



The Science Behind Food Safety, Mechanics, and Electronics in TechVoc Classes

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In today's world, Technical-Vocational (TechVoc) education plays a bigger role in helping students prepare for the real jobs of the future. TechVoc classes teach a variety of knowledge and skills such as mechanical work, cooking, and electronics. But behind all this knowledge and skills is one important thing, science. Whether students are fixing machines, working in the kitchen, or connecting wires, science helps them understand how and why these things work.

In mechanics, science helps students understand how machines move and function. Mechanics is not just about turning screws, hammering, or using tools, we also have to think and understand how or where force, energy, and motion come from. These ideas obviously come from physics. When students learn how machines work, they also learn how fuel burns, how pistons move, and how energy is converted from heat to motion (Gibilisco, 2016). They also learn how important it is to maintain and stabilize machines to keep them running smoothly. Science explains why oil is needed to reduce friction or why excessive heat can damage an engine. So they always give reminders, how much and when it should be used (Ayong, R.M., 2025)

When it comes to food safety, one of the most important things to consider is food preparation hygiene. Some foods can harbor bacteria like Salmonella or E. coli, which can lead to illness. As a result, TechVoc students learned the proper temperatures for preparing and storing food. Research shows that heat kills bacteria on food and kitchen utensils, which emphasizes the importance of keeping hands, utensils, and surfaces clean (World Health Organization, 2020). Without science, students may not know how food spoils or how to ensure its safety for consumption.

Science also plays a vital role in electronics. Students in TechVoc courses learn how to connect circuits, fix broken cables, or properly set up light fittings. However, they must first understand the fundamentals of current and electricity before they can accomplish that. They learn about the movement of electrons in well-installed wires and how different materials, such as copper, conduct electricity. Additionally, they are aware of the potential for electricity to cause fires and damage equipment (Dela Calzada, K.P., Tacobo, C.M.P., Lualhati, M.E.C., et al., 2025). TechVoc students can learn about electricity, tools, and how to work safely and wisely with the help of science.

What's great in TechVoc education is that it provides a chance to mix hands-on skills with science. This makes learning at TechVoc more exciting and rewarding. Students don't just memorize, by doing so, they understand science better (Ceneciro, C.C., 2025). For example, instead of reading about bacteria, they see how food can spoil if not stored or cooked properly. Instead of learning physics formulas, they



actually see how a car engine works in real life. This type of learning is extremely helpful, especially for students who want to work right after school.

Science is the backbone of many TechVoc skills. In food safety, it protects people's health. In mechanics, it powers the machines we use every day. In electronics, it lights up our homes and keeps devices running. When students understand the science behind what they do, they become better, faster, and safer workers. That's why TechVoc education is not just about skills or knowledge that come from books, it's about applying that knowledge to real life.

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