

# **Implementing English Medium Instruction in the Asian Higher Education Context: Practical Strategies for Tertiary Educators**

## ***Interactive Workshop***

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### **Abstract**

English language ability is now considered a foundational skill for 21st Century learners, enabling them to survive and thrive in the global workplace after graduation, and also increasingly to participate in study abroad programs during their university degree program.

For tertiary educators, university internationalisation agendas and demands for student and staff mobility often mean pressure to begin teaching their discipline through the medium of English, in many cases a foreign language for the students, the teacher, or both. Academic staff dealing with the challenges of English Medium Instruction often struggle to find practical guidance in the available literature. The students often need to work concurrently on developing their comprehension and application of disciplinary-based concepts, and at the same time develop their command of communicative tools and tactics.

This practice oriented session familiarizes participants with the concept of cognitive load, and presents a range of simple strategies and techniques that can be incorporated into curriculum delivery to support student comprehension and learning when students are studying in English as a foreign language.

# Reducing Student Cognitive Overload

## Notes to Accompany Interactive Session

Sitting through a 60 or 90-minute lecture given in a foreign language may be a daunting task for many students, especially if they have newly transitioned to university from a high school where English was not employed as a medium of instruction. The brain can only absorb so much new information at once; how this information is presented may help or hinder student understanding.

### The Human Brain and Information

There are two types of memory: working memory (WM) and long term memory (LTM). **Working memory** is the part of our brain that consciously processes information; it's what people use when they're learning something new. Working memory can only hold 4-5 bits of information at one time (Malamed, 2012).

**Long-term memory** on the other hand appears to have an unlimited capacity. Think of it like a hard drive on a computer. Information in long-term memory is stored in schemas, mental structures like the digital folders that can be created on a computer. Each folder is different; it may contain knowledge related to a specific topic, situation or experience.

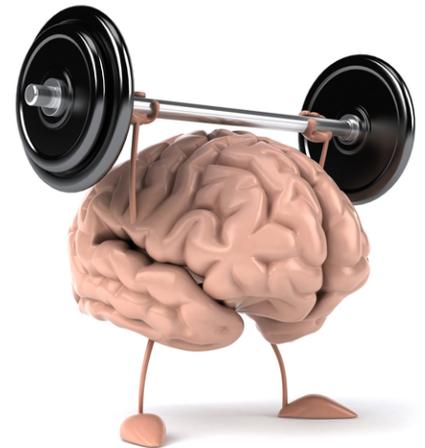
Working memory and long-term memory constantly interact. People build new schemas in working memory so they can be added to existing knowledge in long-term memory (Malamed, 2012). Think of it like adding new folders or adding new documents to existing folders on a hard drive.

But that transfer of knowledge goes both ways, those schema folders in long term memory are what helps people understand the world around them. It also helps them make predictions. Who would probably win a football game between Brazil and Thailand? Most would predict Brazil. Their Brazil football schema – five time FIFA World cup champions, talented world class superstars, a long football tradition, may suggest to most people that Brazil is a better team.

### The Human Brain and Learning – Cognitive Load

Sometimes learning something new can be quite difficult and involves great effort. That's because working memory is easily overloaded, as we study increasingly complex subjects and perform increasingly complex tasks (Malamed, 2012). **Cognitive load** is the total amount of mental activity imposed on working memory at any one time. Think of it as all the stress and pressure put on the brain as it is trying to learn something new.

People learn more effectively when they can build on what they already know and understand. Time is also important; if new information is delivered too quickly it may become difficult to process in working memory. Then of course there is language: learning something in a foreign language is much more



difficult than learning it in your native tongue. The brain must work harder to process language while simultaneously trying to understand new information. The cognitive load is therefore higher.

This is increasingly relevant to higher education contexts in Asia, where English Medium Instruction is becoming more common and students are faced with the challenge of acquiring disciplinary knowledge through a foreign language medium. For university teaching staff, understanding the concept of cognitive load and learning strategies to reduce the cognitive load burden on students in their EMI courses is one way to facilitate a better learning experience.

### Types of Cognitive Load

There are 3 types of cognitive load: **intrinsic cognitive load** (Chandler and Sweller, 1990) **extraneous cognitive load** (Chandler and Sweller, 1990) and **germane cognitive load** (Sweller, Van Merriënboer & Paas, 1998).

#### Intrinsic

Intrinsic cognitive load is the natural or **inherent level of difficulty** of the material to be taught. Some concepts are easy, some concepts are difficult. Look at these two problems, which is easier?

- A) Solve:  $2 + 2 = ?$   
B) Solve for y if:  $y = 2x - 3x^2 - xy + 3y^2$ .

Problem A is easier; it has a lower intrinsic cognitive load.

#### Extraneous

Extraneous cognitive load is the **extra unnecessary cognitive load** that results from how information is presented to learners. For example, there are several ways to describe chopsticks to a foreign language student.

An oral or written definition: a pair of thin, tapered sticks, often of wood metal or plastic, held in one hand between the thumb and fingers and used chiefly in Asian countries for lifting food to the mouth. (dictionary.com)

By picture:



If the definition is given verbally a student must listen to language, figure out words they may not know, imagine the object, and make a connection to how they refer to the object in their own language.

But it takes only a second and much less effort to understand what the instructor is talking about when a learner is shown a picture of chopsticks. The verbal definition is thus an example of extraneous cognitive load, complicating what would be accomplished more easily with a picture.

## **Germane**

Germane cognitive load is the **effort of processing new information**, creating connections to the knowledge you have and creating connections between new ideas. How hard does your brain have work to make those connections? Think of being in a new city where no one speaks your language. You have to find a restaurant, a museum, and a department store. You have the addresses. Your smartphone has GPS. You turn it on, follow the map. Easy. Now imagine you don't have a smartphone. No map. Just addresses. Suddenly reaching your destinations has become a lot harder. You'll have to try to talk to people, show them the addresses, use hand gestures. Some may know, some may not. You may or may not understand the directions. You may get lost. It will still be possible to reach your various destinations, but it will probably require much more time and effort.

A lecturer cannot control intrinsic cognitive load. Course material will be naturally easy or difficult. However, a lecturer can control extraneous and germane cognitive load by adopting certain practices when they present material. Ten ideas are presented below for the more traditional lecture driven courses.

### **A. Language**

#### **1. Glossaries, Highlight key words in texts**

Make sure you provide a glossary of key words and concepts students should know at the end of the course. If time permits, highlight these words in articles or readings students are assigned. Review these words in class from time to time, in assessed quizzes if need be. Remember on average it takes 7 encounters with a word on 7 different occasions before students actually know a word.

#### **2. Vocabulary building apps**

Once you have a glossary, there are many apps and websites that allow students to practice vocabulary freely available online. Memrise and Quizlet, two of the more popular feel more like play than study. Memrise (<http://www.memrise.com/>) allows you to create a course for your students where they can practice specific words, learning spelling, pronunciation and how to use the words in context. Quizlet allows the user to make flashcards which can then be used in a number of activities and downloaded to their smartphones so they can practice whenever they get the urge.

#### **3. Provide/ elicit local examples of word and concepts**

The educational trend may be towards globalization, but it's easier to master a concept if you can identify how it applies to your own context. Try to elicit local examples from students for the words/concepts you teach in class to check and reinforce their understanding.

For example, one of the marketing lecturers at RMIT University Vietnam uses a real world example to help students understand the concept of setting a price for imported goods. The students take part in an activity where they map out the steps of importing a car (an Audi) from Germany to Vietnam. She then

has them calculate a retail price for the car. Students must consider the costs of each step, the taxes imposed by the government and the profit they wish to make. All steps and rates are real world; students can see on the vehicle on the street and have a better understanding of how an Audi or other cars they see daily, arrived here.

## **B. Lecturing**

### **4. Simplify language**

We shouldn't oversimplify our lectures, this is university after all, but it's important to be aware of what you say. This is more often an issue for foreign lecturers than for non-native English speaking lecturers conducting a class in English. It's easier for a foreign lecturer, out of habit, to use slang, language or cultural references that students may not understand, especially if asked an unexpected question. Make sure your language is appropriate for your audience, simplify where possible and explain key words when needed.

### **5. Lighten your slides**

Text-heavy slides can be a problem for students if they try to read a long while the teacher is speaking. A few simple rules:

1 slide = 1 idea

1 line = 6 words (maximum)

1 slide = 6 lines (maximum)

Remember if you're presenting something with a lot of text, answers definitions, problems, it's important you give students time to read.

### **6. Use pictures, diagrams and visual representations in lectures**

Show it don't say it. Represent whatever information you can visually. It makes understanding easier and can generate discussion points for previewing/predicting material. Concepts and language are easier to retain if students can tie them to an image.

### **7. Activate schema (background knowledge)**

The mind has a storage system of information. Accessing that system before a lecture begins helps students to start thinking about the topic and making connections with what you are going to discuss with what they already know. There are several ways to do this.

Review: Elicit from students what they learned in previous classes.

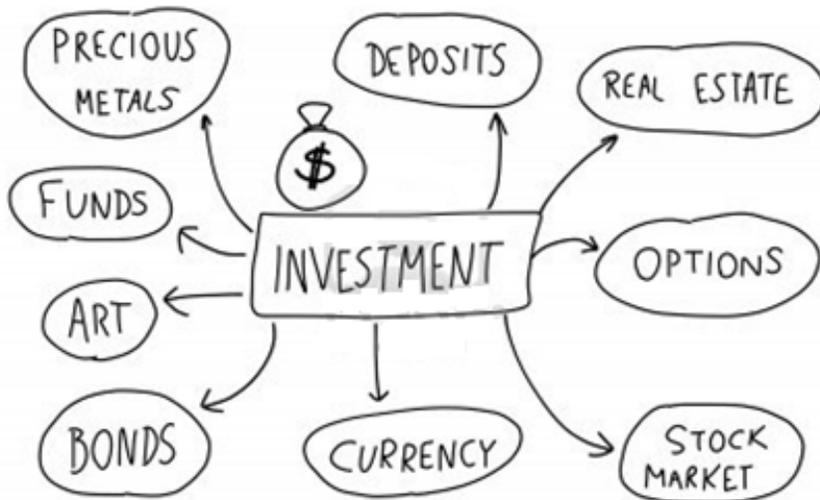
**Visual Prompts** A picture is worth 1000 words. You can use images to have students predict/define/discuss content.

**Video**

Use video to generate interest in a topic. Remember listening is the most difficult foreign language skill. You may have to slow the speed so that all your students can catch it. 82% of original speed usually works well. If the video has lots of action or strong images, play it without sound.

**Mind map**

In groups have students chart what they know about a topic.



**KWL Chart**

Know	Want to Know	Learned

Before a lecture have students work in groups to brainstorm what they know about a topic. Have them write 5 things in the know column and then write 5 things they would like learn about the topic. At the

end of class ask students to write down what they learned. If they still have questions, they can research the answers for homework and post the answer online in a discussion forum.

## **C. Reading**

### **8. Reading strategies**

There are different ways to read a text. Choose the one that best reflects what kind of information you want your students to absorb.

**Skimming:** reading for the main ideas in a passage

**Scanning:** reading for specific information

**Close reading:** A careful reading of the text to catch most of the details

**Gist Questions:** Guiding questions to help them understand the main ideas of the text

### **9. Choose less complex texts**

Academic reading is part of most university courses. Think carefully when you select a text. Do students really need a 30-page text or are there shorter texts that discuss the same material? If the original prose is far too difficult, you may consider writing a shorter summary of the text or directing students to specific sections of the text they should focus on aided perhaps by a set of guiding questions they should try to answer.

### **10. Show students shortcuts...**

Students are assigned readings to explore ideas presented in the literature and to get accustomed to academic language, models, and writing styles. So many lecturers may perceive making students aware of shortcuts as a disservice to their overall academic careers. A valid point, but if students aren't reading the articles assigned them because they are too long or too complex, would it not be better to show them shortcuts to help them understand important arguments?

Some sources are of course better than others. Being able to navigate the enormous variety of information on the internet and discern reliable sources from less reliable is a key skill for graduates. Lecturers will need to discuss authoritative sources with students and help them develop critical literacy skills for the 21st century in the process to prepare them for assessed tasks.

Some simple but effective Shortcuts:

**Wikipedia** – sometimes summarizes important articles in simpler terms

**Google scholar** – an easy website for finding articles online

**Google “summary + article title”** Sometimes students write a summary of an article and post it online. These are often about 200 words in length and highlight the articles main points in easier language.

**Google “abstracts”**- The abstract of an article is often about

**Google key words** – Give your students a list of words they can use to ‘research’ the topic online. Though Googling may not be the ideal method for finding academic texts it is a starting point and may lead to the discovery of interesting material.

## **Conclusion**

Mastering concepts and information in a language other than their mother tongue is a daunting task for many students. By applying some of the strategies described in this paper, tertiary educators will be able to reduce student cognitive overload by facilitating comprehension of new material, which may ultimately leads to more effective learning in and out of the classroom.

## **References**

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