



UNIVERSITAS  
GADJAH MADA

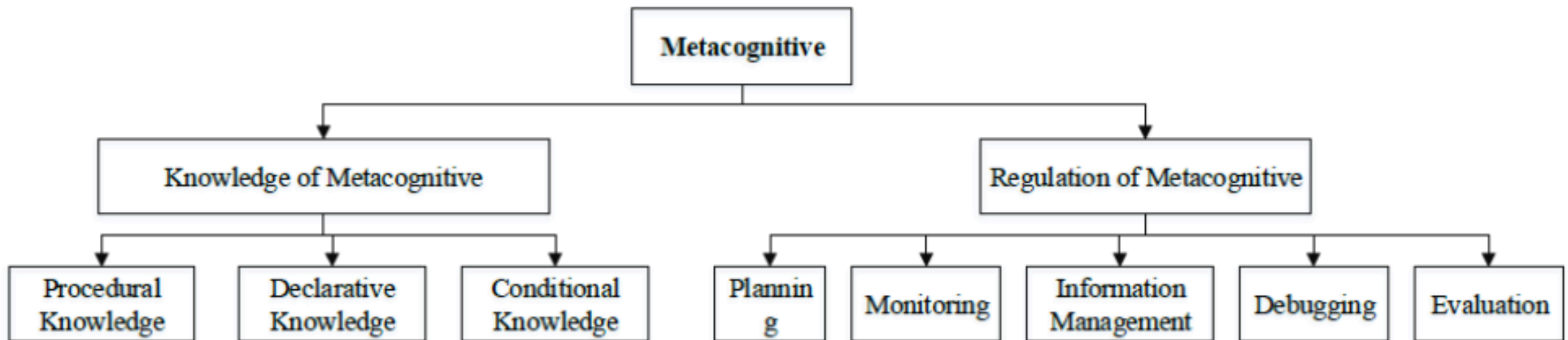
# Metacognitive Training System (MTS) to Support Self-Regulated Learning (SRL)

Uji Coba Prototipe Versi 2.0.0



# Apa itu Metakognisi?

- Metakognitif merupakan **pengetahuan** mengenai **regulasi kegiatan kognitif** individu dalam proses pembelajaran.
- **"It is control over cognition"**
- *Metacognitive* merupakan kemampuan untuk memahami bagaimana seseorang belajar dan mengembangkan **strategi pembelajaran**.



# Contoh Lebih Konkret ...



UNIVERSITAS GADJAH MADA

4

"Dari semua list materi ASD, yang mana yaa yang perlu dipelajari dulu?"

3

"Kira-kira kemampuan apa yaa yang perlu ane persiapkan untuk belajar ASD?? "

2

"Perlu meluangkan waktu berapa lama yaa Untuk bisa memahami semua materi?? "

5

"Biar ane cepet paham, kira-kira strategi belajar apa yaa yang cocok?"

6

"Ada nggak yaa referensi ASD yang cocok, Dan mudah dipelajari"



← Ini Budi, Mahasiswa IT.

"Hmm.. Ane mau belajar matakuliah Algoritma dan Struktur Data (ASD) nih"

1

"Apa yaa bedanya sama matakuliah Dasar Pemrograman yang sebelumnya?"

# Self-Regulation Learning?



- *Self-Regulated Learning* (SRL) adalah sebuah konsep mengenai bagaimana seorang peserta didik menjadi *regulator* atau pengatur bagi belajarnya sendiri.
- Metakognitif merupakan elemen penting dari SRL karena memberikan indikator kemajuan belajar saat ini.





UNIVERSITAS GADJAH MADA

# Metacognitive Training System

- *Metacognitive Training System* adalah suatu sistem pembelajaran yang dapat **meningkatkan kemampuan metakognisi pembelajar**.
- Proses peningkatan metakognisi tentu dilakukan dalam setiap **siklus pembelajaran**.
- Menekankan penggunaan komputer sebagai alat bantu pembelajaran (*Computer Based Tools*)

LOCALLY ROOTED, GLOBALLY RESPECTED

UGM.AC.ID

# Why we must use MTS on ASD?



UNIVERSITAS GADJAH MADA

“Algorithm and Data Structure Course is a basic course for novice programmer that need for metacognitive skill to understand programming concept”

(Nurulain, et al. 2017)

Login Pre-task **Familiarization** Production Evaluation Post-Task

Parse a postfix expression into an expression tree.  
The expression is:  
 $A\ 2\ ^\ 2\ A\ *\ B\ *\ -\ B\ 2\ ^\ +\ A\ B\ -\ /\$   
Create a stack containing nodes that could be part of a tree

1. Push operands on a stack
2. For operators, pop the n and the operands hanging

This page says:  
The operand that you have choose will cause the change in expression tree, Would you like to proceed?  
☐ Prevent this page from creating additional dialogs.

OK Cancel

For your data:

1. Push A onto the stack
2. Push 2 onto the stack
3. Pop 2 and A, create ^-node (with A and 2 below), push it on the stack
4. Push 2 on stack
5. Push A on stack
6. Pop A and 2 and combine to form the \*-node
7. Next expression

A B 2 ^ \*

- + Pop Push leaf node left leaf node right Complete and Submit

Nurulain, et al. 2017 in basic programming course

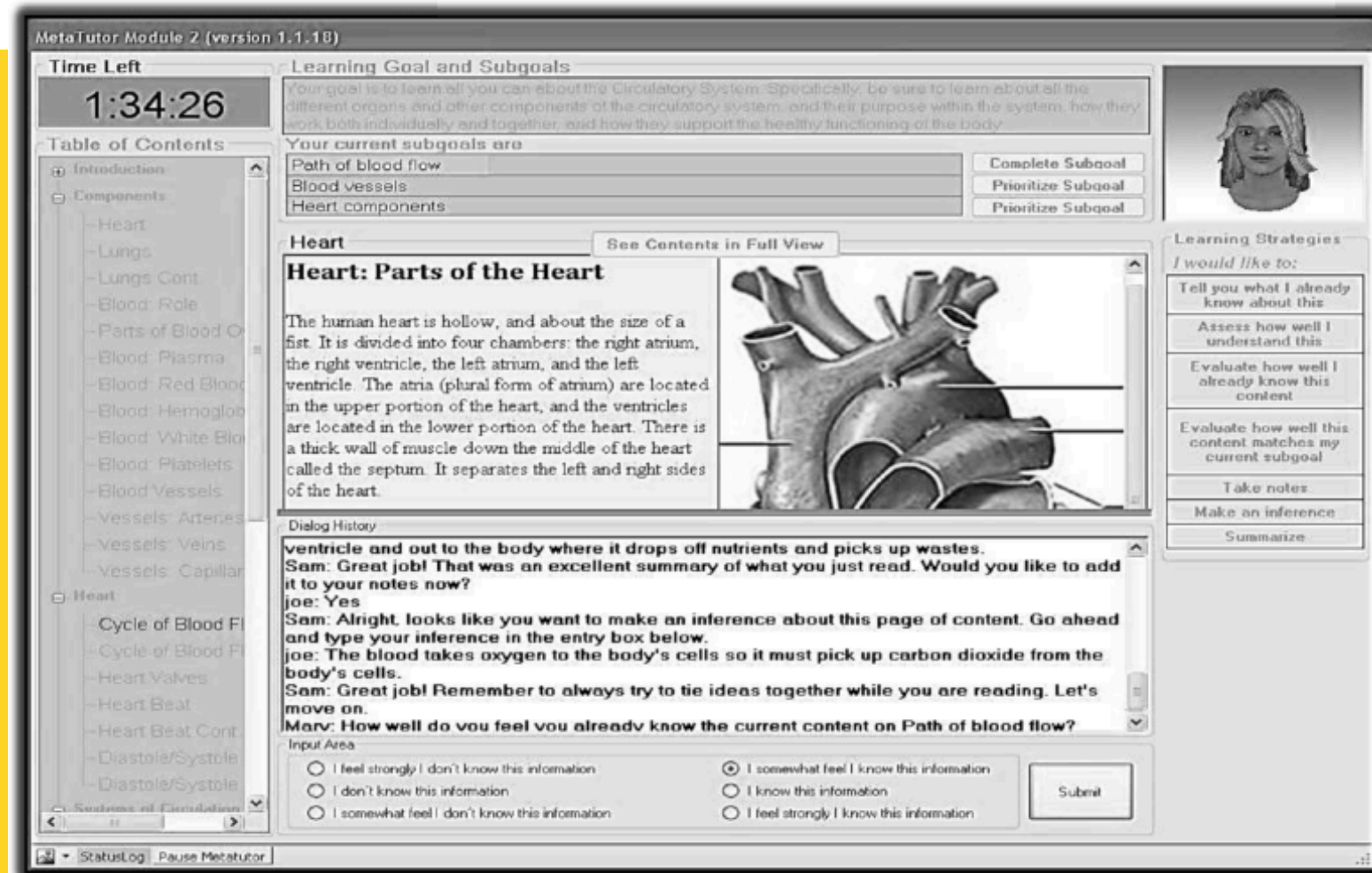


# First Researcher on MTS



UNIVERSITAS GADJAH MADA

- Computer-based learning environments may be viewed as metacognitive tools to enhance Self-Regulated Learning (SRL) (Azevedo, et al 2012)
- These strategies relate to being effective in learning, being able to self-regulate and control cognition (learning about learning), and applying resource management strategies (Zarouk & Khaldi, 2017)

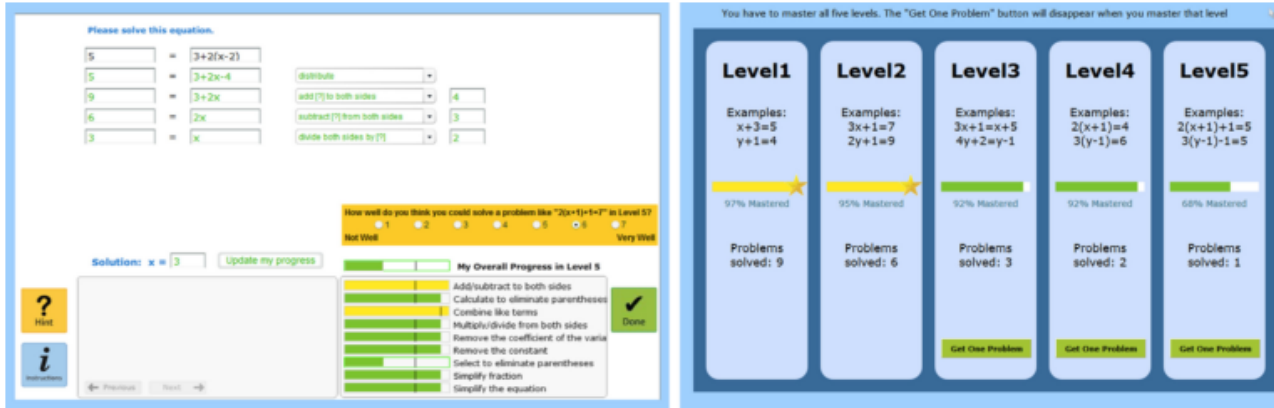


Azevedo, et al 2012 in Biology Course

# Related Work

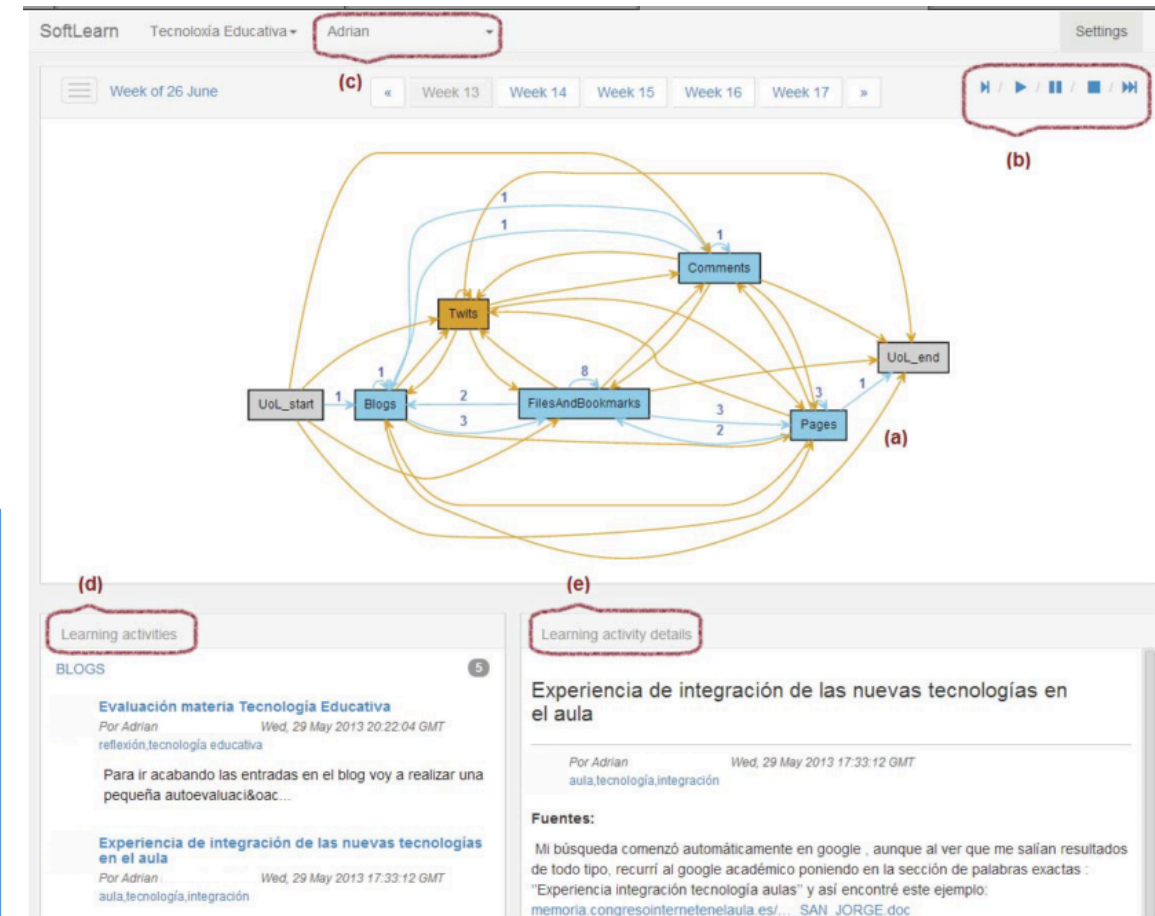


UNIVERSITAS GADJAH MADA



Long & Aleven, 2013 in Math Course

- Most of related works about developing metacognitive tool using LMS design the system only from literature study and developer perspective (**none of them involving user as system designer**).
- Even though, as a shifting paradigm in developing learning system from **technology-centered design** to **user-centered design**, user experience can become important factor for design activity (Syarif, et al 2016).



Groba, et al. 2014. in Student Portfolio Course





UNIVERSITAS  
GADJAH MADA

**Yuk.. Mari kita coba.. 😊**

LOCALLY ROOTED, GLOBALLY RESPECTED

UGM.AC.ID