

### California Automotive Teachers

Fall 2020

Issue #55

### CAT NEWS

www.calautoteachers.com

### **Newsletter Highlights**

- ♦ Congratulations to High Schools
- ♦ Online Learning Resources
- ♦ Board Member Reports
- ♦ Conference Registration

### What's in this issue?

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Due to the restrictions related to COVID-19, the CAT Board would like to share the following information with members.

- After cancellation of the Spring Conference, the CAT board recognized the need for members to meet this Fall. With this in mind, a virtual online version of the Fall CAT Conference has been arranged!
- Recognition of individuals or entities will take place during the general meeting of the Fall Conference, with certificates and plaques being mailed out.
- The CAT Board is actively seeking its next Vice President from the south part of the state. This is a multi-year commitment of serving in different capacities on the Board. Any interested parties should consult with President Wendy Lucko and Vice President Pete Escoto.
- The CAT Executive Director position is open. If you are interested in becoming CAT's Executive Director please contact any CAT board member. George Hritz will assist the new Executive Director by having that person shadow him while he attends to the duties of the position for several months to create a smooth transition.

\*Please continue to look for emails and notifications from CAT.

Together we will remain strong for Automotive Education in the state

of California.\*

The California Automotive Teachers will meet virtually for the <u>Fall Conference</u> due to COVID-19 closures. We are looking forward to the interaction of our members.

## Lucas-Nuelle Training Webinar for ASE L3, ADAS (Driver Assistance Systems) and High Voltage Batteries, Nov 10<sup>th</sup>, 11<sup>th</sup>, & 12<sup>th</sup> at 8 AM PST

To support the CAT instructors in these challenging times, LAB Corporation and Lucas-Nuelle are proud to announce 3 Training webinars that will count towards the required 20 hours of NATEF training per year.

The 3 Training Webinars will cover topics related to:

The New ASE L3 test utilizing our newest Hybrid/Electric vehicle trainer
Diagnosing and maintaining individual High Voltage Batteries in an Electric vehicle
Learning about Driver Assistance Systems (ADAS), in today's high tech vehicles



Distance Learning with Lucas-Nuelle Video Link

### **Electric & Hybrid Vehicle Trainer**

The only electric vehicle trainer on the market that combines the 5 different possible hybrid or electric vehicle configurations that uses industry level voltages. Coverage includes the Toyota Prius series-parallel hybrid and the Tesla pure electric arrangements. The integrated touch screen display can be easily changed to explain the various driving modes and energy flow.

The system uses actual voltage levels to ensure the student is confident and prepared to work on these vehicles safely in an actual shop.

- Touch screen displays the energy flow
- Over 20 measuring points using certified safe connections
- Industry level voltages over 300 volts
- Able to perform the high voltage isolation procedure just like on real vehicles
- Fault switches for troubleshooting
- Works with 5 different types of Hybrid and Electric Vehicles
- Multiple types and operation of hybrid and electric vehicles
- Motor/generator operation with experiments and animations
- Battery management systems
- Power electronics including inverters, DC to AC conversion and
- Safe handling of HV systems
- Instructor Fault Insertion included for trouble shooting the system

### **President's Letter by Wendy Lucko**

I hope this newsletter finds everybody well and adjusting. All we know to do in these uncertain times is educate our students as best we can, thank you. If this has taught me anything, it is how to be more organized in my lessons and how disorganized campuses can be. The day to day movements and expectations of Advisory meetings, grant proposals, committee work and other duties compiled with making training videos, being a mom AND grammar school teacher has been overwhelming to say the least. I very strongly believe that being "mechanics" has helped us cope and deal with what we get, just like that busted head gasket the customer wants fixed for \$400 and free labor! Know you are appreciated, by your students and me.



The industry has also gone through quite a transformation and has adjusted very well after the initial legal issues with being "essential." Campuses still do not understand that we help feed and grow that "essential business." Please work on building strong advisory groups and ask for processes on how shops keep their technicians safe, then don't forget to put those details in the minutes. Remember, no matter what, you need to have advisory meetings not only for ASE (NATEF) but also per the Chancellor's office requirements.

I must thank Patrick McGuire of Allan Hancock College for creating and sharing a proposal for returning safely to campus. I have meshed and mixed information from the CDC, Greater LA New Car Dealers Association, National Automobile Dealers Association, my advisory committee, and ASCCA member shops. This was the first step, but the most difficult part was being real in my expectations of my campus support. So, I put in the proposal that we are ready, willing, and VERY capable of doing it on our own. They responded very positively and helped with digital screening and providing PPE (which we were willing to purchase). The donations from the Greater Los Angeles New Car Dealers Association (GLANCDA) helped us acquire items we needed to get labs up and running before a budget was established. Hopefully, this will now set the path for other CTE areas to return to campuses and I would encourage you to please help out your fellow faculty members as we have whole communities that need our CTE students.

The Advanced Transportation and Logistics training sessions have helped immensely, and I would like to thank Janet Malig for kicking it up a bunch of notches. Katie, Javier, and the whole ATL team have been vocal and present everywhere, and I have never had a time where I felt so much statewide support and representation. Now it is YOU who need to participate and be seen. Just remember to be positive, remember you cannot control every situation or administration, but it could be worse--you could be fixing a head gasket for free!



### **Executive Director's Report by George Hritz**



### **KUDOS**

To all **Automotive Instructors** in the State of California for your effort in providing quality education during this trying pandemic. You've stepped up big time!

Additional congratulations are passed along to:

**Wendy Lucko** for being elected to the ASCCA's (Automotive Service Councils of California) Board of Directors.

CAWA, (California Automotive Wholesalers Association) representing the Automotive Parts Industry, is pleased to announce the recipients of its 2020 automotive high school teachers' scholarship awards, the scholarship is titled the "Motorcar Parts of America - Selwyn Joffe Awards", CAWA provided three scholarships this year to high school teachers to support their automotive programs.

Eric Neubauer, Torrey Pines High School (pursuit of teacher's certification)

Vartkes Gary Semerdjian, Santa Ynez High School (pursuit of program certification)

Ed Woodworth, Tri Valley Regional Occupational Program – Livermore High School (scan tool for in-classroom use)

Dan Silin and the students of Tamalpais High School in Mill Valley who earned the Automotive Technician Training Standards ATTS Certification valid through February 2025. A plaque presentation was made via Zoom earlier this semester. Those in attendance were the school principle, a member of the Marin County Office of Education, several industry advisory committee members and the students in the automotive program.

### FOR YOUR INFORMATION

CAWA Is working with our legislators to establish a "Vehicle Safety Inspection Program" Please note that at this time the language covers only salvaged vehicles. It would be an expansion of the current "Brake and Lamp" safety inspection program the Bureau of Automotive Repair (BAR) currently has in statute. The bill would require the Director to adopt regulations by

(Continued on page 5)

January 1, 2022. The new inspection program would require the development of criteria and standards for specific safety systems and components of the vehicle and to promote the safe and uniform installation, maintenance, and servicing of vehicle safety systems and components.

### **BAR Regulations**

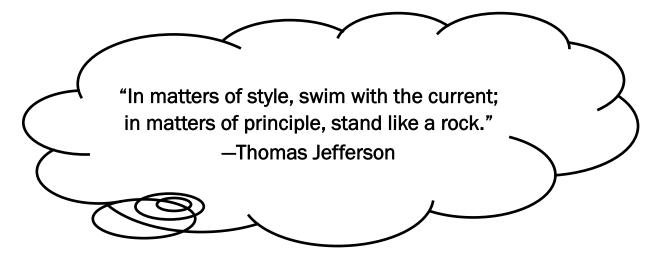
BAR Shop Locator Program.

BAR has developed an application to make it easier for consumers to find ARD licenses based on zip codes and specialties such as transmission, glass, tire, auto body, etc. The application was released to the public late August. See the link to the BAR application. <a href="https://bar.ca.gov/pubwebquery/ard/search.aspx">https://bar.ca.gov/pubwebquery/ard/search.aspx</a>

BAR Cite and Fine Regulations. BAR is proposing to expand the "cite and fine" disciplinary process. Currently, cite and fine is used for smog violations and unlicensed activity. Expanding cite and fine authority to apply to all ARD's would provide BAR field representatives with the ability to issue citations and fines (up to \$5,000 per violation) for violations. A possible citation would require a violator to take a class to train them on the rules they violated. Those proposed courses have yet to be developed, so stay alert to provide input when you can. Industry has raised concerns about the expansion of the "cite and fine" program.

### CLOSING

2020 has been a bleeping year. The pandemic, social injustice and wildfires have touched each of us. Hang in there and stay true to yourself. Most importantly VOTE!





### VEHICLES RETIRED BY THE CONSUMER ASSISTANCE PROGRAM ARE AVAILABLE FOR INSTRUCTIONAL PURPOSES

### SCHOOLS WILL NOT BE CHARGED FOR USE OF VEHICLES

- Transportation to the school and back to the dismantler must be arranged by the school at its own cost.
- Vehicles must be returned to the dismantler by May 30, 2022.
   However, they may be returned or exchanged earlier depending on availability.
- Schools must sign a memorandum of understanding with BAR.

### INSTRUCTORS CAN USE THESE VEHICLES TO

- Teach mechanical and auto body repair techniques.
- Design troubleshooting activities for students.
- Disassemble systems as needed to demonstrate principles of operation.

#### STUDENTS CAN GAIN HANDS-ON EXPERIENCE

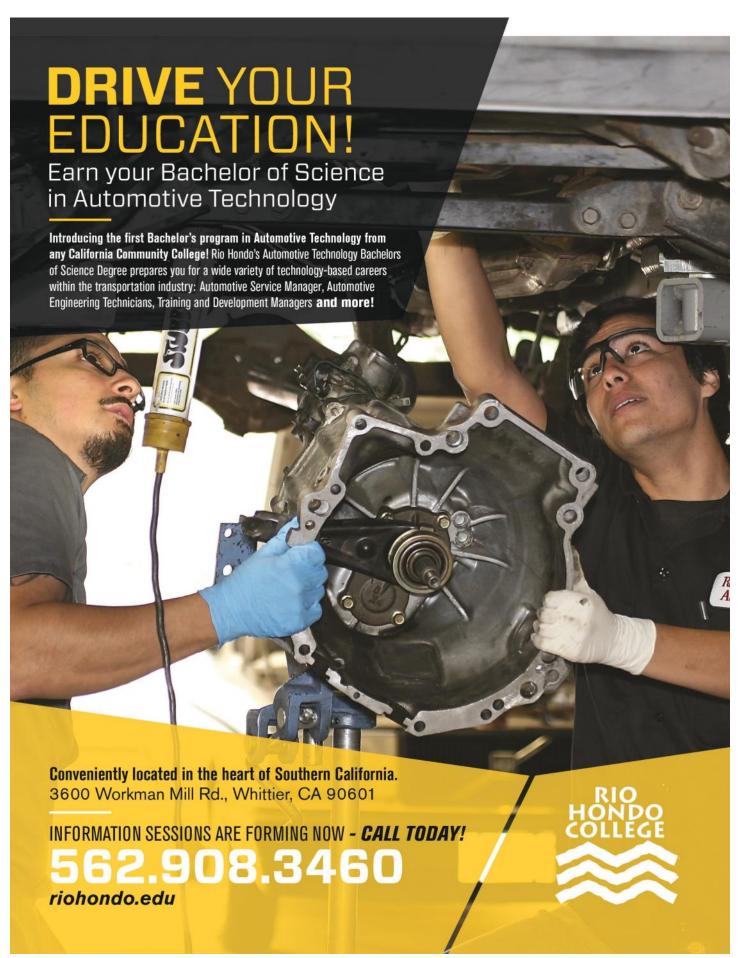
 Assembling, disassembling, and troubleshooting vehicles as needed to complete assignments.







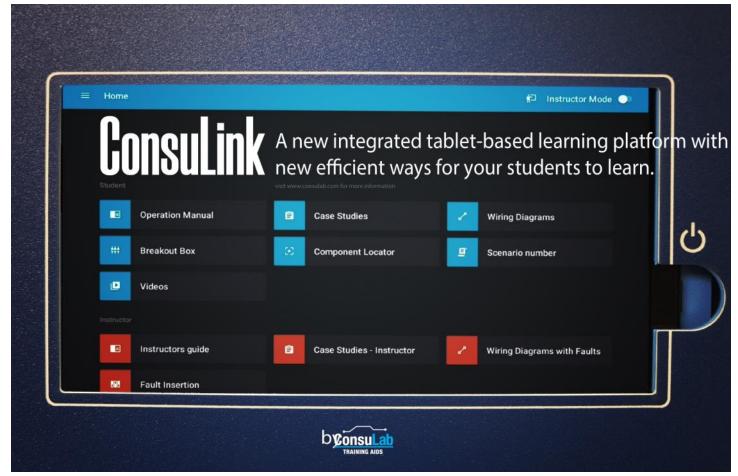




### **WEBMASTER Report by Tom Broxholm**

Like most of you, I have been swamped with the work of instruction and running a program. There is not much to say in the way of a webmaster's report, but I would like to share this list of things to consider when teaching online:

- Don't assume your student has internet access, let alone high speed Wi-Fi or hard wire connection.
- 2. Don't assume your student has anything beyond a phone to access training.
- 3. Don't assume your students have a printer to print assignments or documents, let alone a scanner to scan and return an assignment to you.
- 4. Don't assume your student has the capability or know-how to fill out a PDF form, save it and return it back to you.
- 5. Students don't have to attend your live session in order to keep up with class.
- 6. Make sure to record and post your recording online or in your LMS
- 7. Zoom recordings on the cloud are limited in space. Your recordings will disappear after some time. Consider saving your recordings locally and using YouTube as a way to distribute your recordings. Create a private link inside your LMS.
- 8. Give your students extra time to complete assignments
- 9. Use frequent guizzes to check for retention
- 10. Give multiple attempts for quizzes if possible.
- 11. If possible, use a document camera and bring demos home with you.
- 12. Locate and use online resources to supplement your course.
- 13. Do not sanction or even recommend that students perform lab assignments on a vehicle outside of class. You open yourself and the school district to a lawsuit if something goes wrong.
- 14. If you find a really good online resource or YouTube video, share it with CAT so we can promote it on our website. Only recommend high quality videos and resources. Videos with poor lighting, shaky cameras, poor audio, and someone who just rambles on are low interest videos.





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Catch a Wave!

### **Rare and Unusual Cars**

Many of us as instructors are also automotive enthusiasts, and it has become apparent that some are owners of rare and unusual cars. This is the case for myself and the vehicle that I came to own after trading my first car (a 1957 Chevy 150 4-door

sedan with straight six and three on the tree) for this dune buggy.

It appears to have been built in the 1960s and is based on the pan from a 1956 VW Beetle. According to the numbers, the engine is from somewhere around 1963, but the carburetor, distributor, etc. appear to have been mixed and matched as well.

The body is 1 inch square tubing with aluminum panels riveted on, which must have taken a lot of time for the original builder. No real upgrades had been done, but it did run and drive when I got it.





To make it more operational, the carburetor was replaced with a comparable rebuilt unit and the oil bath air cleaner (it leaked) was updated with a cone-type fabric element. A used set of All-Terrain tires was installed for better traction, but even then, it still gets stuck in the sand with too much throttle.

What this vehicle has done for me is to open up opportunities to teach my own sons how to work on cars. Last year, my oldest son helped me pull out the old wiring with its

ceramic fuse panel and install a system that would make the lighting and accessories operational and safe. Fabrication skills were used to add seat brackets and seat belts for an extra measure of safety.

Tune ups on the beach and cleaning and setting the breaker points with a Leatherman have brought back the nostalgia of working on an older car. Future upgrades include an alternator so the battery doesn't keep dying and a larger fuel tank to keep the fun going a little longer.

Some of you may also have rare and unusual cars you would like to highlight. If so, please send pictures and a write-up to donalh@cos.edu.



~Donal Howell

# ASCEF SCHOLARSHIP AND DONATION OPPORTUNITIES



Every year, the Automotive Service Councils Educational Foundation (ASCEF) awards scholarships ranging from \$500 - \$1,000. These scholarships have been instrumental in helping recipients create rewarding careers in automotive technologies.

Accepting scholarship applications August - March.

To be eligible for these scholarships, an applicant must be a:

- California high school senior who plans to enroll in post high school technical and academic training or
- California college under-graduate in the automotive service field.

### WE TURN CARS INTO CAREERS

ASCEF is a nonprofit corporation that turns donated cars into education and training, scholarships, and other industry inspired programs for individuals wanting to get into the automotive service field.

To learn more, visit us online at asc-ef.org.

To apply, visit automotivescholarships.com





We always appreciate input from our members and supporting vendors.

If you have an article, a helpful tip, or just want to share a story in the newsletter please email me:

Donal Howell donalh@cos.edu







### Interactive

Supercharged learning with fun, interactive, and flexible lessons.



### Gamified

Leaderboards, badges, and trophies keep students engaged.



### Connected

Virtual curriculum with classroom and instructor groups.

- Progress Reports, Online Gradebook, Graded Tests
- LMS Compatible Tests (Blackboard, Canvas, etc.)
- Served from the Google Cloud

**FREE Instructor Access/Demo** 

Academy.AutoUpkeep.com





Vehicle Technology Trainer

Model 610

The Vehicle Technology Trainer is based on a late model "recycled" vehicle. This trainer is available as a gas, diesel, electric, or hybrid option.

(Nissan Leaf shown)

Cut out panels added to show important systems normally hidden by interior panels

- Study and diagnosis of most automobile systems including:
  - Engine Performance
  - Electrical/Electronic
  - Suspension/Steering
  - Rrake
  - Heating/Air Conditioning
  - Transmission





- Includes an ATech Fault/Simulator Panel
- Perform actual service manual diagnostic procedures









A World Leader in Transportation & STEM Training

### New for 2021

# Automotive Training Solutions for Remote and Hybrid Learning

As classes continue, the unique requirements for CTE students in the automotive and diesel fields face unprecedented challenges. For students and instructors navigating remote and hybrid class environments, Megatech has developed new at-home learning solutions for hands-on skill development.

### Theory → Practice → Application

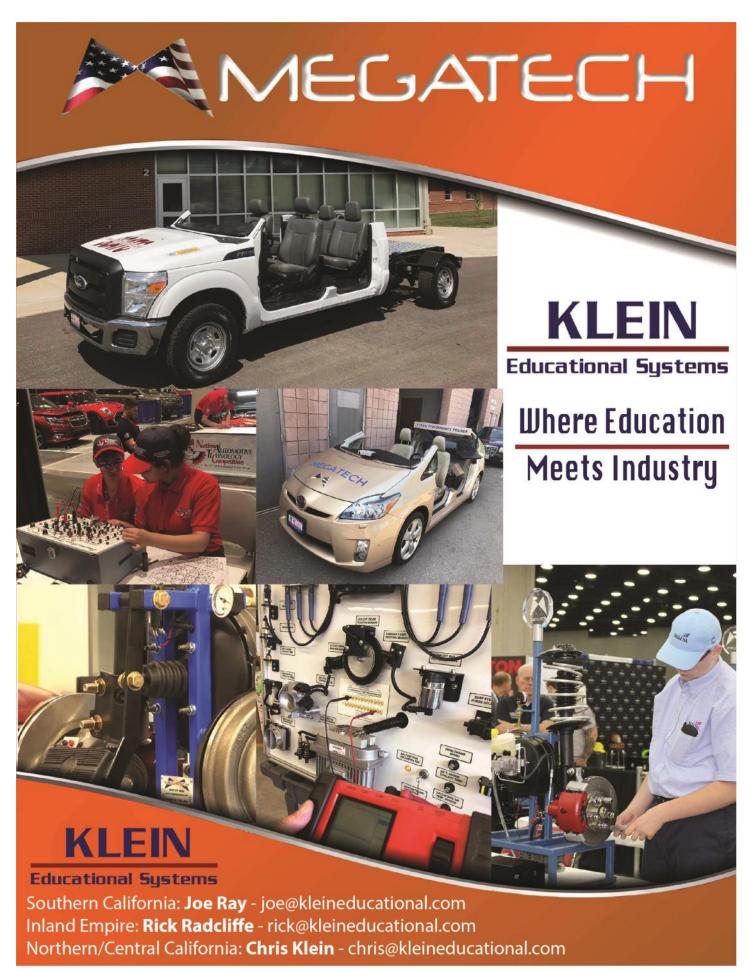




Tactile skill building at home for in class application



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### **Pico Scope Tidbits**

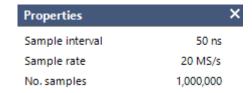
by Thomas G. Broxholm

Every newsletter I will provide the readers with a tidbit or two about using the Pico Scope.

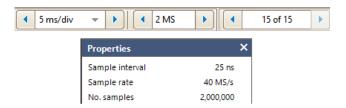
Today's tidbit will analyze what the number of samples setting means and how does it impact the buffer, sample interval, sample rate and number of samples? Equally important, how does the time sweep impact these same values.



The number of samples is how many dots or data points can be placed across the entire screen. At one million samples with a sweep of 5 ms/div the user can have 31 buffer screens of data. This will provide a dot or data point every 50 ns, sampling 20 million samples a second and the entire screen will have 1 million data points.



Simply changing the samples from 1MS to 2MS directly impacts the buffer, sample interval, sample rate and number of samples. The buffer drops to 15, sample intervals drops to 25 ns (nanoseconds), sample rate rises to 40 MS/s (Million Samples per second) and the number of samples rises to 2 million.



Now look at what happens with 3 MS and 4MS. Notice there is no change at 3 MS but 4 MS has another major impact.



### **Pico Scope Tidbits (continued)**

(Continued from page 15)

The software tries to increase the number of samples, but it doesn't always accomplish this. The sample interval, sample rate and number of samples is that same at 6 MS as it is at 4 MS.



Lowering the sweep to 100 microseconds per division or to 500 microseconds per division also impacts the buffer, sample interval, sample rate and number of samples on the screen.



Adjusting the sweep in the other direction to 50 ms/div (milliseconds per division) and 100 ms/div has an impact on sample interval and sample rate but not the number of samples. Raising the sweep increases the distance between each sample point and reduces the number of samples that are taken every second.



To wrap up the changes to the buffer, sample interval, sample rate and number of samples we will look at what happens when the sample rate is lowered. With the sweep set to 5 ms/div and the sample rate set to 100 kS (Kilo or one thousand Samples) and 500 kS we can see the impact. The buffer increased to 32 buffer screens however there are huge changes in sample interval, sample rate and number of samples across the screen.

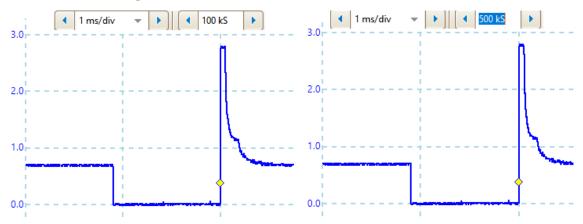


You may at times need a really fast sweep, or you may need the accuracy of capturing 4 million samples across the screen, but more often than not your sample settings will be closer to 500 kS to 1 MS. If you will be saving the capture as a file on your computer, the samples setting has a direct impact on the file size. More samples equal a larger file size. Additionally, increasing the sample value increases the sensitivity to noise. Capturing more noise might make it difficult to capture a clean pattern.

### Pico Scope Tidbits (continued)

(Continued from page 16)

See for yourself with the following pattern captures at different sample values.



The left pattern below is the same as the ones above except at 1 MS. There is virtually no increase in capture quality between 100kS and 1MS for this pattern. Below the right image is under sampled at only 200 samples across the screen. The samples are so low that it was almost impossible to find a data point to trigger from and important data was lost along with critical pattern information.



The next time you set the Pico software sample and sweep settings consider the impact on the buffers, sample interval, sample rate and number of samples.

For those of you who would like to show this to your students you can view the properties in the Pico software by clicking the "Views" menu and selecting "View Properties".

One last note. Make sure when you are showing this to your students that in order to apply the changes the software must be running each time you make a setting or value change.



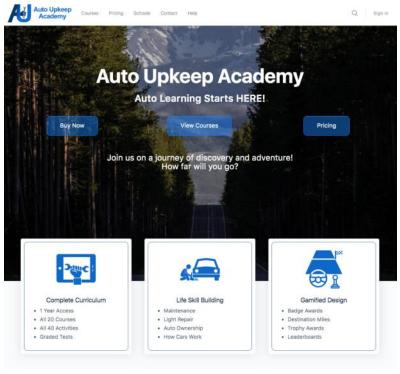
# Engaging Students through Online Learning By Mike and Linda Gray

Seventeen years ago, we made the decision to produce an introductory automotive book for beginning auto students. We didn't know if teachers would find value in our vision. It wasn't until Auto Upkeep was featured on PBS's MotorWeek that we knew we were onto something. One of the first automotive teacher conferences we attended was CAT. We flew across the country with suitcases stuffed full of books to give away review copies to any teacher that would take one. At that time, we received most orders simply by mail or over our home phone.

Fast forward seventeen years and four editions, Auto Upkeep has been adopted by 500+ automotive programs with over 100,000 copies in print. Then suddenly COVID-19 changed life as we all knew it. In early March schools began to call asking for online options. Knowing that most school budgets were already exhausted, we wanted to help students finish out their school year, so we began donating Auto Upkeep eBooks. Week by week, more schools were teaching virtually and the need for an online solution grew. Before the end of last school year, we had donated over 12,000 copies of our eBook. As we issued eBook codes, we realized the time had come to prioritize development of an online curriculum envisioned years earlier. We needed an option that would help teachers keep students engaged. Our concept, the Auto Upkeep Academy, was thrown into high gear. We would take the curriculum that thousands trust and make it more interactive and more fun than just an eBook. We reviewed existing online platforms and decided, for the functionality and control we needed, we had to build our own platform. We knew

WordPress, the content management system used by almost 40% of all websites in the world, would be a great foundation. We wanted to have a social and gamified component integrated with the learning platform. We wanted private classroom groups for students and a collaborative teacher group. The biggest challenge...fall classes would start in a few short months and our company consisted of two people. With passion and dedication, we knew we could take Auto Upkeep to the next level!

While Mike focused on transferring the Auto Upkeep curriculum into the Academy, Linda thought of a way to keep students engaged. Students would participate in a journey along a



(Continued on page 19)

travel route that covered the continental United States. Students would earn **Miles** for their car's odometer, **Credits** to buy **Virtual Tools**, **Badges** for completing courses, and **Trophies** for perfect test scores. Teachers would have an online Gradebook and Group Management portal to monitor student progress. Plus, the Academy had to be affordable, as low as \$15 a student (less than a print workbook).

But would students really engage and like it? We didn't know for sure. We pilot tested the Academy with a school in Washington running a summer course. What did we notice to our surprise? Using Google Analytics we watched the map dots (representing online students) that told the story of students online at midnight, 1 am, and even 2 am. If students had a textbook in their hands, would they be learning at 1 am? Maybe, but most likely not. The feedback we received was encouraging; we had an online platform that students really enjoyed. Students wanted to see their name on the top of the **Leaderboard**. They wanted to earn **Certificates**, **Badges**, and **Trophies**. Students were engaged.

When we began, we envisioned a soft start with several hundred students, maybe a dozen schools. Now today...two months into the new school year, there are over 50 schools and close to 3,000 students using the Auto Upkeep Academy. We have had to upgrade the host server multiple times to meet the increasing traffic demand. The website is now served from a Google data center in Iowa and uses CDN (Content Delivery Network) to provide fast delivery.

You might be wondering if print curriculum dead. We don't think so. Actually, we sold more print books at the beginning of the school year than normal. Many schools purchased a book for each student, instead of sharing books between classes. We will continue to offer our print and eBook options to meet the needs of all teaching delivery methods.



We would like to thank all of the teachers over the years that have trusted the Auto Upkeep curriculum. We are excited about our Academy option and each day we will work to make Auto Upkeep even better. You are part of our team. We value your input and appreciate your dedication to educating the next generation of students.

To learn more, go to <u>Academy.AutoUpkeep.com</u> or call us at 800-918-7323.

### EXECUTIVE DIRECTOR

George Hritz, Retired george.hritz@sbcglobal.net

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Donal Howell, College of the Sequoias donalh@cos.edu

#### WEBMASTER:

Tom Broxholm, Skyline College, tom@calautoteachers.com

The CAT Newsletter is always looking for technical articles and advertisements! The deadline for submitting articles and ads is March 25th for the spring issue and October 1st for the fall issue. Articles should be submitted in Word. It is preferred that ads be submitted in JPEG or EPS formats, PDF will work but sometimes the text is distorted once it is placed into the newsletter. The cost and sizes for advertisements can be found on our Website.

California Automotive Teachers was founded in 1966 by these five visionaries:

Orville Page and James Kenley of Reedley College, Norm Gibbs and Mel Edwards of Chabot College, and Bob Barkhouse of Yuba College.

www.calautoteachers.com

# CAT Conference Fall 2020 Brought to you online by Cisco WebEx October 17th, 2020

### **Conference Information:**

Register for the Fall

Conference by clicking the

link below.

REGISTRATION