



Analysis of Current Training for Smog Technicians

November 18, 2008

Winning is not a sometime thing; it's an all the time thing. You don't win once in a while; you don't do things right once in a while; you do them right all the time. Winning is a habit.

--Vince Lombardi

INVESTIGATORS

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OBJECTIVES

- ▶ Evaluate current training strategy
- ▶ Assess practices relative to training and examination
- ▶ Identify processes and procedures for textbook selection, material development and replacement practices
- ▶ Identify models to adopt when using SMEs or Advisory Committees

DATA GATHERING

DATA GATHERING METHODS

FOUR SURVEYS

1. Training survey (instructors). Obtain information from instructors about their views regarding current curriculum, areas for which students needed in-depth training, obstacles to teaching and actions that BAR could take regarding training program and course content.
2. Training survey (technicians with ≤ 2 years experience). Obtain information from technicians about their prelicensure experience, training courses, and whether there was a need for additional training modules.

DATA GATHERING METHODS (continued)

FOUR SURVEYS

3. Assessment of technician knowledge (technician-owners/supervisors). Obtain information about their facility, technician-employees, and strengths and weaknesses of technician knowledge.
4. Needs assessment (technicians). Obtain information from technicians about their training and experience before and after completing BAR courses, and, to rate tasks with regard to when competency was acquired.

DATA GATHERING METHODS (continued)

TWO FOCUS GROUPS

1. Gather information from educators and technician-owners to discuss the relationship of training to technician job performance, input with regard to effectiveness of training, course content, course formats, strengths and weaknesses of technician training, challenges faced by instructors.
2. Convene educators and technician-owners to re-evaluate and refine task statements from 2006 occupational analysis of technician practice for the purpose of conducting a needs assessment study. Partition tasks in terms of those for which competency is acquired during industry experience, coursework or training before vs. after licensure.

DATA GATHERING METHODS (continued)

INTERVIEWS

1. Instructors at community college and private training facilities. Obtain information about how training courses and hands-on exercises were implemented, how Smog Check materials were integrated into the curriculum, and issues related to student preparedness for working in the industry upon graduation.
2. Shop owners at Smog Check facilities. Solicit information about equipment, inspections and technician knowledge.

DATA GATHERING METHODS (continued)

ARCHIVAL DATA

1. Student enrollment statistics. Obtain information regarding course enrollment in BAR alternative courses, licensing pass rate trends for 2004-2007.
2. Candidate data from examinations. Obtain information regarding pass/fail rates for colleges, private institutions, and ROP/high school/adult education programs.
3. Proposals to restructure BAR's existing training program. Examine outcomes to restructure training within current framework of BAR courses and to create new training courses and certifications.

FINDINGS

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CURRENT TRAINING STRATEGY

- ▶ The 2006 occupational analysis indicated that inspection only technicians did not perform tasks related to “Diagnosis” and “Performing and Verifying Repairs”; results do not support examining inspection- only technicians on diagnosis and repair
- ▶ Needs assessment identified tasks for which competency is acquired only after licensure vs. before licensure
- ▶ Enrollment in BAR alternative courses and Advanced Clean Air Car Courses has declined

FINDINGS (continued)

CURRENT CURRICULUM

- ▶ 31% of instructors (Survey #1) indicated that BAR training adequately prepared students to diagnose and repair vehicle emissions failures or perform Smog Check inspections
- ▶ 52% of the instructors (Survey #1) indicated that curriculum and course hours need to be overhauled
- ▶ 57% of instructors (Survey #1) indicated that time spent on emission-related diagnostic procedures should be significantly increased
- ▶ Initial pass rates on licensing examination are higher for community colleges than for private institutions, ROP/high school/adult education programs

FINDINGS (continued)

CURRENT CURRICULUM (continued)

- ▶ Technicians (Survey #2) indicated that courses should emphasize step-by-step diagnostic procedures, CAN systems, scan tool usage and Mode 6
- ▶ 21% of newly licensed technicians (Survey #2) reported that they had not taken any automotive courses prior to their first BAR course
- ▶ Technicians (Survey #2) indicated that there should be a minimum number of Smog Check inspections on actual vehicles prior to completing the training program and more hands-on exercises related to diagnosis and repair

FINDINGS (continued)

ROLE OF BAR, INSTRUCTORS, AND SUBJECT MATTER EXPERTS

- ▶ Instructors (Survey #1) indicated that BAR should work with outside expertise, e.g., SMEs paid by the state, committees of educators) to identify course content, course curriculum and textbook or resource material
- ▶ Instructors (Survey #1) indicated that instructor update training should be conducted by an automotive expert hired by the state, a knowledgeable BAR instructor or a combination of BAR and an automotive expert

FINDINGS (continued)

MODELS TO ADOPT

- ▶ A two-tiered system for licensing technicians who conduct inspections vs. technicians who perform diagnosis and repair; system would have a shorter pathway for candidates with industry experience, coursework, or recognized credentials
- ▶ BAR should work with a knowledgeable vendor to guide committees of subject matter experts in developing curriculum, curriculum standards, selection procedures for instructors, and outcome measures for students and training institutions
- ▶ BAR should work with a knowledgeable industry vendor to design textbooks and course materials

RECOMMENDATIONS

1. Create a two-tiered licensure system (inspection technician and diagnosis/repair specialist) to accommodate candidates who wish to be licensed as inspection technician vs. those who wish to be licensed as a diagnostic and repair specialist
 - Inspection technician: Training focuses on engine performance, Smog Check laws and regulations, Smog Check inspections
 - Diagnostic and repair technician: Training on electrical/electronics, advanced engine performance and drivability, or their educational or certification equivalent
2. Restructure current curriculum into a modular format to make it easier to add new program requirements

RECOMMENDATIONS (continued)

3. Include more hands-on exercises that involve commonly encountered inspection and diagnostic situations
4. Develop criteria and procedures to certify instructors and audit training institutions
5. Work with SMEs to develop a hands-on “end of course” examination that meets BAR’s specifications
6. Review and revise occupational (job) analysis of Smog Check technicians

THANK YOU