

HS IET Design Classroom

Teacher: Okay. [inaudible 00:00:02] You want to check for understanding of all standards. Safety, application of electrical safety law, technical communications, advanced, technological advancement and innovation. [inaudible 00:00:26] from your past experience of working with electrical circuits, Ohm's law, Power law, reading schematics, come up with a possible product or design, a device, in which will prevent cars from not stopping at stop signs. That's the major issue today with drivers. There's many accidents with pedestrians as well as automobiles because people are not coming to a complete stop.

Think of a device and remember I'm also asking you to come up with some possible electronic or electrical components that might be used. Some of the theories, or some of the laws that might be applied in your design circuit as well as what are some of the safety aspects when installing this device at a stop sign.

As groups, can you collaborate, work as teams because that's very important in the real world that you can work with each other and come up with those ideas. Any questions? Can you work together as a team and start figuring out what you design might be?

Student: Does that mean something completely new or ...?

Teacher: It's entirely up to you on this. If you feel that there is a way to make sure that the automobile will stop at the stop sign, because that's the problem. Then you come up with your idea. Questions? Okay so can you guys start brainstorming now as a group? Okay. Student. Student. What might be some of some idea that you might thinking of? Try to discuss this among each other.

Student: [crosstalk 00:03:22]

It's red light or at a stop sign.

Teacher: [inaudible 00:03:30] Do you agree that it is a problem that people are not coming to a stop at stop signs? Okay so ...

Student: [inaudible 00:03:05]

Teacher: Exactly.

Student: [inaudible 00:03:10]

Teacher: Maybe we could prevent drivers from not stopping. Maybe would have less accidents then pedestrians wouldn't get hurt. Go ahead. Keep working.

Student: [crosstalk 00:03:57] It's a little bit shorter. You know how it's to stop maybe 2 seconds. You stop for 2 seconds at least and then go. If you're waiting 30 seconds, just really ...

I'm just going to, I don't know [inaudible 00:03:57]

Teacher: Do you think it would benefit if drivers came to a stop at the stop sign?

Student: It would yeah.

Teacher: Have you seen drivers just go ...?

Student: Almost ... yeah.

Teacher: Even red lights.

Student: [Yes. 00:04:12]

Teacher: If you guys can actually think of this and come up with a product, you think you might be able to ...?

Student: See it?

Teacher: No. You think you might even be able to manufacture and sell this product? Do you think people would use it?

Student: This product that we have idea right now? No.

Teacher: Yeah. Is it possible if you came up with a design that you could actually manufacture it and sell it to maybe to the city county?

Student: Yes.

Teacher: It's a real problem. Come up with a good idea.

Student: [inaudible 00:04:57]

Teacher: What are some of your ideas?

Female: Camera in front of the car.

Student: [inaudible 00:05:14] And you're parking it and it [automatically stops 00:05:10] it. That's in front and [inaudible 00:05:12] pedestrians [inaudible 00:05:14]

Teacher: You're now having that idea. What might be some of the components that you will be using?

Student: [inaudible 00:05:27]

Teacher: Once you come up with your product or design, think about what are some of the

components that might be used in this circuit.

Student: [inaudible 00:05:57] That's a lie!

A pressure plate. The distance between the pressure plate and a stop sign. The pressure plate's right on the stop sign. [inaudible 00:06:00] The pressure plate has to be before so when you hit it, the thing starts to come up.

Teacher: What might be some of the components you might have to use?

Student: A lot of wires.

A lot of wires.

Teacher: Wires. What else?

Student: Gears. Resistors.

Teacher: What are some of the other components you've used?

Student: A switch.

A magnet.

[inaudible 00:06:38]

Teacher: Brainstorm.

Student: [inaudible 00:06:47] A light on the stop sign [inaudible 00:06:45] it lights up so you know what's coming up.

Teacher: One of the person in your group be called your device, your component and some of the safety that you consider in installing this device. I would like you to share your ideas with the whole class.

Student: [inaudible 00:07:15]

Teacher: Yeah. Yes. That's pretty good. We can take care of that tomorrow.

Student: [I'm just asking. 00:07:26]

Teacher: I know but we are focused on the task. What else would you use for designing this device? What are you using right now in front of you?

Student: I don't know.

Teacher: Right in front of you. What kind of components have you using or might you need?

Student: That's so stupid.

Teacher: What are you touching and showed me?

Student: [inaudible 00:07:57]

Teacher: Huh? What is that called?

Student: [inaudible 00:08:02]

Teacher: What is the whole thing called?

Student: Circuit board.

Teacher: [inaudible 00:08:17] circuit board. Very good.

Student: [inaudible 00:08:18] car.

Teacher: You naming components that you use, so from what you've worked in this class, try to utilize that experience that you've already gained.

Student: [inaudible 00:08:30]

Teacher: Try to relate what you've done in the class up to now to these problems that you are working on. The more you can relate to what you've learned, will identify if you have a understanding of the standards that we're trying to target in this class.

Student: [inaudible 00:09:08]

Teacher: Student. One idea of a safety that you might utilize in installing this device at the stop sign. One of the safety factors might be might you use?

Student: [inaudible 00:09:45]

Teacher: A proper clothing? Okay.

Student: [inaudible 00:09:58] You want a helmet because [inaudible 00:09:47] like concrete. Putting it down. [inaudible 00:09:59]

Teacher: In construction you always have helmets, so that's a good idea. Anything that will prevent injuries.

Student: [inaudible 00:10:32] Slow down on a right turn anyway. [inaudible 00:10:21] put posts up there but they'll [inaudible 00:10:33]

Teacher: Do you folks have your idea?

Student: Yeah.

Teacher: Okay. Have you already determined what possible components you might be using in this device?

Student: [inaudible 00:10:52]

Teacher: Very good.

Student: [inaudible 00:10:56]

Teacher: Where are we now?

Student: The component.

Component.

Teacher: [inaudible 00:11:29] What type of components have you used for your [inaudible 00:11:24] board? Do you feel that there will be part of a circuit?

Student: Mm-hmm (affirmative).

Teacher: Good. Basically what you've learned in the class you are applying it now.

Student: [inaudible 00:11:43] If there's traffic then the pad's going to stay up. [inaudible 00:11:43]

Teacher: What's your main point of the time that they have to stop?

Student: Make sure that they stop?

Teacher: Yeah. The bottom line is they stop.

Student: [inaudible 00:12:24]

Teacher: You're saying that if they don't stop, the car will be damaged?

Student: If they don't slow it down a bit, they might get a little [bump 00:12:26] or maybe worse.

Teacher: That's a big incentive to stop.

Student: [inaudible 00:12:35] stop the car.

Teacher: Very good.

Student: We got stuck.

Teacher: On what?

Student: We was thinking pressure plate but then what we didn't think of traffic so once if there's traffic then cars are still on the pressure plate. Wouldn't it just stay up or stay down?

Teacher: That way you have to decide.

Student: Problem-solve?

Teacher: That's your pressure plate. What about your pressure plate?

Student: [inaudible 00:13:23] No one stop [inaudible 00:13:23]

Teacher: In other words, is there only one type of pressure plate? Do you know how pressure plate actually work?

Student: [inaudible 00:13:50]

Teacher: You should research that and have a better understanding while pressure plates because how do they actually work?

Student: [inaudible 00:14:20]?

Teacher: Sure.

Student: [inaudible 00:14:44] You have to turn it on and off. [inaudible 00:14:44]

Teacher: Student.

Student: Yes.

Teacher: In today's technology, electrical technology, is it possible to create pressure plates that can pretty much detect whether or not it's the same car or different car? You think so?

Student: I think so.

[inaudible 00:15:10] pressure plate. [inaudible 00:15:17]

Teacher: How is the technology in electronics, how has it evolved over a period of time to make you say yes that can be done?

Student: They have a chance to respond.

Teacher: Can it know that it's a different car?

Student: [Can a 00:15:45] pressure plate [have 00:15:41] a camera on it too? Or it's just [inaudible 00:15:44]?

Teacher: My question to you is this. Say you're a pressure plate. How would you know if it's a different car? Think about that. What do you know about the car? What's the fundamental part about the car? That touches the pressure plate?

Student: The tires.

Tires.

Teacher: Tires. Most vehicles have how many tires that will touch the pressure plate?

Student: One tire.

It could be like 2.

Teacher: 2 at a time. Which would be the which two is first?

Student: Front.

Teacher: Front and then?

Student: Back.

Teacher: Would you know if it's a different car?

Student: Yes I would.

Teacher: Very good.

Student: [inaudible 00:16:52]

Teacher: If you were now an electrical engineer, do you understand how real, how design device for real road problems?

Student: [inaudible 00:17:45]?

Teacher: Yeah. If you could design this device and manufacture this device, what's your chance of being successful in the industry? If you can solve real world problems, what is the chances of being successful?

Student: Chances? Pretty good.

Teacher: Pretty good, yeah. It's really so your job as electrical engineer is to what?

Student: Solve real world problems?

Teacher: Exactly, perfect. Perfect.

Student: [inaudible 00:18:38]

Teacher: How about maybe another couple more minutes and let's begin to share our ideas among the groups. You'll see other ideas, other perspective of devices that people think of that will make cars come to a complete stop at the stop sign. Also what component and what safety [inaudible 00:20:20] involve?

Student: [inaudible 00:20:23]

[inaudible 00:20:23] They should be like [inaudible 00:20:21] The car is going to [inaudible 00:20:23]

Teacher: Come on. Let's collaborating, get the job done, gentlemen.

Student: [inaudible 00:20:27]

Teacher: How about suggestion safety? Work to get the task done.

Student: [inaudible 00:20:34]

Teacher: [inaudible 00:21:05] write what are the safety things that we'll consider in installing the electrical device. What are some of the things that we do in the class in other words, at fire safety?

Student: [inaudible 00:21:11] after a certain amount of time the pillars would raise.

Teacher: When we started what is one of the safety rules that you follow?

Student: Wear safety glasses.

Teacher: Wear safety glasses. Whenever they working on the field.

How are you guys doing? [inaudible 00:21:50] If you're not too sure then we'll walk to the next question. What safety guidelines and rules should be followed for installers for electrical installers? Name one. Name one. Especially what we do in the classroom. Shoes. Wear shoes. Appropriate attire, correct. What else?

Student: [inaudible 00:22:57] Wear helmets.

Teacher: Helmets, good.

Student: [inaudible 00:22:37]

Teacher: Use one hand on electrical circuits?

Student: Correct.

Teacher: Yeah, good. Then at least what we are learning in class, exactly relevant here.

Student: [inaudible 00:23:10]

Teacher: Student, how much longer you guys need?

Student: 5 more.

Teacher: 5 more minutes. How much longer you folks need?

Student: We need 5. [inaudible 00:24:43]

Teacher: How much longer you folks need for complete your assignment?

Student: 10 minutes.

Teacher: 10 minutes, okay. Anywhere from 3 to 5 minutes and then let's share.

Student: Pressure plates. [inaudible 00:25:30]

Teacher: Start wrapping it up and then we can share our ... Share any [inaudible 00:25:37] helpful, to also give you ideas on what others take.

Could you see yourself designing something that solve real world problems?

You should have a good grasp on components that you would use in a circuit. Did you notice every circuit you did in class, utilize pretty much the general type of components that you've used. If you look, if you open up a motherboard, what would you find?

Student: Wires.

Wires.

[inaudible 00:26:52] Lights, transmitters. Transistors.

Assemblers.

[inaudible 00:27:00]

Teacher: Are we ready to share out? Volunteers. Somebody's got to go.

Student: We'll go.

Teacher: Can we all give our attention to group 1?

Student: [inaudible 00:28:24]?

No.

Our safety invention is called a none-shall-pass. What our design will do is when a car comes and hits a pressure pad, these pillars will start to raise at the stop light. It'll force the car to come to a complete stop before they actually can move on to their next destination. [inaudible 00:27:54]

To have the pillar go down, stuff like that, we have a secondary pressure plate that will [inaudible 00:28:03] they're there to stop and that will start to bring the pillar down. Stuff like that so it makes it a little bit more safer and stuff. As my colleague here pointed out, that would just have one pressure plate, they could always bypass. If there's a time limits [inaudible 00:28:20] slow down immediately turn after the pillars are down.

Teacher: Good, okay. How about your group?

Student: They're basically the same thing but it runs, it's not, [inaudible 00:28:33] not on the pressure plate. More like a ... red stop light itself. Whenever it's red, the posts are up for a few seconds, and it goes back down.

Teacher: Okay. Your group?

Student: Ours is basically like since there's already [inaudible 00:28:53] that can detect native cars nearby, it'll automatically stop itself. You can have the same thing for the front where it tags pedestrians [inaudible 00:29:02] as you get closer, it'll automatically stop itself also.

Teacher: It's a computerized system in the car?

Student: Essentially.

Teacher: What components might you find in this electrical device that you're creating?

Student: Wires.

Wires.

You have wires. Resistors. [inaudible 00:29:27]

Lights. LEDs.

Teacher: Anything to add to that?

Student: Same thing.

Teacher: How about your group? Anything to add?

Student: Did you guys say switches already?

Yeah. [inaudible 00:30:00]

Circuit board. [inaudible 00:30:00]

Teacher: The pretty circuit board, good. What was the other one?

Student: Chips.

Teacher: Very good. Integrated circuit chips. You find them almost in a lot of computerized systems today. Microprocessors. How about safety? Always a good idea to be safe and to protect yourself and protect other properties, et cetera. What might be some of the safety considerations? We'll go backwards this time, okay? Your group. What are some of the safety features you might incorporate in installing this device?

Student: When the red [inaudible 00:30:46]

Teacher: Good.

Student: [inaudible 00:30:51]

Teacher: No long sleeve, no jewelry. What else might be considered an electrical installer?

Student: Safety glasses.

Teacher: Wear safety glasses.

Student: Possibly a hardhat.

Teacher: Hardhat.

Student: Shoes.

Student: Shoes. Shoes.

Teacher: A lot of the safety attire. Your group?

Student: Be very vigilant of your surroundings. Basically make sure you know what you're doing that you're not horsing around in your work area, no rough-housing and stuff. It's a job so you want to get it done.

Teacher: Very good, very professional-like in the job. It's what you need to do whenever you're working with electricity and hopefully the habits that you are building in a classroom can transfer. That's why we need to enforce safety in the classroom. We can take that same habit and take it to when we actually do, have a job and in the field. You guys did good. I appreciate you guys working together as a group. I think that is important, collaboration, teamwork and everybody was participating. That's very important. It gives you an idea about things that we do in the classroom, how are we going to apply that.

The components you learned, could you have said that at the beginning of class? Probably not but in the safety components. All of these things are indicated to me that standard that we're teaching for the course. You are transferring that and learning it. Very good. Good job class. Good job.