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## FLIPPED LEARNING IN ENDOSCOPY: A TIME EFFECTIVE MODEL TO IMPACT CHANGE IN PRACTICE CULTURE



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### Introduction

It is difficult to change practice culture. In a GI department, the few early adopters may seek and adopt new technologies. The majority, who are typically pragmatist and risk averse, however wait until the technologies become community standard. Unfortunately, the technologies may never become community standard without their acceptance. We hypothesized that one way to impact change is by improving the training.

### Aim

We propose to use the flipped learning. In flipped learning, direct instructions are self-learned, and the classroom environment is used for dynamic learning and provide personalized hands-on training (Figure 1). We report the adoption rates of two technologies – the over-the-scope clip and the through-the-scope balloon dilatation, after flipped learning.

### Method

We prospectively enrolled general gastroenterologists (n=25) and fellows (n=12) who were naïve to these two techniques at a large tertiary hospital. We used a cloud-based learning management system and provided them with self-learning materials, which included important studies, procedural steps, instructional movies, and self-assessment materials. We gave them a month to complete the cloud-based learning. We then conducted a hands-on training course using silicone and explant models. The participants alternated the role of assistant and endoscopist to become familiar with all aspects of the procedural technique. Post-course we tracked their performance in clinical practice. We received an Exempt Status from our IRB office.

### The Flipped Endoscopy Learning Framework

The diagram illustrates the Flipped Endoscopy Learning Framework. It starts with a mobile device displaying a learning management system dashboard, followed by a computer screen showing a detailed curriculum for OTSC and ESD modules. This leads to a photograph of a hands-on training session where participants are using endoscopic models. To the right is a checklist titled 'Checklist For Esophageal Dilatation' with various tasks and corresponding images. Below the checklist are five numbered steps: 1. Self-study the Background Knowledge, 2. Pass a Self-Assessment test, 3. Learn Hands-on using Models, 4. Assess Technical Skills, and 5. Follow-up information. Step 3 shows a participant using a model, step 4 shows a checklist, and step 5 is a general call to action.

**1 Self-study the Background Knowledge**  
On a cloud-based Learning Management System, study the required and optional, written and multi-media material.

**2 Pass a Self-Assessment test**  
Pass an automatically-scored test which is administered through the LMS.

**3 Learn Hands-on using Models**  
Dynamic personalized training of the procedural skills using a step-by-step manual until the learner feels competent and comfortable.

**4 Assess Technical Skills**  
Learners must demonstrate complete competence of the technique in order to satisfactorily complete the course.

**5 Follow-up information**

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