

Microteaching Lesson Plan and Reflection: Somdut Roy

In what course might this lesson occur: **Transportation Systems Engineering**

Main topic of the microteaching session: **Emerging Systems: Connected Autonomous Vehicle Technology**

Learning outcomes for this session (what do you want students to know and be able to do at the end of this lesson?):

Outcomes should be: specific, measurable, action-oriented, concrete, learner-centered, observable, and appropriate to the context (situational factors and course goals).

Students will be able to learn more about the new technologies of transportation engineering that are involved in driving us forward in the autonomous vehicle industry. They will be able to appreciate how the different hooks of technology work in tandem theoretically to make such a complicated “smart city” ecosystem.

Teaching and learning principles:

How will you incorporate your knowledge of teaching and learning principles in this lesson? (Think about what we have learned about memory retention and transfer, prior knowledge and organization, motivation, student development, and diversity and inclusion.)

To improve retention, the key points in the lesson will be reiterated by making the student perform simple yet thought provoking exercise. Not much Prior knowledge would not necessary for this lesson, considering I will be mostly teaching basic ideas that involves cars in general without getting to much into the technical details on the mechanics and data analysis. To motivate students, I will be giving exercises on regular intervals and also use real-life examples that fit into my descriptions of the technologies.

Active/collaborative Learning:

Your microteaching demonstration must include at least one active/collaborative learning experience. Provide a description of exactly what you are going to do during that activity and estimate the time it will take.

Active/collaborative learning will be used at two times, one at the middle of the lecture and one right at the end. First, I will ask questions in relation to Autonomous Vehicle Technology using some real Vehicle model as an example. For connected vehicle technology, I will make some sort of matching exercise where the students will learn first-hand how to distinguish between the natures of connections between transportation elements.

Formative Assessment:

Your microteaching demonstration must include a plan for formative of student learning. How will you know what students learned? Explain how you would/will measure learning on this topic, even if you cannot conduct the entire assessment during the microteaching.

As mentioned I will have two exercises. On both cases, I will use real-life examples and see how they understand what I taught, by looking at their responses in quest for solving the problems. I will be monitoring the lesson chat to ensure active participation from everyone involved.

Agenda:

Break the lesson into component parts and include how long each part will take.

What am I teaching: Overview – 2 min

Course Plan – 1 min

Type of automation – 2 min

Exercise for type of automation with Tesla 2020 Model Y example – 2min

Connected Vehicle technology – 3 min

Exercise for V2V, V2I, V2X connections – 2 min

Time for questions from students – 3 min

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Materials & Supplies:

Please include a description of items (and quantity, if applicable) needed for this specific lesson. Examples include: a model, flipchart markers, flipcharts, timer, rulers, etc. What handouts and other files will you need?

Presentation Slides (all we could use in current “remote” setting 😊)

Contingencies:

Think about the assumptions you are making about the lesson and the students. What are two or three things you worry might happen that would require you to change gears? What is your back-up plan if something you are worried about happening happens? Include what you would do if you had extra time. What would you cut if you were running behind?

I hope I would not have to come to contingencies. I will prepare and make sure my timing is on point. In the odd-case that I run out of time, I will speed up the second active exercise, by taking less examples to solve. Also, I will focus more on the motivation than the actual material, because in a hypothetical case, as the classes advance, this introductory material will automatically become second nature to the students.

Feedback Received and Self-Reflection:

I had a hard time finding a topic that would be easily deliverable to students of different backgrounds. This has more to do with my way of thinking over the years. Being in an Engineering field from India, we are taught to learn things in the form of Mathematics. So, it automatically becomes hard for me to teach something basic without involving “unnecessary” technical terms in them. It is a process of conditioning myself and I am working on it. Once I had the topic decided, it was relatively easy to plan the teaching material considering this topic of Autonomous vehicles is something I am very passionate about. Looking back at my lecture, I also noticed I was breathing hard a lot. That is not how I generally talk. So, I do not know what that was about. I may need to do more “mirror practicing” to ensure my delivery is smoother. Also, I went past some concepts a bit too fast. I would have needed to pace myself better. I would like to thank Dr. Williams and my peers for the feedback I received for my teaching exercise and here are my responses to the feedback.

Most effective aspects?

- Constant use of examples was really helpful: Thank you, I will fine-tune my technique to retain this.
- Very interesting topic and detailed explanations on the topics.
- Interesting topics. Topics are connected gradually.
- The categorization of the different parts of the lecture was very helpful; it allowed my brain to more easily digest the information. I also appreciated the exercise where we predicted what category each of several examples fell into: Thank you. However, the “level of automation” is confusing in itself. I could have used more examples to make it clearer.
- There were a lot of active check-ins where we got to sort things into the defined categories, this was super helpful since it illuminated that we weren't 100% confident in the definitions.

Suggestions for future teaching

- The definitions are a bit hazy, but I assume that's just the nature of the material. I also didn't necessarily feel the motivation as to why this technology is important or why the distinctions we were learning about were important: I understand this feedback, I could have worked more on the definitions. It got a bit hard as I had to try to get as technical as possible.
- He could use more examples when explaining levels of automation: Time. I wish I had more time. Also, I added too much information in that slide. I could have bullet pointed that, in hindsight.
- The beginning was a bit long, including one slide with a lot of stuff crammed onto it. Perhaps introduce the class with an opener question to get things flowing without a long opening lecture: I will take that in my stride. I feel the arrangement of the slides made it harder as well. I need to work on this.
- I think there was a lot of information presented here at a quick speed, it made for an interesting presentation but I am not sure how much of it I would actually retain as student: I will keep that in mind.