

Id_Objek	Kind	Description
btnPenilaian	Button	If clicked will run the algorithm ALGO-14
btnTambah	Button	If clicked will run the algorithm ALGO-15

g) Specifications Display Message

Table 26 Specifications Display Messages FS-8

Id_Pesan	Time Occurrences	Message content
LP-16	BtnTambah when clicked but data is incomplete or still empty	Please complete the data in advance!
LP-17	When btnTambah dklik and all the criteria have been charged to a	Student assessment please do next!

	student	
LP-18	When btnPenilaian dklik and no students were assessed	Please fill in the criteria for student assessment data in advance!

h) Specifications Process / Algorithms

Process Id: ALGO-14

Related objects: cmbNIM, cmbKriteria, txtNilai

Event: btnTambah onClick

Initial State (IS):

Table TMahasiswa and TKriteria been created and the data is filled

Final State (FS):

If btnTambah clicked it will enter data into TPenilaian, and if there is data that is not complete then it will bring up the LP-16, LP-17 then displays when the assessment is complete for a student

Specifications Process / Algorithms:

Number of Criteria = Calculate the number of criteria

While \$ loop <> JumlahKriteria

IF (IsEmpty (cmbNIM) AND (IsEmpty (cmbKriteria))
THEN

Run QUE-14

Run QUE-15

\$ loop ++

ELSE

Show display messages LP-16

While END

Show display messages LP-17

i) Specifications Reports

Nothing.

3.2.3.4 Implementation results

Here are the results of the implementation of the draft MEDATONJI:

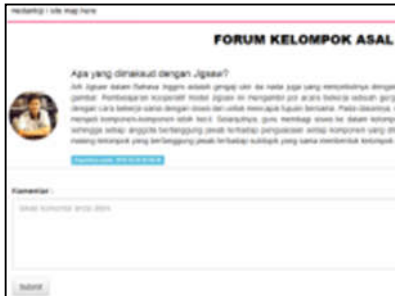


Figure 11 Page Discussion Forum



Figure 12 Page Materials Group Home



Figure 13 Page Classroom Management



Figure 14 Page Management Course

medantoy / site map here

HALAMAN PENGELOLAAN S

Daftar Soal			
Tampilkan	10	↓	↑
Entri			
No	Matakuliah	Soal	Dibagi Ke
1	Matkul 1	Soal 1	AC11, P111
Menampilkan 1 sampai 1 dari 1 Entri			

Figure 15 Page Management Problem

medantoy / site map here

HALAMAN PENGELOLAAN DC

Daftar Dosen			
Tampilkan	10	↓	↑
Entri			
No	NIP	Nama	Alamat
1	11223344	Dosen Satu	Jl Dimana Mana Hatiku Senang
Menampilkan 1 sampai 1 dari 1 Entri			

Figure 16 Page Management Lecturer

3.2.3.5 Testing

1) Testing Individual and Small Group

In the test individuals and small groups of media is already integrated in the Internet network. This is to simultaneously check the smoothness of the media in the Internet network so that it can eventually be known problems if an *error* occurs. The problem prevented interfere with subsequent testing in the field. On this test involves eight semester students who have never taken a course Learning Media. The students involved in individual testing, among others:

Table 27 Students Involved Individual Trial

No.	NIM	Name
1	120030023	Bella Cintya Devi
2	120030048	I Putu Agung Wisawa
3	140010431	Wira Anggara Darmawan

Students who engage in small group trial, among others:

Table 28 Students Involved Test Small Group

No.	NIM	Name
1	120030073	Made Gede Dwipayana
2	120030074	Ni Kadek woldy Setianingsih
3	120030082	I Wayan Revelation Marteka
4	120030098	I Gusti Agung Satya Wiguna
5	120030138	Indra Kurniawan Prasetyo
6	120030147	Kadek Daniel Pramana
7	120030133	I Gusti Made Aditya Arya

		Purnama
8	120030162	I Ketut Suardiarsa
9	120030163	Tas Bagus Wijayanto
10	120030187	I Gd Sukarta Merta Jaya

From the trials of individuals and small groups were conducted, more than 75% give advice eLearning media is already good and very well used in the learning process.

2) Field Trial

At the time of field trials prior to media students were tested by two lecturers. After that involves the entire semester student of class 7 E123. The authors employ the use of *web* media as much as 4 times the student. The use of media is also supported by the Internet so students are able to solve a given problem, at the same time can directly access information from the Internet.

Based on the observations made, the media can facilitate learning faculty in presenting the material. Each student access to material individually according unknowns, regarding the material being studied.

Students' response to the development of instructional media with the adoption of Jigsaw collected using the student questionnaire responses obtained. Based on analysis of student response scores in Table 26 obtained predefined categories and are presented in Table 27.

Table 29 Test Results Student Response

Responden ke-	ITEM PERNYATAAN															TOTAL SKOR	KATEGORI
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1	5	4	5	4	4	4	4	4	4	4	3	4	3	3	4	59	Baik
2	4	4	4	4	4	4	5	5	5	4	4	4	4	5	5	65	Baik Sekali
3	4	4	3	4	5	4	4	4	4	4	4	5	4	5	4	62	Baik Sekali
4	4	4	3	3	5	4	4	4	5	3	4	4	5	4	4	60	Baik
5	5	5	4	4	4	4	5	4	5	5	4	4	3	4	5	65	Baik Sekali
6	4	4	4	4	5	4	4	5	4	4	5	4	5	5	5	66	Baik Sekali
7	4	5	4	4	5	4	4	5	5	4	5	4	4	5	5	67	Baik Sekali
8	3	4	4	4	3	4	4	3	4	4	3	3	4	4	4	55	Baik
9	5	5	5	3	5	5	5	5	5	4	4	5	5	5	4	70	Baik Sekali
10	5	4	4	4	5	4	4	3	4	4	4	3	4	4	4	60	Baik
11	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	61	Baik Sekali
12	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	59	Baik
13	5	5	4	4	5	4	4	4	4	4	5	5	5	5	5	68	Baik Sekali
14	4	5	5	4	4	4	5	5	5	4	4	5	5	4	5	68	Baik Sekali
15	4	5	5	4	4	5	5	4	5	4	4	4	4	4	5	66	Baik Sekali
16	4	5	4	4	5	5	4	4	5	4	5	5	5	4	5	68	Baik Sekali
17	4	4	4	3	5	4	4	3	5	5	4	5	4	4	4	62	Baik Sekali
18	4	5	5	4	4	4	5	5	4	4	4	4	4	3	4	63	Baik Sekali
19	4	4	4	4	4	5	4	4	5	4	5	5	4	4	4	64	Baik Sekali
20	5	4	5	4	5	4	3	3	3	4	4	4	4	4	4	60	Baik
21	4	4	4	4	3	4	3	5	5	5	4	5	4	4	5	63	Baik Sekali

Responden ke-	ITEM PERNYATAAN															TOTAL SKOR	KATEGORI
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
22	4	4	4	4	3	4	3	4	4	4	4	4	3	4	4	57	Baik
23	4	4	4	3	3	4	4	4	4	3	3	4	4	4	3	55	Baik
24	5	4	4	4	4	4	3	4	5	4	4	5	5	5	5	65	Baik Sekali
25	3	4	3	3	4	3	3	4	4	2	5	4	4	3	4	53	Baik
26	4	4	4	4	5	4	3	4	4	4	5	5	4	4	4	62	Baik Sekali
27	5	5	5	3	5	5	5	5	5	4	4	5	5	5	4	70	Baik Sekali
28	5	4	4	4	5	4	4	3	4	4	4	3	4	4	4	60	Baik
29	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	61	Baik Sekali
30	3	4	4	4	4	4	4	3	3	4	4	4	4	4	4	57	Baik
31	3	4	4	3	3	3	2	4	4	4	4	4	4	4	4	54	Baik
32	3	4	3	4	3	4	4	2	4	3	4	4	3	3	4	52	Baik
Baik Sekali															19		
Baik															11		
Cukup															0		
Kurang															0		
Kurang Sekali															0		
RATA-RATA															61,78	Baik Sekali	

Table 30 Conversion Response Students

No.	Class Interval	Frequency	Percentage	Category
1	$60 \leq X$	19	59%	Very well
2	$50 \leq X < 60$	11	34%	Good
3	$40 \leq X < 50$	0	0%	Enough
4	$30 \leq X < 40$	0	0%	Less
5	$X < 30$	0	0%	Less than On

7th semester student response class E123 towards the development of instructional media with the adoption of Jigsaw, scattered on the category of excellent 59%, good 34%, enough 0%, less than 0% and less than once 0%.The average score is 61.87 student response so that the response of students to the development of these media can be categorized as good.

The percentage of student responses to the instructional media development with the adoption of Jigsaw can be presented in Figure 17.

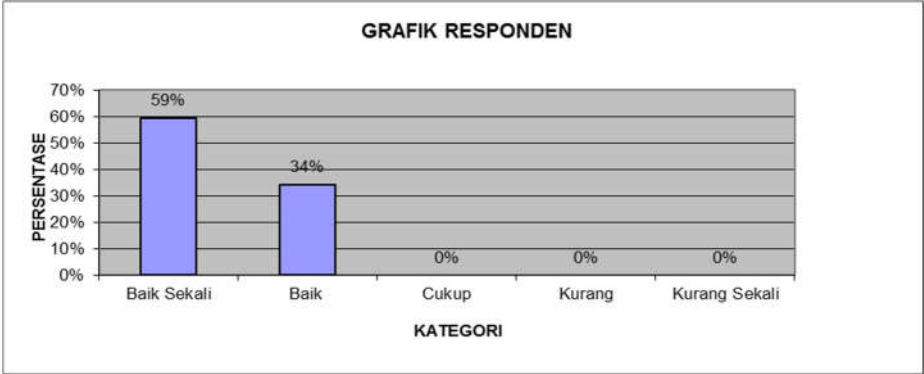


Figure 17 Graph Student Response

4. Conclusions and suggestions

4.1 Conclusion

The conclusions obtained through this research are:

- 1 The system has been designed using the concepts and stages of learning with Jigsaw method, so it can be used as a medium of learning as a learning tool.
- 2 Testing the use of the system is done by testing individual, small group testing, and field trials, provide results that are generated in the learning media research has been well accepted and can be used in learning.

4.2 Suggestions

Advice can be given for the development of the next is:

- 1 Adding facilities such as CHATT discussion, so that the communication between students and faculty can be more smoothly.
- 2 Should be given additional facilities to give awards to students who are actively engaged in the discussion and can be directly added to scoring points.

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