## **RESEARCE STATERKIT**

MEMBANGUN KERANGKA RISET YANG SOLID

Dr.Eng. Banni Satria Andoko, S.Kom., MMSI





# Nama : Banni Satria Andoko Panggilan : Ando Email : ando@polinema.ac.id No HP : 0813-5988-9181

#### RIWAYAT PENDIDIKAN PERGURUAN TINGGI

Tahun Lulus	Program Pendidikan	Perguruan Tinggi	Jurusan/Program Studi
	Penalaikan		31001
2020	Doctor	Hiroshima University	Engineering/ Learning
			Engineering
2009	Magister	Gunadarma University	Manajemen Sistem Informasi/
			Rekayasa Perangkat Lunak
2006	Sarjana	STMIK PPKIA Pradnya	Teknik Informatika
		Paramitha	

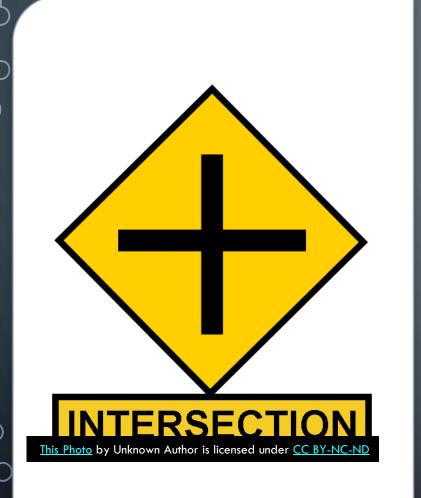
#### STARTER KIT : POTENTIAL PROBLEM

- Should Our Research have a "Massive" impact?
- Should Our Research have to be beyond imagination?
- What should I do?
- How to start?
- How many people needed?
- What kind of knowledge should I have

#### STARTER KIT : WHAT

- Definisi riset :
- *"Scientific research is a systematic, controlled empirical and critical investigation of propositions about the presumed relationship about various phenomena" (Kerlinger ,1986)*

• *"Research is all about addressing an issue or asking and answering a question or solving problem" (Hopkins WG, 2002)* 



## STARTER KIT : WHAT

- Kategori Riset :
- Basic research

Penelitian dasar mengembangkan suatu teori atau konsep dalam bidang tertentu, dan

• Applied research

Penelitian terapan berkaitan dengan suatu penerapan teori untuk mendapatkan perbandingan, hasil kinerja atau menghasilkan suatu produk yang membantu manusia.

Sumber : https://www.dkampus.com/2017/04/riset-menurut-para-ahli-ruang-lingkup-dan-karakteristiknya/

#### STARTER KIT : WHAT – BASIC RESEARCH

- Basic Research juga meliputi pengembangan, pengujian, verifikasi dan memperjelas metode riset, prosedur, teknik dan alat yang membentuk metodologi riset itu sendiri.
- Contoh jenis riset murni
  - Pengembangan suatu teknik sampling yang dapat diaplikasikan pada suatu situasi yang khusus maupun spesifik
  - Pengembangan suatu metode untuk mengukur ekspresi pada orang

#### STARTER KIT : WHAT – APPLIED RESEARCH

- Riset terapan adalah riset yang teknik, prosedur dan metode nya diaplikasikan pada pengumpulan informasi tentang berbagai aspek suatu situasi, isu, permasalahan atau fenomena sehingga informasi yang terkumpul dapat di gunakan atau diaplikasikan.
- Hampir semua riset dibidang ilmu sosial adalah riset terapan, karena dari pemahaman tentang fenomena yang dihasilkan dari melakukan riset, dapat diterapkan pada formulasi kebijakan (policy) dan administrasi.

#### STARTER KIT : WHAT – OBJEKTIF DARI RISET

- Sesuai dengan perspektif objektif dari riset, maka riset dapat dibedakan menjadi empat kategori riset, yaitu riset :
  - Descriptive,
  - Exploratory,
  - Corelational dan
  - Explanatory

#### STARTER KIT : WHAT – RISET DESCRIPTIVE

- Riset Descriptive adalah studi yang berusaha untuk menjelaskan secara sistematis suatu situasi, permasalahan, fenomena, pelayanan atau program, atau memberikan informasi tentang kondisi kehidupan suatu komunitas, atau menjelaskan sikap (attitude) yang diakibatkan oleh suatu isu dan sebagainya.
- Misal studi tentang: "Bagaimana Perilaku siswa Setelah penerapan kurikulum K13"

#### STARTER KIT : WHAT – RISET EXPLORATORY

- Riset Exploratory adalah studi untuk melakukan investigasi/ penyelidikan sebuah permasalahan yang belum terdefinisikan dengan jelas. Riset ini bertujuan untuk memberikan pemahaman mendalam terhadap permasalahan/ fenomena saat ini tetapi tidak akan memberikan hasil yang pasti.
- Misal Kenapa siswa yang bekerja secara berkelompok memiliki kecenderungan untuk terdapatnya siswa "free ride".

#### STARTER KIT : WHAT – RISET EXPLANATORY

- Riset Explanatory adalah riset yang berusaha untuk menjelaskan mengapa dan bagaimana adanya hubungan antara dua aspek dari suatu situasi atau fenomena.
- Contoh ; studi untuk menjelaskan mengapa pada topografi yang miring mengakibatkan banyak terjadi longsor.

#### STARTER KIT : WHAT - RISET CORRELATIONAL

- Riset Correlational adalah studi untuk menemukan atau menetapkan adanya suatu relationship/association/interdependence antara dua atau lebih aspek dari suatu situasi.
- Misal apakah pengaruh media pembelajaran dapat meingkatkan performa belajar siswa.

#### CREATING A GOOD SCAFFOLDING

- Kerangka Riset
  - Research Background
  - Related Study
  - Experimental setting and Measurements
  - Conclussion

#### KERANGKA RISET : RESEARCH BACKGROUND

- Apa saja yang tertuang didalam Research Background?
  - Cerita mengenai Latar belakang riset yang harus saling memiliki benang merah / keterkaitan antar paragraph dengan pola Top – down
  - Metode dan Riset-riset terdahulu secara narasi
  - Hipotesa / Asumsi yang kita angkat
  - Research Question

#### MEMBANGUN CERITA/ NARASI TOP - DOWN

- Contoh : Aplikasi pembelajaran Bahasa Inggris di materi Reading Comprehension dengan menggunakan metode Toulmin arguments untuk mahasiswa EFL.
- Maka, kita bisa susun kerangka sebagai berikut :
  - Bahasa Inggris secara general dan permasalahan yang ada
  - Reading in English for EFL, focus on Reading and its problem
  - Reading comprehension detail activity and specific problem.
  - Method used for improving Reading Comprehension : Strategi Grafis
  - Toulmin Arguments as one of Graphical Strategy and it's used from several researcher
  - Hipotesa dan Research Question

#### KERANGKA RISET : RELATED STUDY

- Main key aspect is : Read a lot of research publication
- Dari contoh diatas, maka ada 2 subjek besar, yaitu, Reading Comprehension in English as EFL dan Media pembelajaran untuk Bahasa Inggris
- Kombinasi antara dua disiplin ilmu Metode Belajar dan Aplikasi Pembelajaran
- Jabaran mengenai riset-riset terdahulu dan pembeda dengan riset kita

#### HOW TO FILLING OUT THE GAP?

- We need to conduct a collaborative research!, or
- Follow other researcher's step and material to be used in our research

#### KERANGKA RISET : EXPERIMENTAL SETTING AND MEASUREMENT

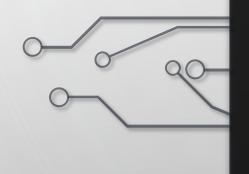
 Definisi mengenai tahapan-tahapan experiment yang akan kita lakukan dan bagaimana kita akan mengukur eksperimen tersebut. Pastikan, setiap eksperimen yang dilakukan sesuai dengan Research Question.

#### KERANGKA RISET : EXPERIMENTAL SETTING AND MEASUREMENT

- Measurement :
- Qualitative VS Quantitative
- Qualitative : Deskripsi tentang situasi yang terobservasi dari kondisi kehidupan komunitas, atau bagaimana opini/pendapat masyarakat terhadap suatu isu.
- Quantitative : Jika informasi yang diperoleh dari studi tentang fenomena, situasi, permasalahan atau isu dibentuk utamanya dalam variabel-variabel quantitative dan jika analisa dimunculkan dalam magnitude dari variasinya. Menggunakan pendekatan statistic dalam pengukurannya.

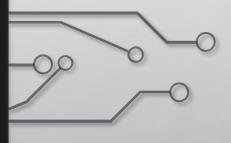
#### KERANGKA RISET : CONCLUSION

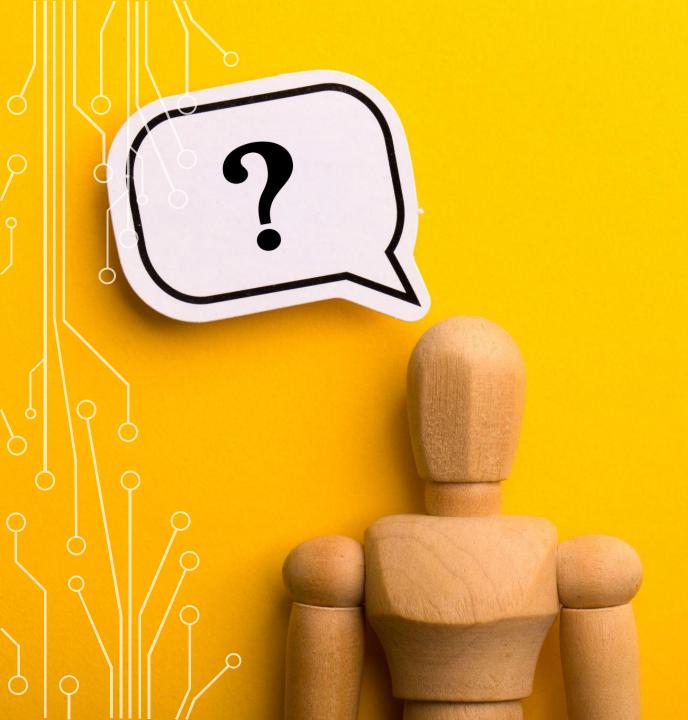
 Bagian ini merupakan bagian terpenting untuk menjabarkan hasil eksperimen terhadap pertanyaan riset. Setiap pertanyaan riset, dijabarkan hasilnya berdasarkan temuan yang didapatkan saat eksperimen dan dikaitkan dengan riset – riset sebelumnya untuk membentuk suatu kontribusi baru.



## MY RESEARCH

LEARNING ENGINEERING

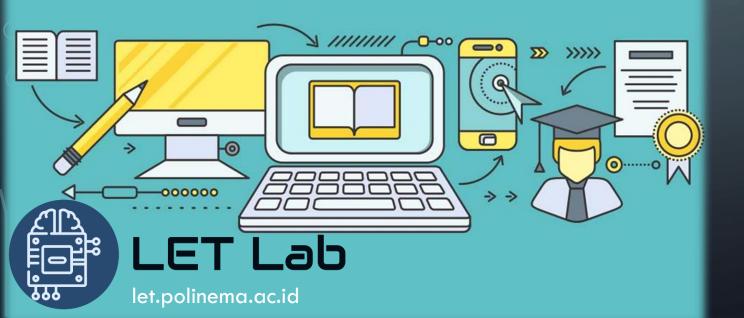




## WHAT IS IT?

#### WHAT IS IT?

### • "the use of technology to maximize the student learning experience"



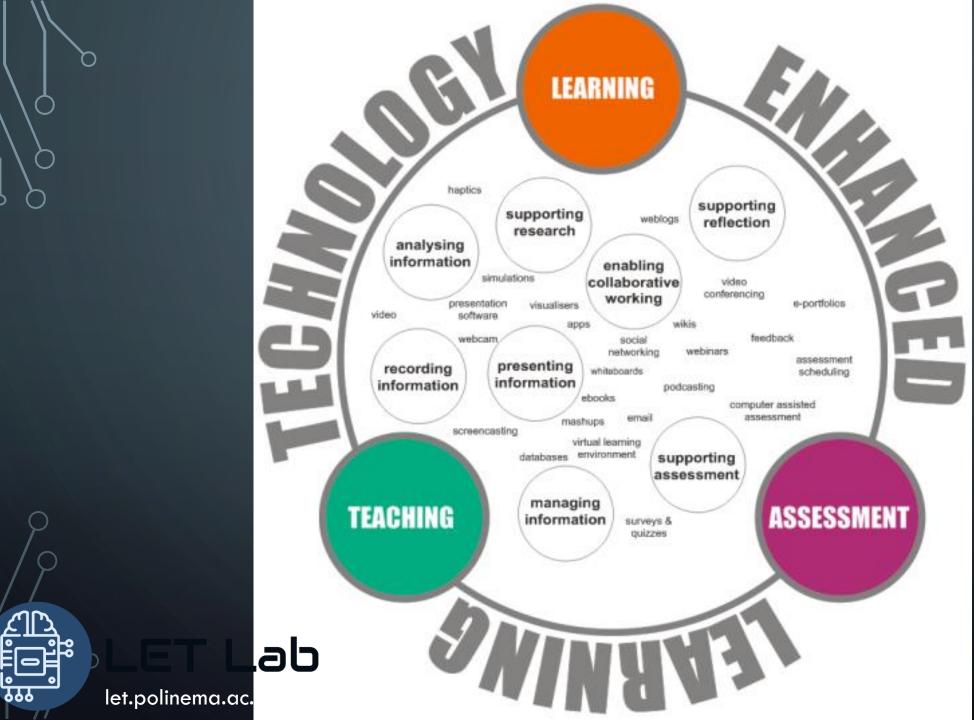


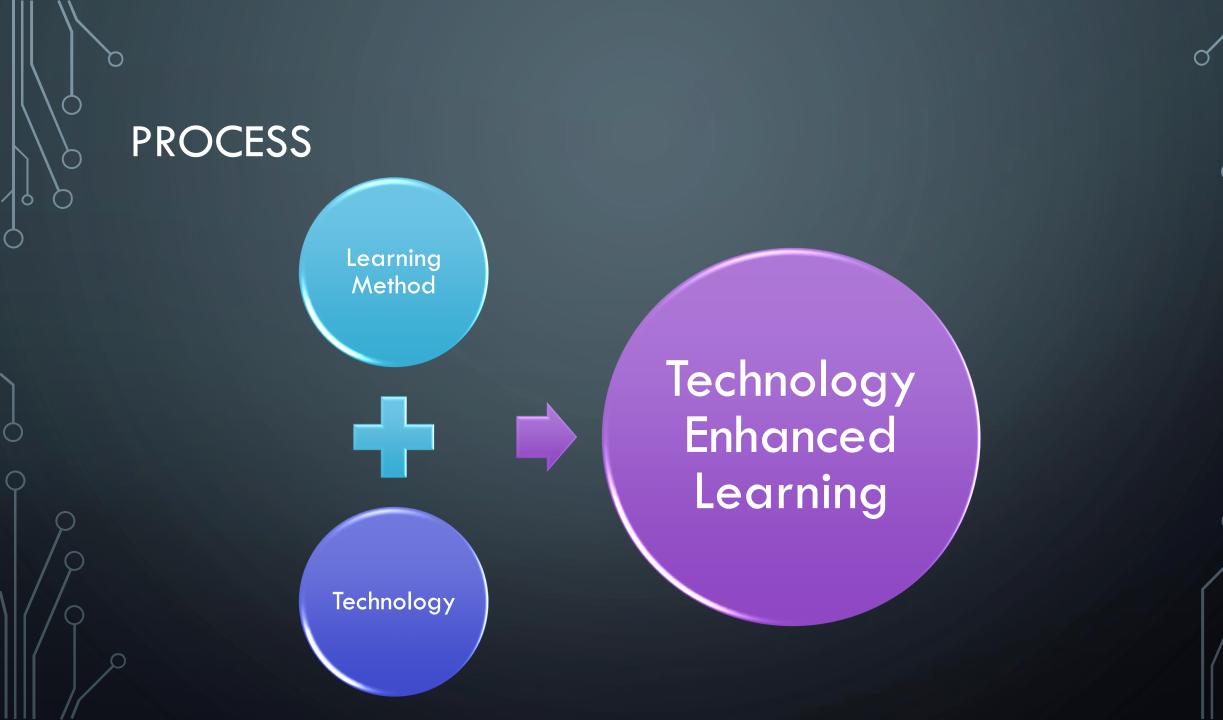
#### International Bureau of Education

 The use of information and communication technologies as mediating devices supporting student learning that can include elements of assessment, tutoring, and instruction



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#### TEACHING

- Teaching is best positioned as a design science, because it requires creative and scientific thinking in order to solve ill structured problems
- Design thinking capabilities are inherently challenging to develop, but are supported through sustained practice, reflection, exemplars, and expert guidance.

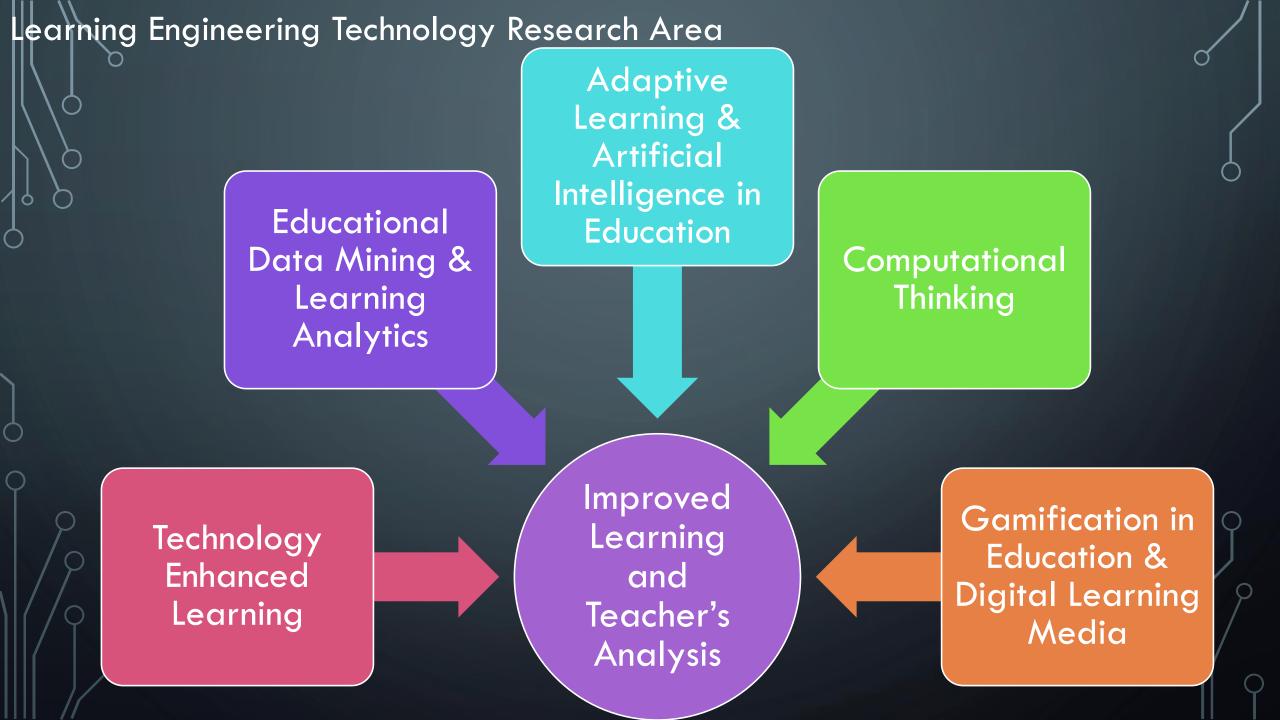




 "Fundamentally, designing for learning involves understanding and catering to students, creating tasks that help students achieve learning outcomes, ensuring alignment between different aspects of the design, and promoting accessibility"







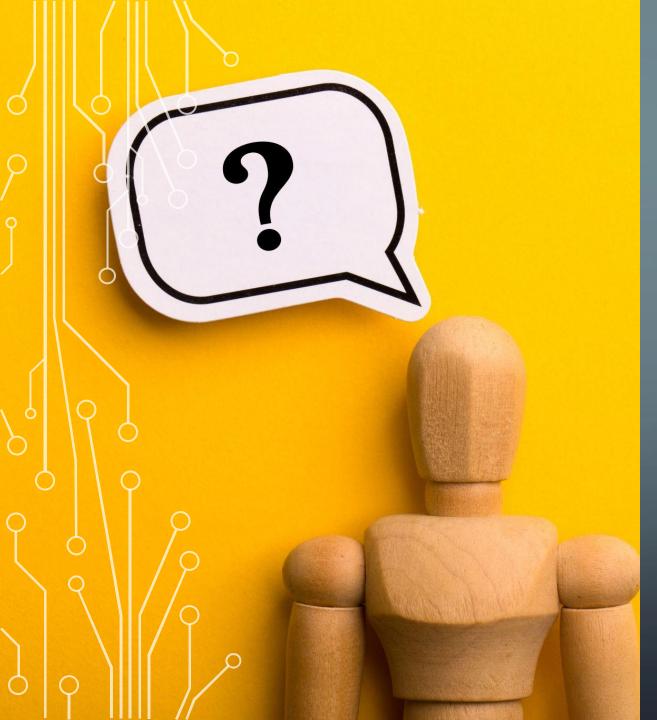
	Technology Enhanced Learning	• The use of <b>technology</b> to maximise the student <b>learning</b> experience
6	Educational Data Mining & Learning Analytics	<ul> <li>an emerging interdisciplinary research area that deals with the development of methods to explore data originating in an educational context</li> <li>EDM uses computational approaches to analyze educational data in order to study</li> </ul>
		educational questions
	Gamification in Education & Digital Learning Media	• a developing approach for increasing learners' motivation and engagement by incorporating game design elements in educational environments.
9	Computational Thinking	• <b>Computational thinking</b> means <b>thinking</b> or solving problems like computer scientists. CT refers to thought processes required in understanding problems and formulating solutions.
	Adaptive Learning & Artificial Intelligence in Education	• Global adoption of technology in education is transforming the way we teach and learn. Artificial Intelligence is one of the disruptive techniques to customize the experience of different learning groups, teachers, and tutors.
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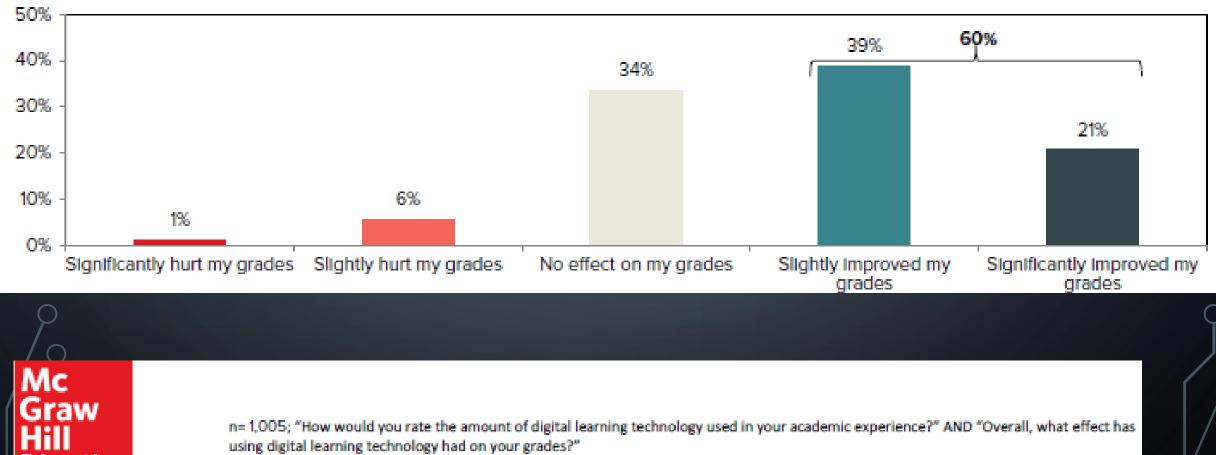


## ITS: DO ME NEED

### WHY DO WE NEED TEL

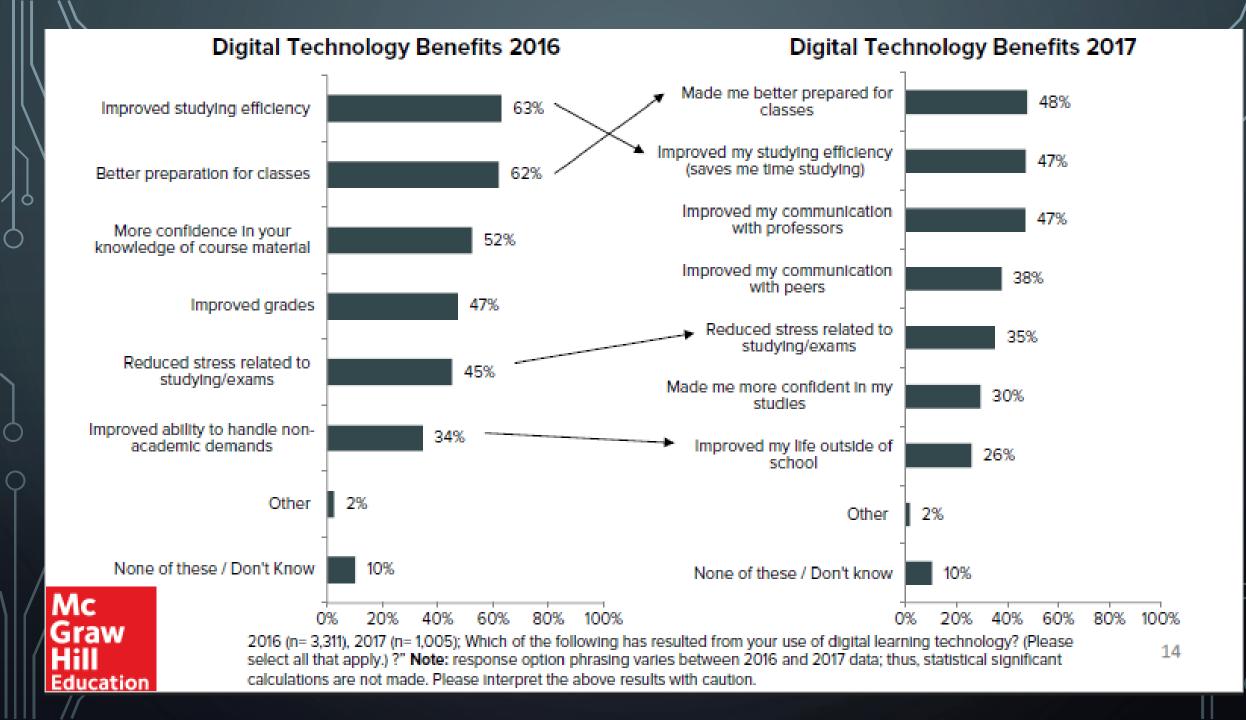
• Increased Students Achievements

#### Digital Learning Technology Effect On Grades



using digital learning technology had on your grades?"

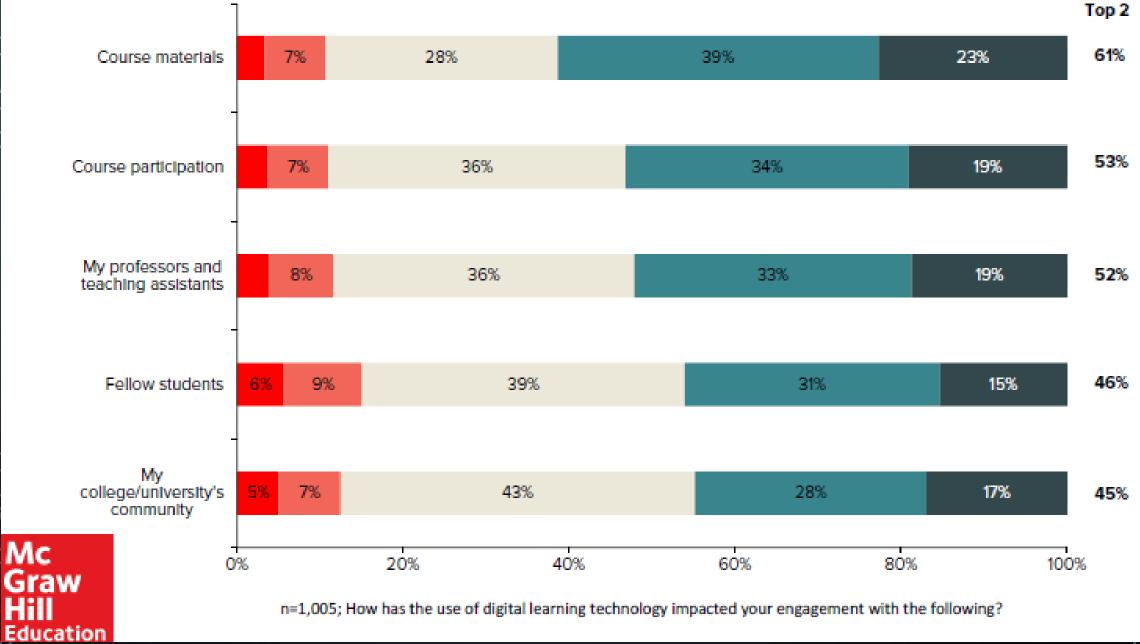
Education



#### WHY DO WE NEED TEL

• Promote Student's Engagements

#### Greatly decreases Somewhat decreases Neither increases nor decreases Somewhat increases Greatly increases

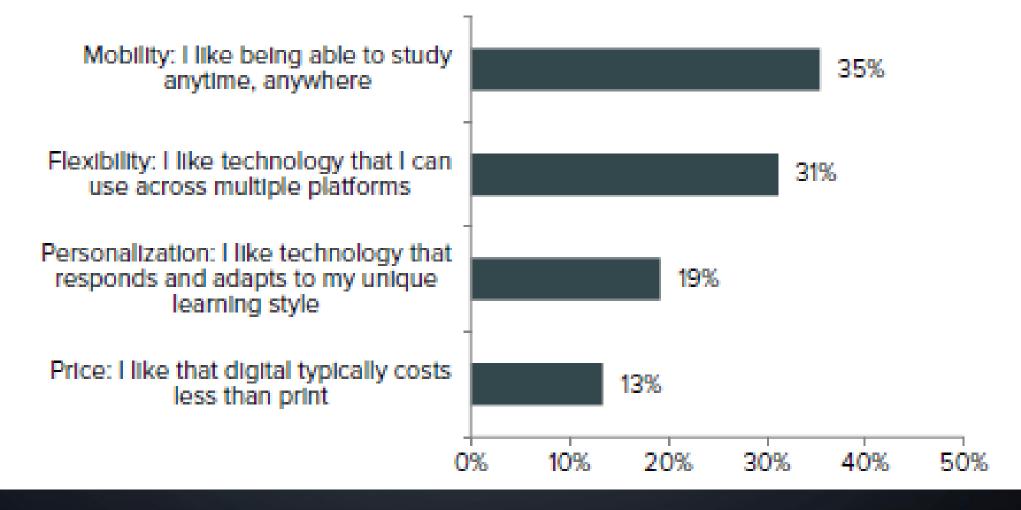


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### WHY DO WE NEED TEL

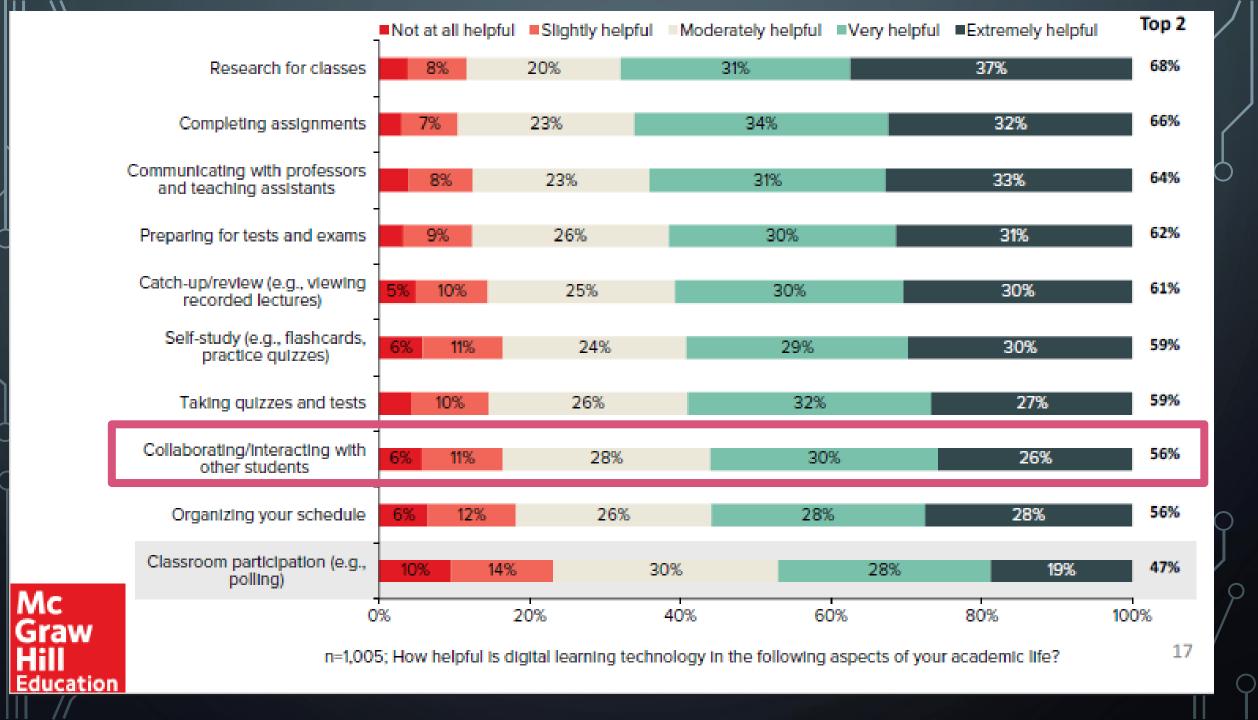
• Extend Access and Flexibility

#### Most Liked Digital Learning Technology Features



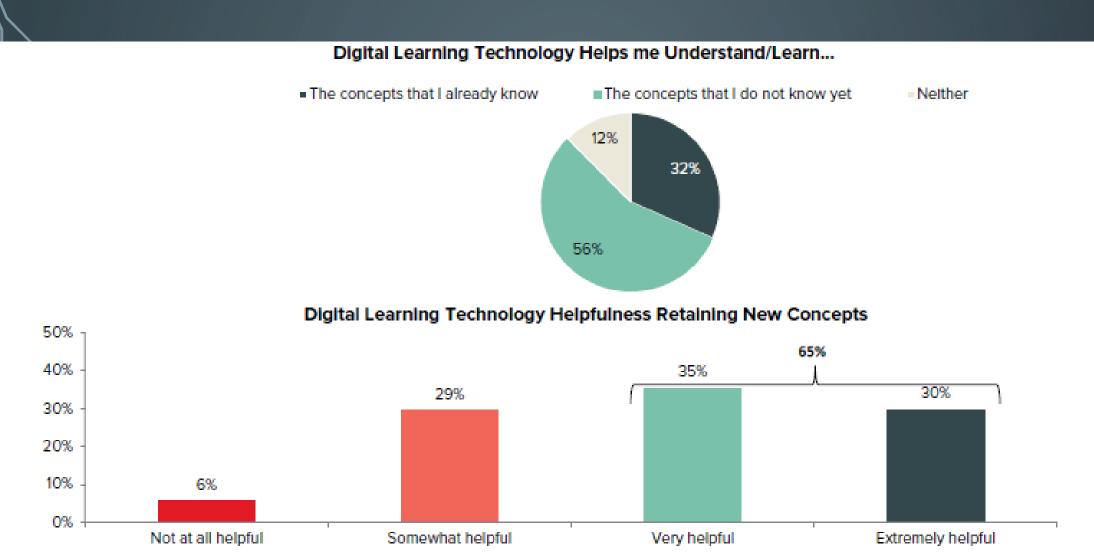
### WHY DO WE NEED TEL

• Facilitate Students Discussion



### WHY DO WE NEED TEL

• Helpfulness



Mc Graw Hill Education

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n=1,005, "Which of the following best represents your experience? Digital learning technology helps me best understand/learn..." AND n=950; "How helpful would you say that digital learning technology has been in terms of aiding your ability to retain new concepts?"

18

## b Dem

Demographics		
Age		
19 and younger		
20-21		
22-23		
24+		
Ethnicity		
Asian or Pacific Islander		
Black or African-American		
Caucaslan		
Hispanic		
Native American or Alaska Native		
Other or Multi-Racial		
Prefer not to answer		
Gender		
Male		
Female		
Other		
Region		

South West

Midwest

Northeast

Student Status	
Full-time	<b>72</b> %
Part-Time	28%
Collegiate Status	
1st Year/Freshman	23%
2nd Year/Sophomore	24%
3rd Year/Junior	17%
4th Year/Senior	13%
5th Year/2nd Year Senior	4%
In a masters or doctorate program	18%
Degree Program	
2-year Associate's degree program	34%
4-year Bachelor's degree program	44%
Master's degree program	11%
PhD program	7%
Other	4%
Attendance Type	
On-campus	69%
Online	<b>16</b> %
Hybrid	<b>16</b> %
Other	0%

Mc Graw Hill Education

"What is your age?" AND "What is your ethnicity?" AND "How do you identify your gender?" AND "In which state do you currently attend college?" AND "Are you a full-time or part-time student?" AND "What is your collegiate status?" AND "Which of the following best describes the type of degree program that you are currently enrolled in?" AND "How do you take the majority of your courses?"

28% 19% 13% 40%

9% 20% 54% 16% 4% 5% 2%

45% 54% 1%

38%

25%

19%

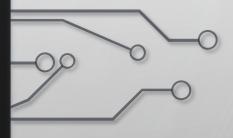
18%

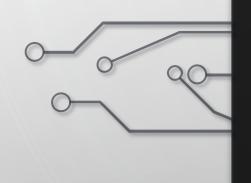


# CAN WE MAKE



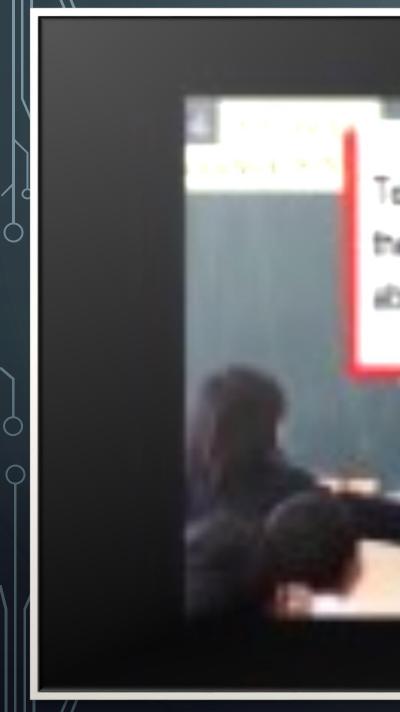
#### LEARNING ENGINEERING LAB – HIROSHIMA UNIVERSITY PRODUCTS



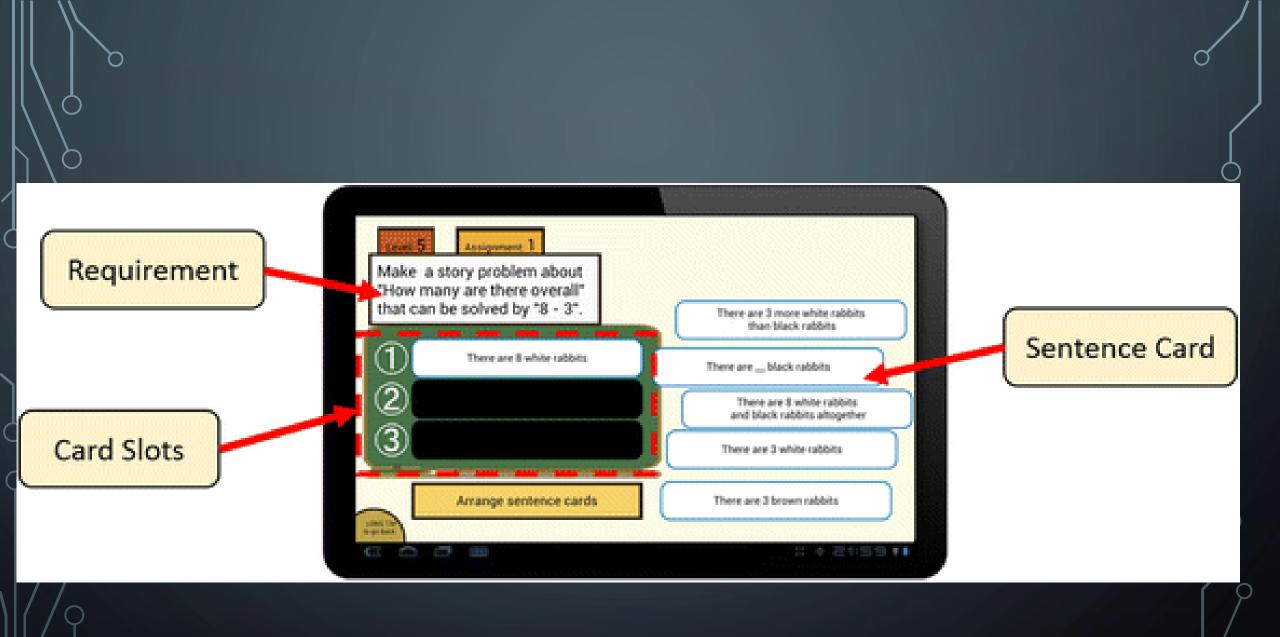


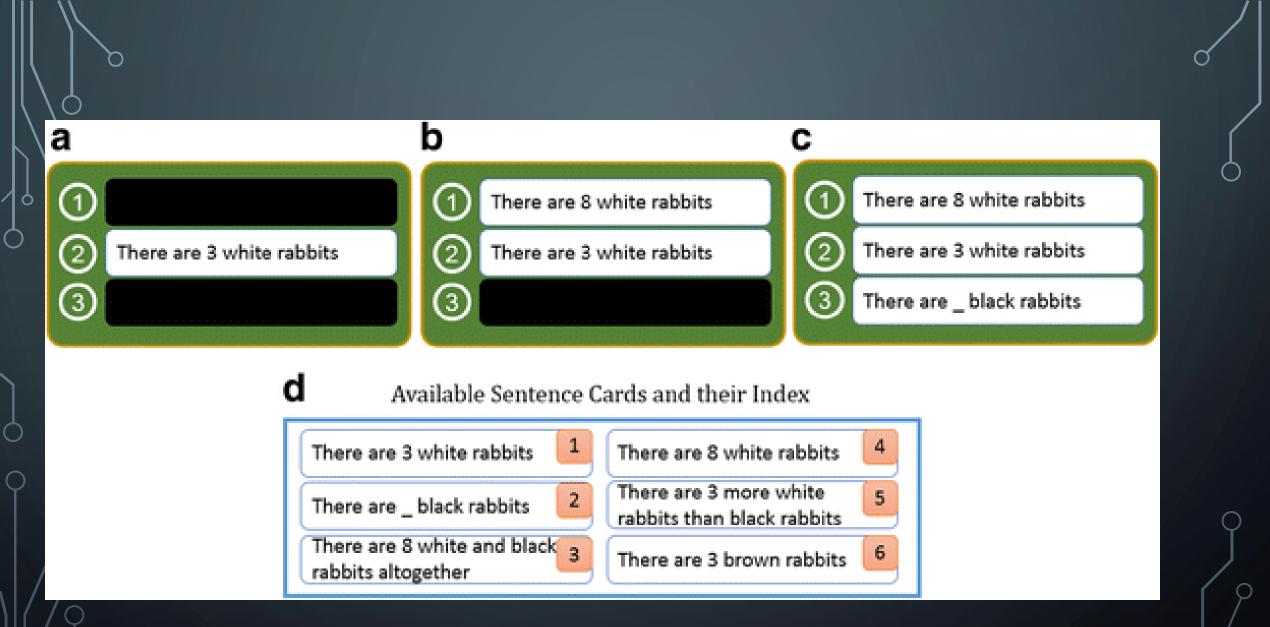
### MONSAKUN





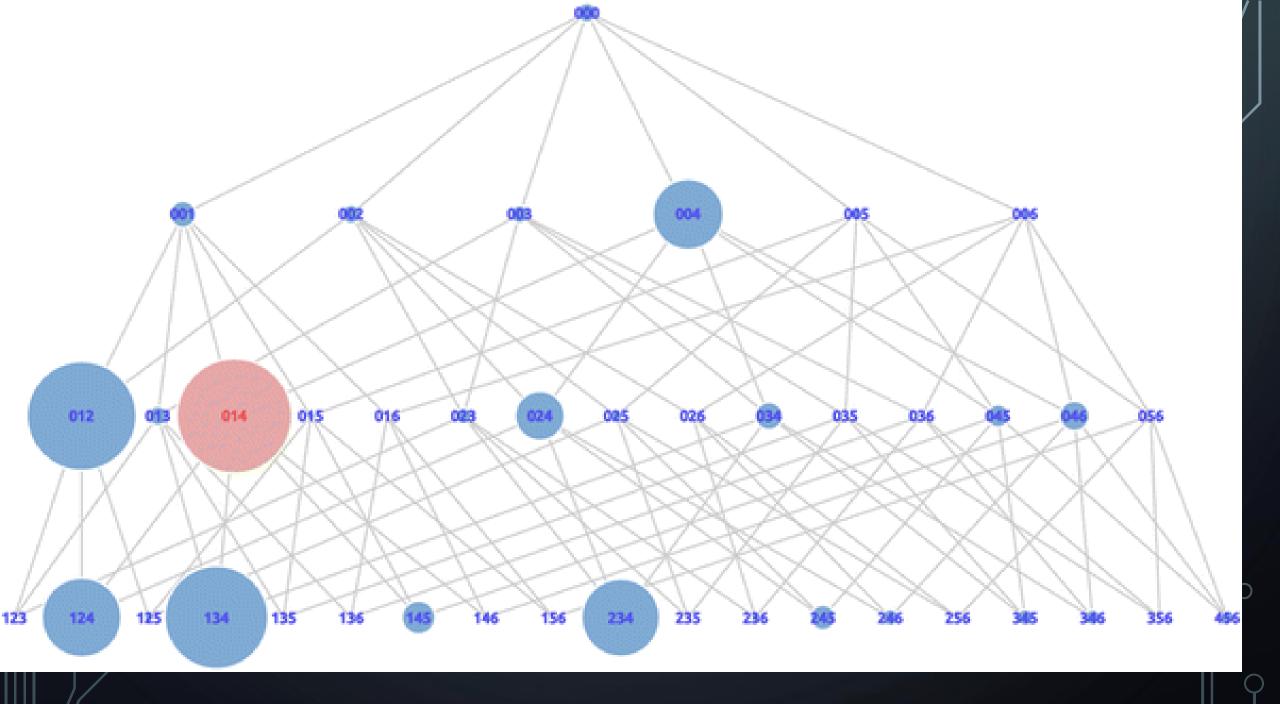
Teacher wants to know why the students think that the sentence about "rebbits" cannot be used

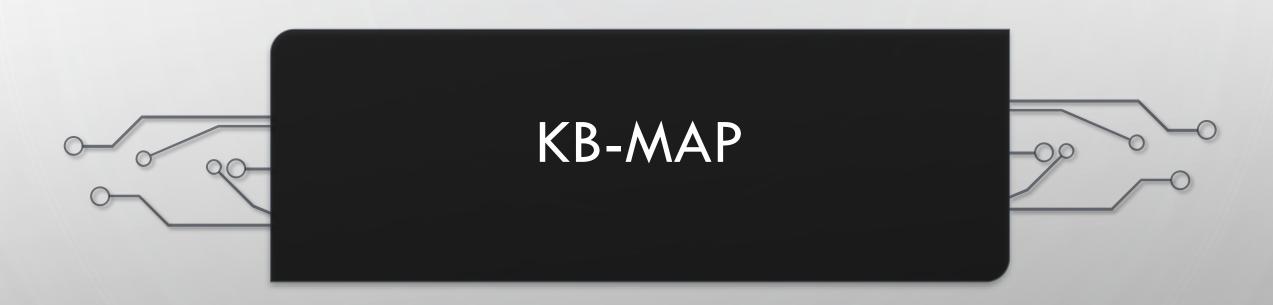




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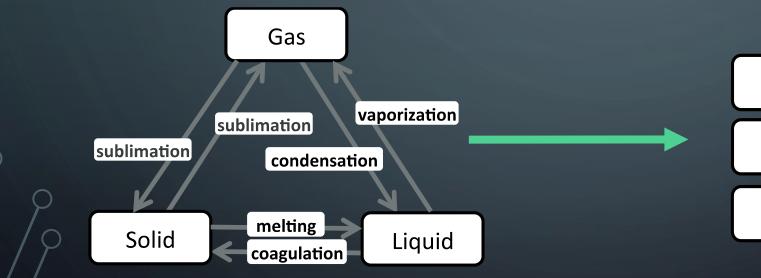
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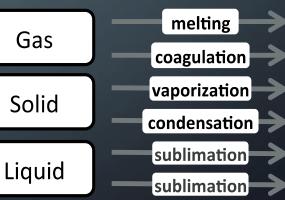




#### HOW IS KB-MAP WORKS?

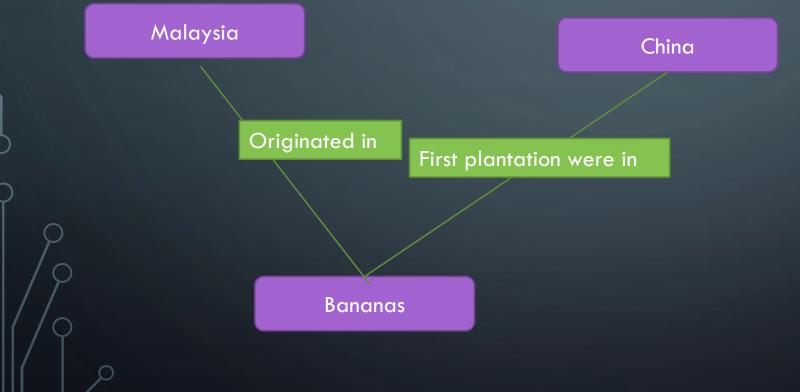
"Any substance may exist as solid, liquid or gas. If a solid is heated, it will melt to become a liquid. This is called melting. If the liquid is then cooled, it will freeze to become a solid again. This is called freezing. Similarly, if a liquid is heated it will boil to become a gas. This is called boiling......"





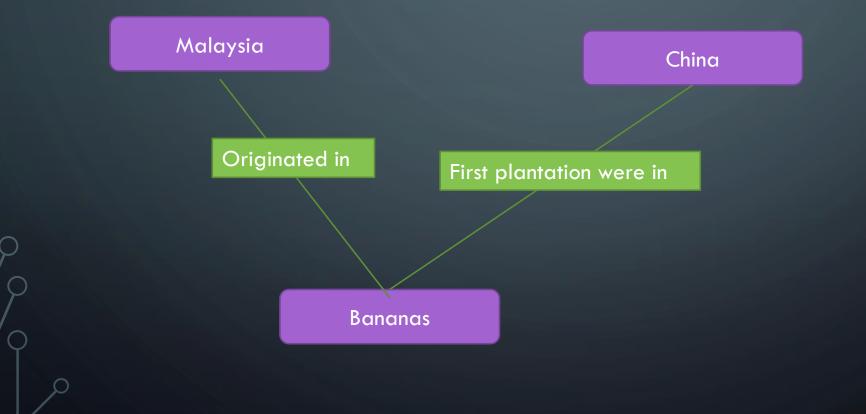
#### Bananas originated in Malaysia as early as 2000 BC,

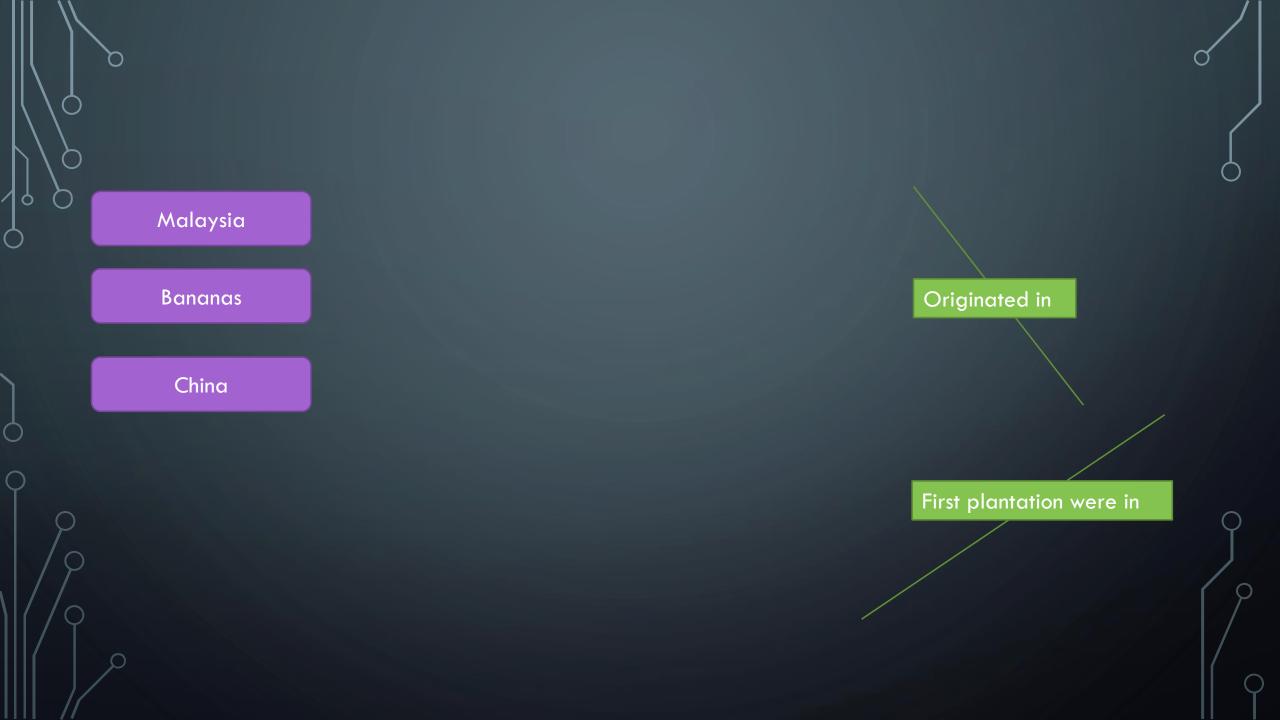
but first banana plantations were established in China around 200 AC. In the early 1500s, the Portuguese and Spanish introduced bananas to the Caribbean and Americas. The United fruit Company, formed in 1899, was responsible for the commercialization

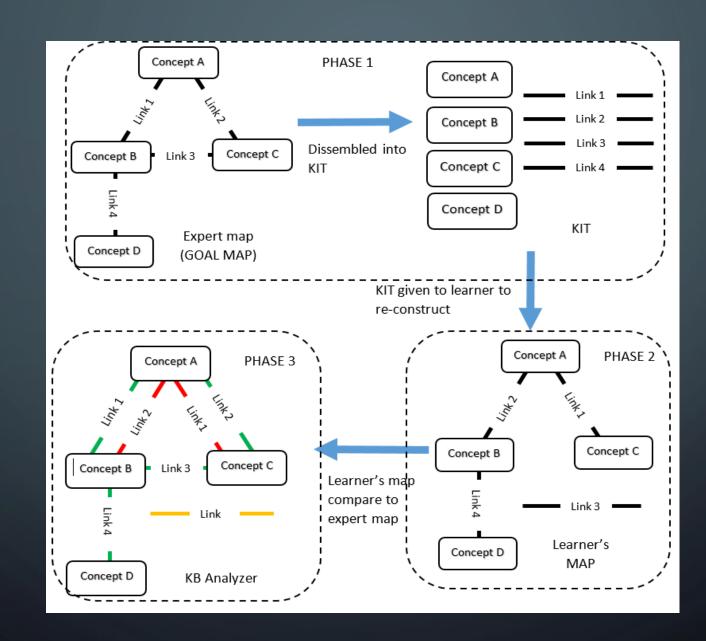


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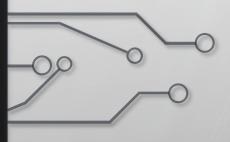








### MY RESEARCH WITH KB-MAP



### METHOD : ANAGRAM DISTANCE (AD)

Anagram Distance is used to measure the sentence by sentence style, where learners are bound to the sequence appearance order of the text.

В compute urdamental compone Computer data storage called memory called storage Expected Result Distance

Example : Learners constructed the A proposition then B proposition, according to the reading material those construction were the 1<sup>st</sup> and the 3<sup>rd</sup> proposition.

This also indicate that user try to complete the paragraph by constructing the proposition from the same paragraph.

#### Computer data storage

Computer data storage, often called storage or memory. Is a technology consisting of computer components and recording media used to retain digital data. It is a core function and fundamental component of computers.

In contemporary usage of the words "memory" and "storage", "memory" is usually semiconductor storage read-write random-access memory, typically DRAM (Dynamic-RAM) or other forms of fast but temporary storage. "Storage" consists of storage devices and their media not directly accessible by the CPU, typically hard disk drives, optical disc drives, and other devices slower than RAM but they are non-volatile. Historically, memory has been called core, main memory, real storage or internal memory while storage devices have been referred to as secondary storage, external memory or auxiliary/peripheral storage.

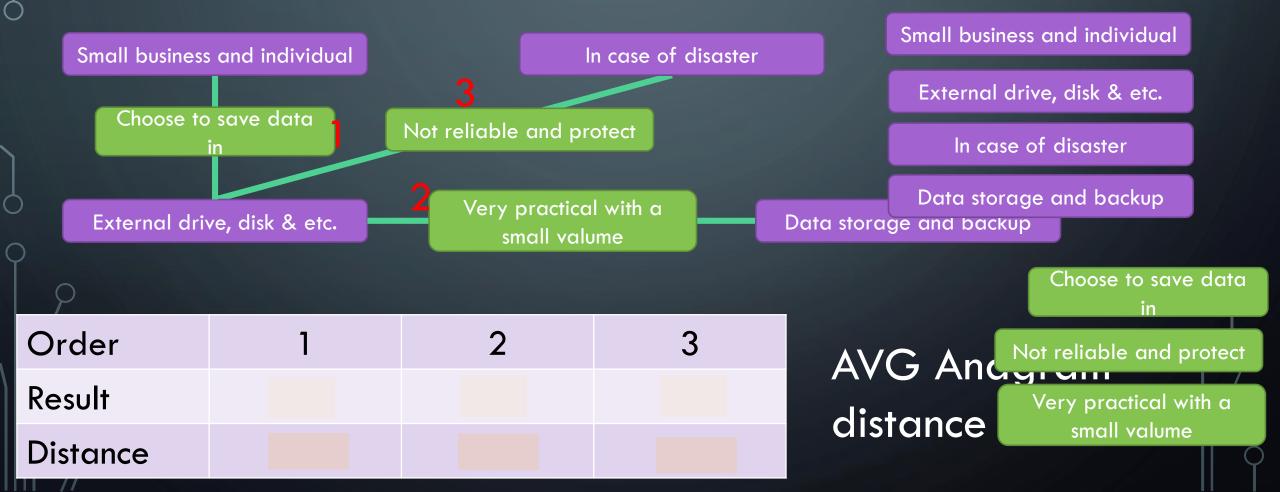
Small business and individual

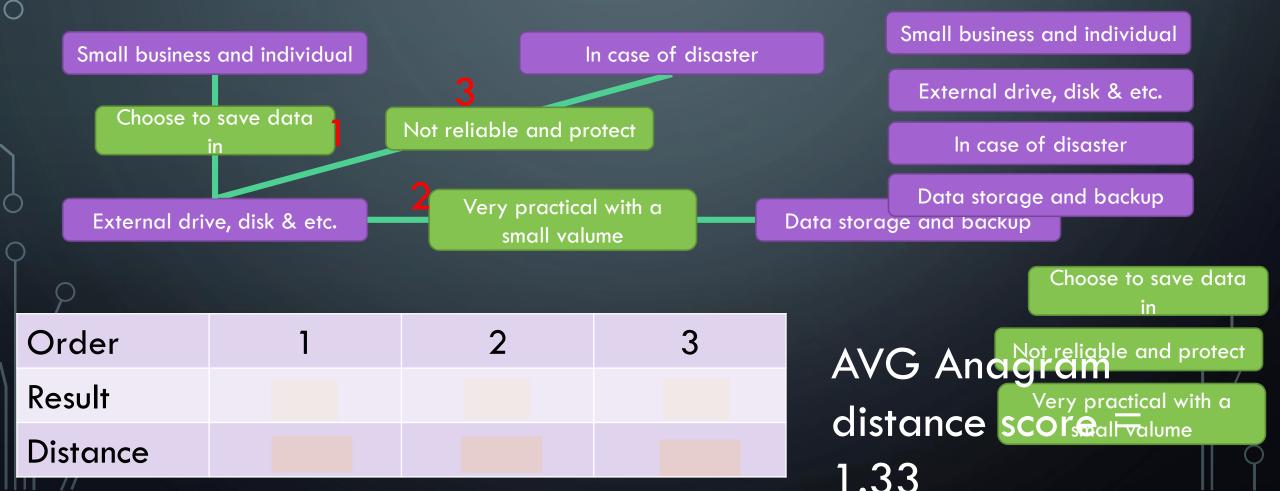
External drive, disk & etc.

In case of disaster

Data storage and backup

Choose to save data in Not reliable and protect Very practical with a small valume





#### METHOD : PARAGRAPH REMAINING (PR)

- Structure of the text is Important in Reading Comprehension.
- Paragraph remaining (PR) is used to measure Learners' Construction from a text Structure point of View. This value measures how much a leaner constructing the propositions within the same paragraph continuously.

Small business and individual

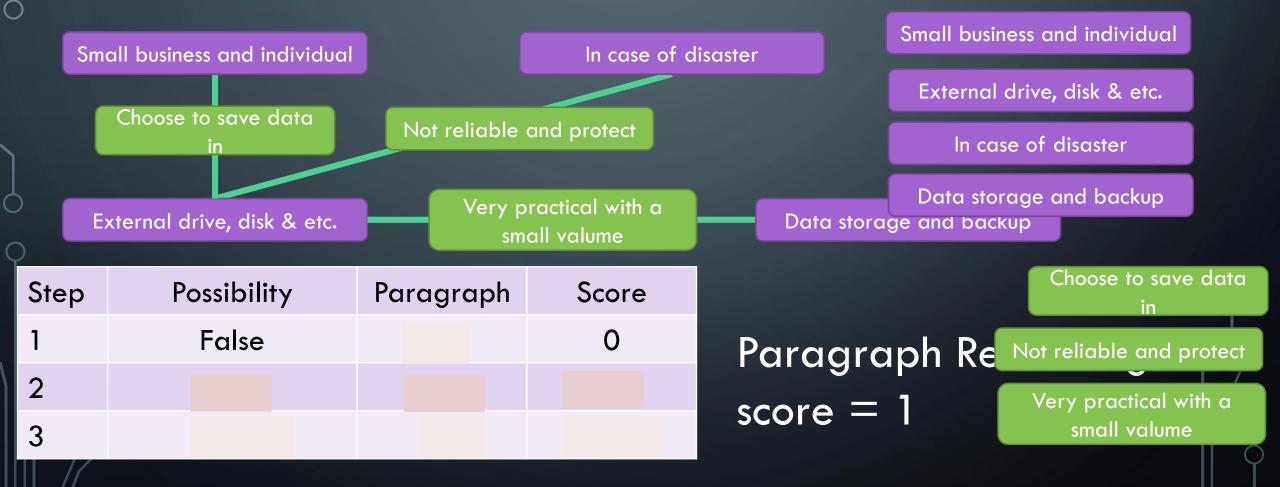
External drive, disk & etc.

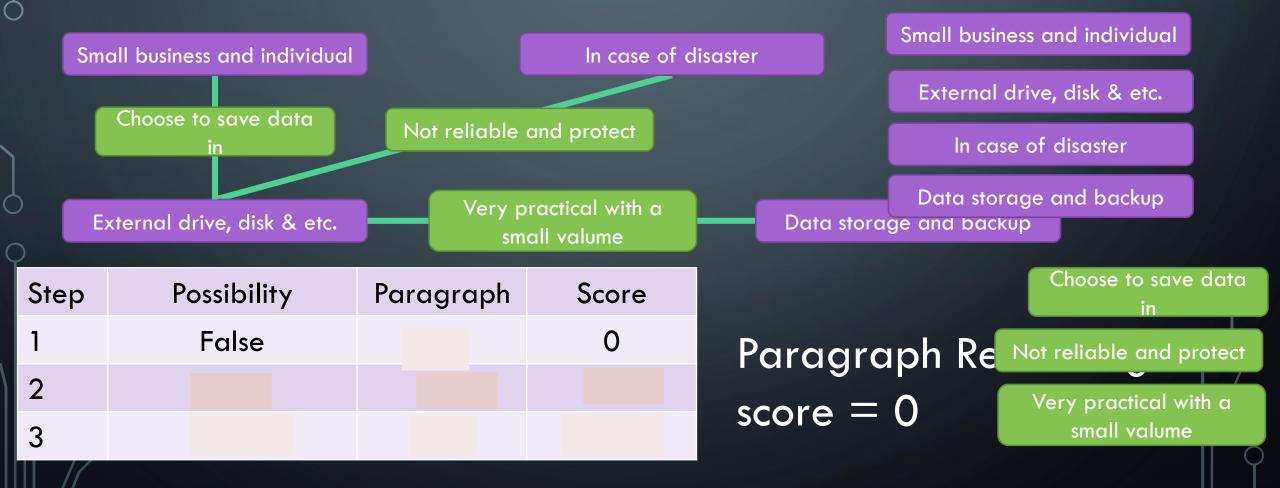
In case of disaster

Data storage and backup

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Very practical with a small valume





#### EXPERIMENTAL SETTING AND METHOD

#### • PROCEDURE

- This experiment involving eight Japanese undergraduate students who learn English as foreign language.
- The student divided into two groups by the TOEIC reading score and they use Kit Build (KB) and Scratch Build (SB) by turn.
- We conduct six session with a different material for each session

• In each session we do several activities, they are:

- Reading the material session with Dictionary and translator allowed (10 minutes)
- Constructing KB Map and SB Map session with open reading material (10 Minutes)
- Test session with closed reading material, dictionary and translator (5 minutes)
- Test explanation session (10 minutes)

### EXPERIMENTAL RESULT AND DISCUSSION

#### **RESULT of Anagram Distance**

Туре	Mean (SD)	p-value
КВ	0.47 (0.088)	0.049
SB	0.33 (0.15)	

- This means learners with KB tend to construct concept maps not according to the order of sentences in the text (AD is High)
- If just anagram distance is high also means that learners may randomly pick up sentences from the texts and make propositions.

#### Analysis RESULT of Paragraph Remaining

Туре	Mean (SD)	p-value
KB	0.72 (0.14)	0.20
SB	0.81 (0.13)	

PR both in KB and SB is high, 0.7 - 0.8. This means learners make propositions in the same paragraph in the possibility of 70 - 80%.

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# RESEARCH 2 : LEARNING SUPPORT FUNCTION IN KB-MAP

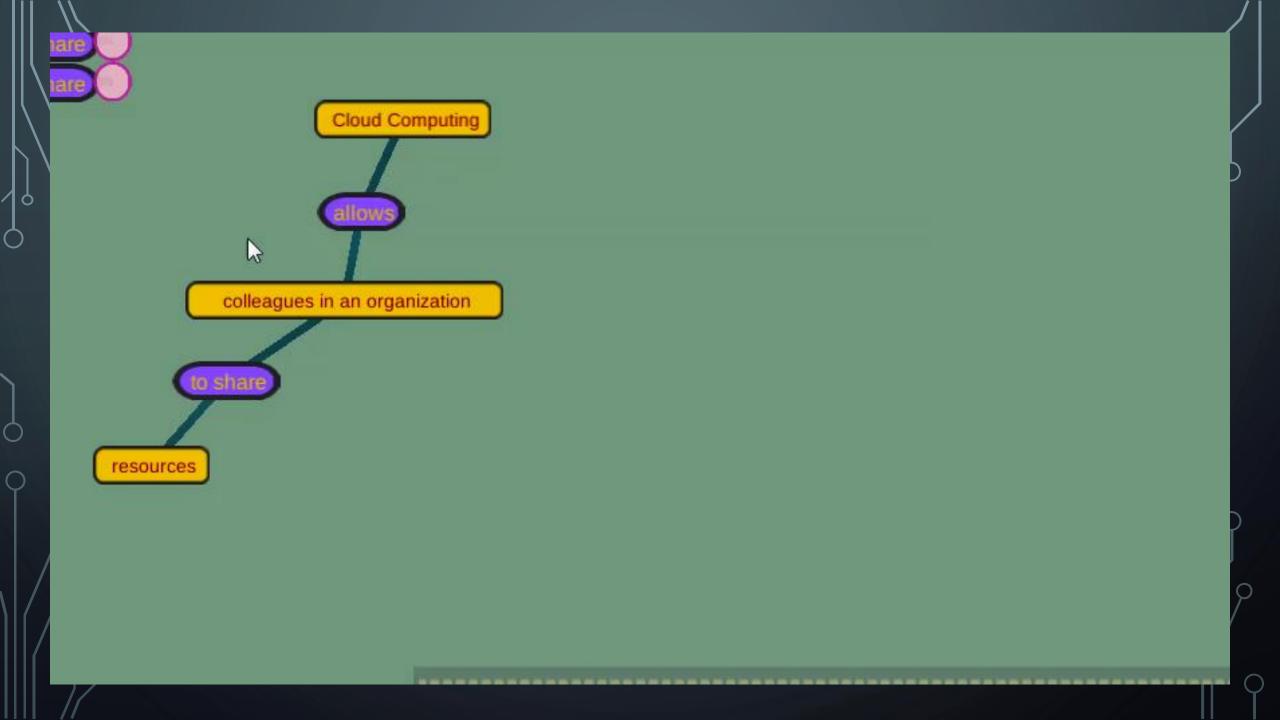
# SOURCE-CONNECTION STRATEGY

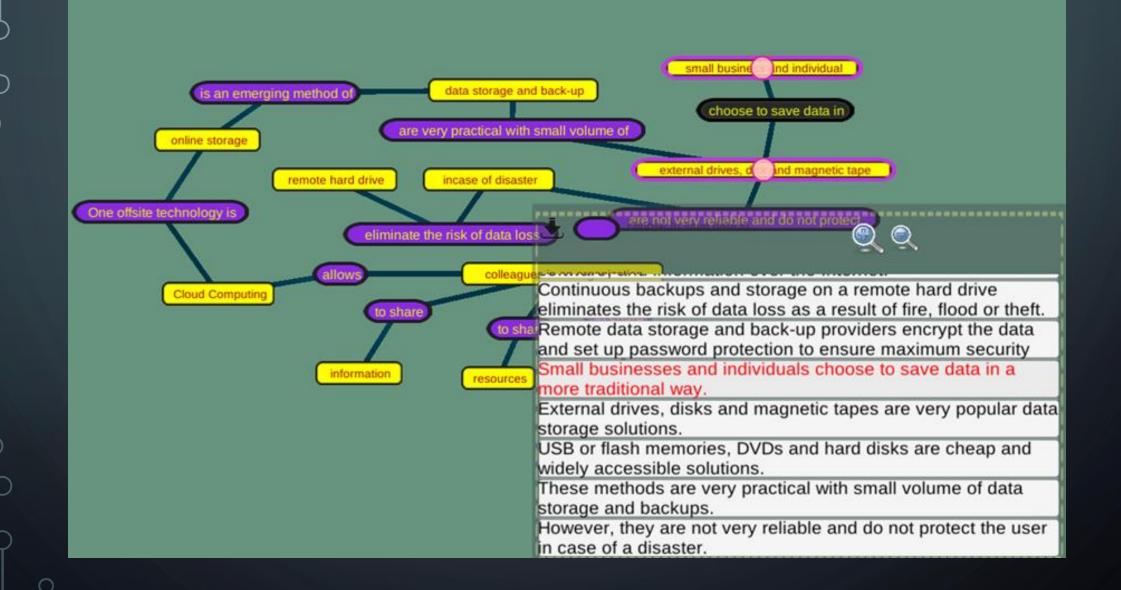
• This function aims to facilitate learners to make confirmation of their understanding (in the form of learners' map) with the reading material.

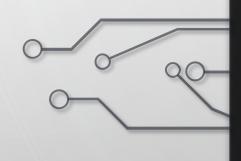
					o
$\backslash \bigcirc$				Good Reader	Poor Reader
	MENTAL MODEL Comprehending Comprehending Reading Material MENTAL MODEL Psonson Psonson Reading Material MENTAL MODEL	Non-physical layer Physical layer	Construction process	Confirming the understanding by them self by clarifying with the reading material	X
	Learner's thinking in usual KB-map		After Construction	Teacher's feedback to repair misunderstanding	
	MENTAL MODEL	Non-physical layer		Good Reader	Poor Reader
<i>2</i> <i>2</i> <i>2</i>	Comprehending Comprehending Representation Connection Reading Material Connection Learners' Map	Physical layer	Construction process	Confirming the understanding by them self by clarifying with the reading material	
			After Construction		back to repair standing
	Learners thinking in KR-man with source conn	ection			

Learners thinking in KB-map with source connection

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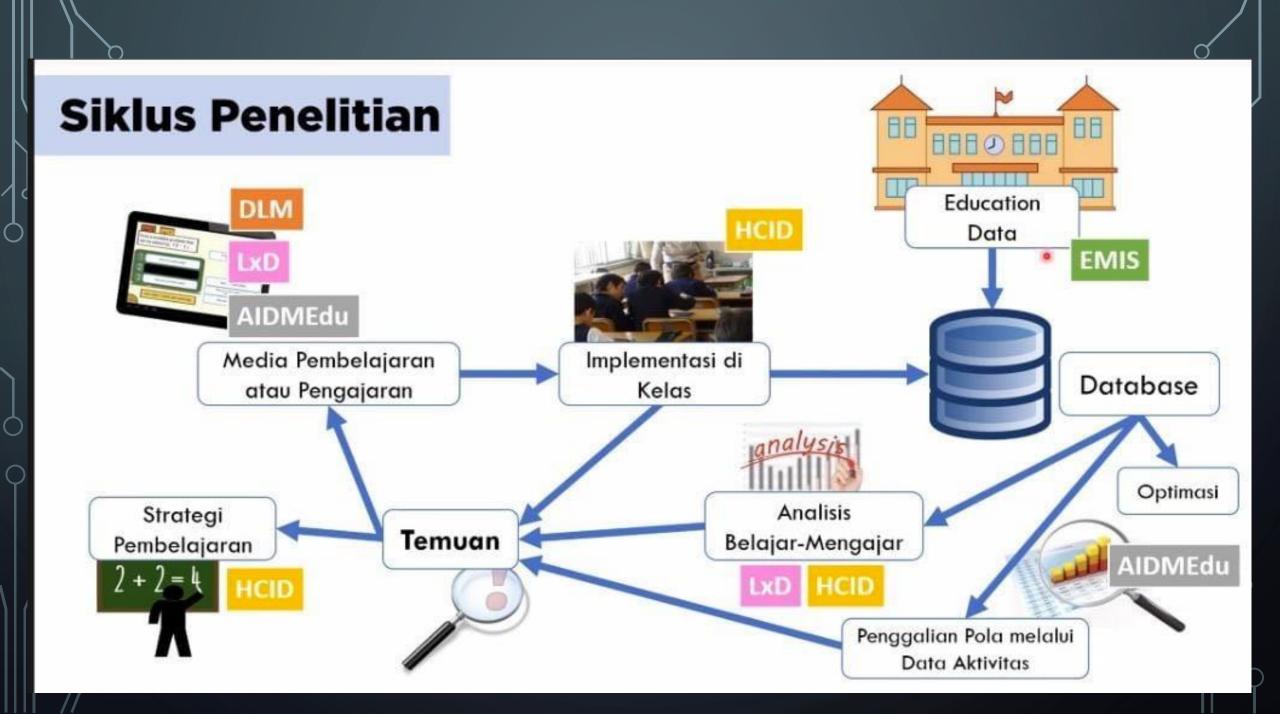


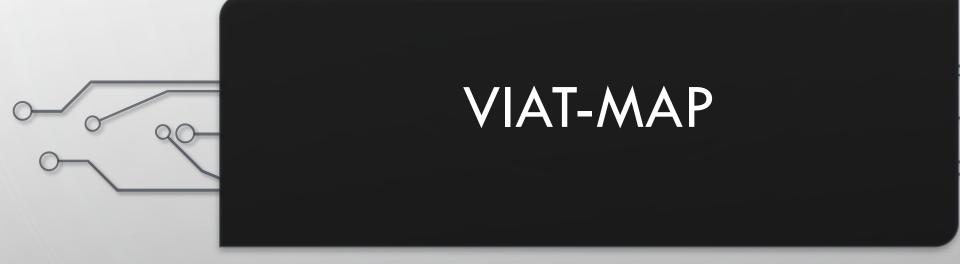


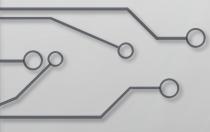


### LEARNING ENGINEERING TECHNOLOGY LAB – POLINEMA









# BASED ON TOULMIN ARGUMENTS



## Claim

# **Evidence**

**Qualifier** Cases in which the claim isn't true.

**Backing** Further unpacking of evidence.

Grounds

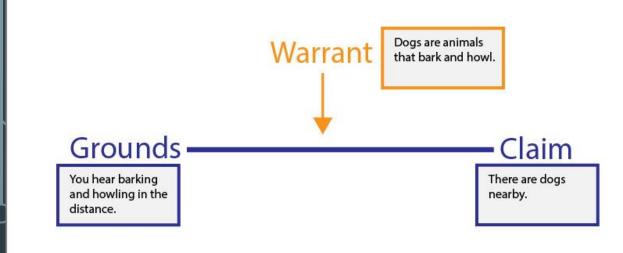
What makes the evidence reliable.

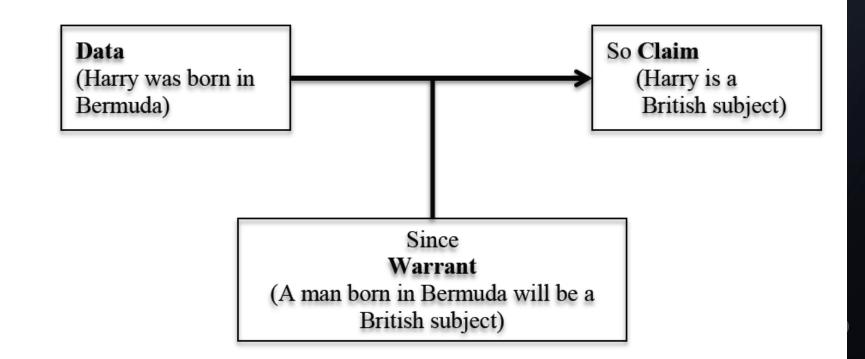
Rebuttal

Who could contest this evidence & why?

#### Warrant

Underlying beliefs and assumptions that make the claim important.









#### VIAT-MAP

#### READING COMPREHENSION APPLICATION

VIAT-map (Visual Arguments Toulmin) Application to help Reding Comprehension by using Toulmin Arguments Concept. We are trying to emphasise the logic behind a written text by adding the claim, ground and warrant following the Toulmin Argument Concept.

Published article :

Ο

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No. Title		Published Year
1	A Preliminary Study: Toulmin Arguments In English Reading Comprehension For English as Foreign Language Students	2021
2	Rancang Bangun Aplikasi Strategi Grafis (Viat-Map) Untuk Reading Comprehension Dengan Toulmin Arguments	2021

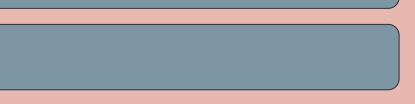
lab Member :

No	Nama	Judul
1	Arka Arifiandi Leonanta	Penerapan Argumentasi Toulmin di Viat-map untuk pembelajaran Bahasa Inggris materi Reading Comprehension
2	MUHAMMAD FACHRY NAJIB	Penggunaan meaningfull feedback pada aplikasi strategis grafis (viat - map) dalam upaya peningkatan reading comprehension dengan toulmin argument
3	RIO FEBRIANDISTRA AD	Fitur analisa guru pada aplikasi viat - map terhadap detil aktivitas siswa di materi reading comprehension
4	MEGANANDA FADILLA REZEKI	Penambahan Fitur Gambar Di Aplikasi Viat-Map Untuk Pembelajaran Bahasa Inggris Reading Comprehension Untuk Siswa Sekolah Dasar
5	BENING SUKMANINGRUM	Confident Tag Untuk Mengetahui Tingkat Pemahaman Siswa Untuk Belajar Bahasa Inggris Reading Comprehension Dengan Aplikasi Viat-Map



The sun is out to stun today. Let's have some fun! Let's run in the sun. Run, run, run. It is fun to run in the sun. Run, run, run. It is hot when you run in the sun.

Choose a question that matches that paragraph





The sun is out to ... today

Will they burn the

How do they run?

How do they have

fun?

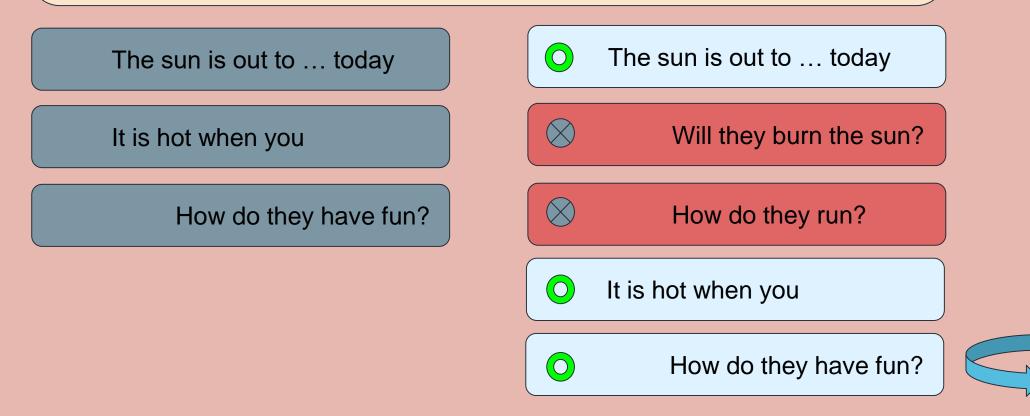
fun?

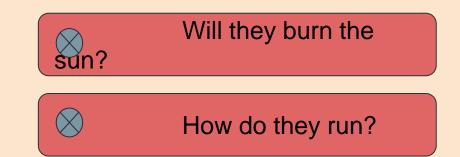
sun?

How do they have

The sun is out to stun today. Let's have some fun! Let's run in the sun. Run, run, run. It is fun to run in the sun. Run, run, run. It is hot when you run in the sun.

Choose a question that matches that paragraph





Because the two statements above cannot be answered with reading material



# **QB REC (QUESTION BUILDING RECONSTRUCTION)**

READING COMPREHENSION APPLICATION

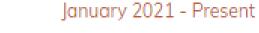
Question Building Reconstruction Application to help Reding Comprehension by constructing a proper question to understanding the reading material. We are trying to emphasise the the understanding by creating a proper question that can be answered from the Text

Published article :

No. Title Published Year

lab Member :

No. Nama		Judul
1	Rei Fangky	Penambahan Kandidat Jawaban Untuk Konfirmasi Lanjut Pembelajaran Bahasa Inggris Dengan Qb
	Primandicka	Rec Application
2		Meaningful Feedback Di Aplikasi Qb-Rec Untuk Mempertajam Pemahaman Dalam Membuat
		Pertanyaan Bahasa Inggris Di Subjek Reading Comprehension





# CONTACT DETAILS

- ando@polinema.ac.id
- <u>let lab@polinema.ac.id</u>
- 0813 5988 9181
- let.polinema.ac.id
- •Det.polinema.ac.id/ando

## LEARNING ENGINEERING TECHNOLOGY Lab. POLINEMA

# LET Lab let.polinema.ac.id

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