

# Using iPad for Teaching: My Experiences and Best Practices

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# Pre-Tutorial Exercise

You considered a Java example in 3 slides:

**Q1.** *How would you teach this example?*

**Hint.** Will you restrict your delivery to slideshow only?

Say after you teach this example, some poor students ask:

- **Student Q1:** After Alan gained weight, why was Alan's BMI *decreased*? Didn't Alan *gain* weight?
- **Student Q2:** After Alan gained weight, why was *Tom*'s BMI increased? Wasn't it *Alan* gaining weight?

**Q2.** *How would you answer above student questions?*

**Hint.** Just ask students to verify the result in Eclipse?  
Just tell students it's very basic OO?

# My Approach: Applicable to Your Courses?

- I have adopted this approach for teaching **all** my courses:
  - **EECS1021** Object Oriented Programming from Sensors to Actuators [ W19 ]
  - **EECS1022** Programming for Mobile Computing [ W18, W21 ]
  - **EECS2030** Advanced Object Oriented Programming [ F17, F18, F19 ]
  - **EECS3311** Software Design [ F17, F18, W19, F19, W20, F20 ]
  - **EECS4302** Compilers and Interpreters [ W20 ]
- As long as there's **something** you want to teach in your course, then my approach is **applicable**!
- I even use approach to give a **research talk**.

# My Approach: Four Phases

## 1. PREPARATION

- Most **time consuming**, yet most **critical**
- Clarify **what** examples/concepts you wish to demo in details.
- Create **starter pages**: **MAINTAINABLE, EXTENSIBLE, REUSABLE.**

## 2. SETUP

- Application 1: Live lectures/reviews [ wireless microphone ]
- Application 2: Offline lectures/tutorials [ studio microphone ]

## 3. DELIVERY

- Presentation [ e.g., powerpoint, PDF ]
- Programming Tool [ e.g., Eclipse ]
- **Drawing Tablet** (e.g., iPad) [ projected to your computer ]

## 4. SHARING

- As the subject expert, **insights/remarks** made while you demonstrate are the most valuable for your audience.
- **Record** the entire delivery and **share** it with students (or even those in the public).

# Step 1: Preparation

1. You need a **note-taking app** [ e.g., GoodNotes 5 for iPad ]
2. Load onto your drawing tablet the **slides** you will show in class.

**Q.** What **artifacts** (code fragments, diagrams) do you want to go through?

3. Crop relevant artifacts as **pictures**.
4. Start a blank page on your note-taking app.
5. Create a **starter page** using these pictures (+ any art work!).

**Best Practice** :

- Store starter pages in a notebook. [ EECS3311-**Template** ]
- Create the notebook for a course. [ EECS3311-F20-**Blackboards** ]
- For each lecture, copy/paste those starter pages you need. [ **REUSABLE** ]
- **Reflect** changes back to the **template**. [ **MAINTAINABLE & EXTENSIBLE** ]  
(**Optional**): Share the starter pages with students?

## Step 2: Setup

- **Connect** a microphone to your computer:
  - Live sessions [ a wireless phone ]
  - Offline sessions [ a studio microphone ]
- **Project** the iPad (or whatever drawing tablet you use) to your computer:
  - Connect the iPad to your computer using a **wire**.
  - Launch Quick Time
  - Select: File → Movie Recording → iPad as the camera source  
(**Alternative**): Use an app for wireless projection. [ issue: **stability** ]
- **Open** your slides.
- **Launch** any necessary tools (e.g., Eclipse).
- **Launch** your screen recording program. [ e.g., Active Presenter ]

**Best Practice** :

Practice makes perfect. [ ≈ 2 minutes for setting up a live lecture ]

## Step 3: Delivery

- Let me show you how I would teach the exercise example:
  - Pretend that you're a student ⇒ Interrupt me with me questions
  - At the end, let's have a delegate student to ask question.
- Some **guiding principles** :
  1. **Switch** between slides, tool, and iPad if necessary.
  2. When annotating, be **creative** on drawing and using colors.
  3. This will trigger more questions from students than otherwise:
    - Be comfortable with being delayed or interrupted.
    - To address questions, start a **blank** page.
  4. The more you play with the note-taking app by creating **starter pages**, the more capable you are to draw fluently on the fly.
  5. (**macOS-only Tip?**) What if students ask a question about the code you demo, but you haven't created a start page for it?
    - Copy the fragment `[ Cmd + Ctrl + Shift + 4 ]`
    - Paste it (through the wireless network) to a blank page on your iPad!

## Step 4: Sharing

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- Create a YouTube channel for uploading instructional videos:  
`https://www.youtube.com/user/jackiechenweiwang`
- Create a public space to store all learning materials for students:  
`https://www.eecs.yorku.ca/~jackie/teaching/lectures`



- Explore more examples of adopting the approach:
  - **Lectures:**  
<https://www.eecs.yorku.ca/~jackie/teaching/lectures>
  - **Tutorials:**  
<https://www.eecs.yorku.ca/~jackie/teaching/tutorials>
  - **Starter Pages** and Annotations:  
<https://www.eecs.yorku.ca/~jackie/teaching/iPad>
- Read more about the approach:
  - **Chen-Wei Wang**. *Creating Tutorial Materials as Lecture Supplements by Integrating Drawing Tablet and Video Capturing/Sharing*. In *8th Computer Science Education Research Conference (CSERC)*, pp. 1 – 8. ACM, 2019. [PAPER]
  - **Chen-Wei Wang**. *Integrating Drawing Tablet and Video Capturing/Sharing to Facilitate Student Learning*. In *ACM Global Computing Education Conference (CompEd)*, pp. 150 – 156. ACM, 2019. [PAPER]

# Index (1)

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**Pre-Tutorial Exercise**

**My Approach: Applicable to Your Courses?**

**My Approach: Four Phases**

**Step 1: Preparation**

**Step 2: Setup**

**Step 3: Delivery**

**Step 4: Sharing**

**Resources**