Program Level Outcome (PLO) Assessment Report Summary

Program Level Outcomes for Advanced Diesel Technology

Upon successful completion of Advance Diesel Technology program, a student should be able to:

- demonstrate skills and knowledge to inspect and repair all major systems found in current heavy duty diesel equipment.
- complete accurate work orders of heavy duty equipment repairs related to service history, analysis of problems and description of correct repairs.
- research applicable vehicle and service information using paper and electronic manuals, pertinent websites, and diagnostic equipment to identify, analyze, and to correct problems of all major heavy duty equipment systems

What we looked at:

We focused on PLO1, demonstrate skills and knowledge to inspect and repair all major systems found in current heavy duty vehicles. For this assessment, we reviewed the course content, teacher expectations, and level of critical thinking skills of the following courses: ADT 100, Diesel Engine Technology, ADT 101, Diesel Engine Rebuilding, and ADT 110, Electrical and Electronic Systems. These are the courses that focus on major systems in current and modern heavy duty diesel vehicles. Students are required to recognize the problem, identify the causes, and complete research from the Internet for service manuals and replacement of parts or components.

The Advanced Diesel Technology requires students to use computers for diagnostics and research as well as critical thinking skills. The computer may indicate the trouble area, but the students must then problem solve the part or component that needs to be replaced using the skills that they have learned in class and lab.

All instructors reviewed the results from the student lab demonstrations, quizzes, and tests. Students were given problems in the lab final to assess and identify the appropriate repairs. On the lab final, the students either passed or did not pass on each of the different stations. The students need to demonstrate that they know how to assess and correct the problem.

The quizzes and tests focus on hypothetical situations for students to analyze how to repair or replace parts or components in auto systems. Again, the students either know how to assess and solve the problem or not. All instructors focus on the students' abilities to fix or repair heavy duty vehicle problems. Students who complete courses must know how to repair the vehicles. The students know that there is no gray area; either they know how to fix the problem or they have to tell the customer to go to another repair shop!
What we found:

In reviewing the assessments, 67% of the students did not pass ADT 100 and 110 with a C grade or better. The 33% to 40% who did pass with a C grade or higher acquired the skills and knowledge to fix or repair current heavy duty vehicles.

It is good to know that the ADT discipline maintains the heavy duty diesel industry workforce standards by not allowing students to pass with a C grade without learning the course content.

We found that both in the ADT and AUT technology programs the majority of the students had difficulty in reading comprehension. They did not understand the concepts, directions, and instructions from the service manuals, diagnosis information, textbooks, and research materials. In addition to reading comprehension, the students did not have basic math skills to calculate percentages, ratios, geometry, and volume.

When students completed the lab final, they memorized vocabulary or terminology, but they did not know how to apply these concepts in problem-solving situations. Most students expected the instructors to tell them the answer so that they could show how to fix it. The recent high school graduates are accustomed to memorizing answers. In this particular certificate, the students have to use critical thinking. This is a skill not emphasized in middle and high schools.

Student attitudes: Students who have been able to pass courses in the past with the minimum of effort are having difficulty with the course expectations of punctuality, completing reading and writing assignments on time, practicing auto shop safety regulations, and paying attention in class without distractions of cell phones and iPads.

Other students have challenging family life issues. Parents insist that the ADT students find jobs rather than waste time going to school. Parents are not aware of the changes in the auto technology field and that their sons do not need to go to school to make money. Parents expect their sons to contribute to the finances at home. Many good students have had to drop out of the program to obey their parents’ wishes.

What our next steps are:

Students are not reading the materials; if they do read the materials, they do not understand the concepts or principles. Therefore, both the ADT and AUT faculty have decided to demonstrate the techniques and concepts with the actual tools and motors for the students to acquire the knowledge. Since students do not understand the reading assignments, the instructors will have to do more visuals, hands-on approaches, and discussing main concepts of the chapters.

The ADT and AUT faculty will assign the students to work in teams to work collaboratively on selected problems or assignments in and out of class. With more peer coaching and teaching, the students may deepen their understanding of the concepts.

The ADT discipline will advocate for more student services at the Alisal Campus. Students need study rooms, additional computers, tutors, library, and Internet access in the new shop. Without these support materials, more students will not pass this certificate program.