

Are we pushing on a pull door?

Steps to change our Land Surveying Outreach Efforts moving forward.

by Trent J. Keenan, PLS

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Pushing on a pull door. Think about that saying for a second.... Those five words sum up our outreach efforts for the last 35-plus years. We continue to push on doors hoping people will invite us in. It is time for change. It is time for us to pull open the doors to create our own opportunities and secure the future of our profession. It is time to mobilize; get out there and pull open those doors to bring awareness to this great profession/career. We all can make a difference moving forward! In this article, we outline a few things to kick start our efforts.

The theme of the 2022 Western Regional Survey Conference was "Mapping the Path for the Next Generation." It was a fitting theme for a profession that is eager for an influx of new talent and diverse voices.

At a conference Roundtable discussion dedicated to outreach efforts, passionate participants brainstormed ideas to move the profession forward and fill our thinning ranks.

When it comes to Outreach and attracting new talent to the profession, four clear avenues merit our time and attention:

1. K-5 students
2. 6-8 students
3. 9-12 students
4. Adults

While the conference's theme focused on the next generation, individuals of all ages are interested in land surveying work. Here, we dive into the various avenues that can attract new talent to the land surveying profession.

K-12 Outreach Initiatives



Today's students are talented and driven, and it's important to introduce them to the existence of land surveying at a young age.

Exposure can begin at the youngest levels, tactics like fun coloring books, games, or toys with a surveying link.

The most critical time to bring awareness to the profession is in middle school, when students are old enough to be thinking seriously about the question "what do you want to be when you grow up?" but not yet decided on a career path. Suppose we can start the surveying conversation with elementary or junior high students. In that case, that awareness has the highest chance of carrying into high school and, therefore into students' professional lives beyond.

But since every individual is different, you never know when the right activity or presentation at the right time will stick in a students' mind and change the course of their professional life. Therefore, our best strategy is to develop a repetitive message that reaches all of the K-12 students at different stages of their journey.

Deepen ties with existing programs

Getting involved does not necessarily require starting from scratch. There are an incredible array of existing programs that have a link to land surveying, which would be in our best interest to explore and invest in further.

Here is a collection of current programs:

[Get Kids Into Survey](#)



Get Kids Into Survey was established in 2017 and uses comics and other age-appropriate content to connect children with the world of surveying.

Brand ambassadors can get involved with Get Kids Into Survey in order to support their local communities. Anyone can become a Brand Ambassador – all you need is a passion for the industry and for educating the next generation.

Find out more about GkiS or become a brand ambassador at: <https://getkidsintosurvey.com/>

GeoBus



Pioneered by the University of Central Florida, the GeoBus is a 40 foot retrofitted city bus with a solar-powered learning lab meant to inspire science's next generation in Science, Technology, Engineering, Arts, and Math (STEAM). The mobile laboratory is focused on maps, apps, and drones and visits K-12 schools, community centers, and events.

While UCF's GeoBus operates only within the state of Florida, the concept is an exciting one. The program could easily be expanded or replicated in other areas of the country. Be sure to follow the GeoBus at: <https://storymaps.arcgis.com/stories/a9790220342b45b18e89ad306f780b74>

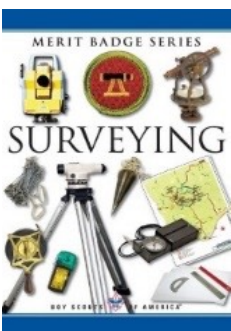
Trig-Star

Sponsored by the National Society of Professional Surveyors, Trig-Star is a math-based competition that recognizes and rewards high school students who excel in mathematics, particularly Trigonometry, and their teachers. The program's goal is to demonstrate practical uses for mathematics and bring greater awareness to the surveying profession. Current surveying professionals can get involved by administering a Trig-Star Exam.



During the WRS conference roundtable, an important point was raised: math students are likely to be interested in the surveying profession, but so are history students. Developing a history-based survey program that targets a new subject area could prove valuable. Find out more about Trig-Star at: <https://trig-star.com/>

Scout troops



Boy and Girl Scout troops are a natural target for surveying outreach because of their love of the great outdoors and hands-on activities.

Currently, there is a Surveying Merit Badge that Boy Scouts can earn. However, it is presently one of the least-awarded merit badges and is at risk of being sunsetted. One issue is that the badge takes a full day to complete, which is less tempting for scouts who can earn multiple badges in a day for different activities. The badge is in need of revision and funding if it is going to make a continued impact. Scoutmasters often don't know who to ask to guide scouts through earning the badge. This is where surveyor volunteers could help tremendously.

On the Girl Scout side, STEM badges help girls build valuable technology skills while exploring scientific topics. One of the best ones to start with would be either the Junior Geocacher Badge or the Cadette STEM Career Exploration Badge. These badges could be used to promote from a surveying standpoint.



- **Naturalist** badges invite girls to explore the outdoors.
- **Digital Art** badges help girls build valuable technology and computer skills.
- **Science and Technology** badges connect girls to favorite science topics like video game development, the physics of roller coasters, and the technology used to create new fabrics.
- **Innovation** badges encourage problem solving using scientific methods from fields like anthropology, engineering, graphic design, and business.
- **Financial Literacy** badges prepare girls for a financially sound future.

Annual events like the Boy Scout National Jamboree also lend themselves to opportunities for presentations, activities, and earning badges related to surveying. NSPS is currently seeking volunteers to attend the next Jamboree and offer the Surveying Merit Badge. Similar events likely exist where Girl Scouts and the STEM badges can be targeted.

<https://jamboree.scouting.org/> & <https://www.girlscouts.org/en/footer/press-room/2017/23-new-stem-outdoor-badges-enrich-programming.html>

Future City



The Future City Competition is a project-based learning program where students in 6th, 7th, and 8th grades imagine, research, design, and build cities of the future.

Surveying is an important part of designing environmentally-friendly futuristic cities, yet it's currently not embedded in the Future Cities competition as well as it could be.

Currently, surveyors can get involved as judges of the event. The opportunity to increase exposure lies in increasing our involvement prior to the final competition day, and making sure that students fully understand the surveying component of the project and how their project will be judged.

When surveying is an abstract line item of the rule sheet, it's not compelling. However, many Future City coordinators are more than interested in the concept of having surveyors come to present to their students during the planning process so that they can incorporate new knowledge into their Future City projects.

Become a mentor: <https://futurecity.org/about-the-competition/forming-your-team>

SkillsUSA



Another middle school-focused program is SkillsUSA. SkillsUSA is a national nonprofit made up of a partnership of students, teachers, and industry working together to ensure America has a skilled workforce.

Currently, surveying is not represented as part of the SkillsUSA program, but it would be an excellent fit. The group has both an educational component and a skill component, which is used to introduce and train students in various vocational professions.

Find a locate State Association Director in your area: <https://www.skillsusa.org/about/state-directors/>

CTE (Career and Technical Education) for High School



Career Technical Education (CTE) provides students of all ages with the academic and technical skills, knowledge, and training necessary to succeed in future careers and to become lifelong learners. In total, about 12.5 million high school and college students are enrolled in CTE across the nation. CTE prepares these learners for the world of work by introducing them to workplace competencies and makes academic content accessible to students by providing it in a hands-on context. In fact, the high school graduation rate for CTE concentrators is about 90 percent – 15 percentage points higher than the national average.

Find a CTE in your state: <https://careertech.org/cte-your-state>

Project Lead the Way (PLTW) for High School



Reinventing the Classroom Experience

Project Lead The Way provides transformative learning experiences for PreK-12 students and teachers across the U.S. They create an engaging, hands-on classroom environment and empower students to develop in-demand knowledge and skills they need to thrive. The professional development for teachers provides training, resources, and support to engage students in real-world learning.

PLTW Engineering empowers students to step into the role of an engineer, adopt a problem-solving mindset, and make the leap from dreamers to doers. The program's courses engage students in compelling, real-world challenges that help them become better collaborators and thinkers. Students take from the courses in-demand knowledge and skills they will use in high school and for the rest of their lives, on any career path they take.

A recent study shows PLTW students outperform their peers in school, are better prepared for post-secondary studies, and are more likely to consider STEM careers, compared to their non-PLTW peers. Students find PLTW programs relevant, inspiring, engaging, and foundational to their future success.

Find the Project Lead the Way School in your area: https://www.pltw.org/experience-pltw/school-locator?search_school=&state=NY

FFA – Future Farmers of America

FFA is a dynamic youth organization that changes lives and prepares members for premier leadership, personal growth and career success through agricultural education.



FFA develops members' potential and helps them discover their talent through hands-on experiences, which give members the tools to achieve real-world success.

Members are future chemists, veterinarians, government officials, entrepreneurs, bankers, international business leaders, teachers and premier professionals in many career fields.

FFA is an intracurricular student organization for those interested in agriculture and leadership. It is one of the three components of agricultural education.

The official name of the organization is the National FFA Organization. The letters "FFA" stand for Future Farmers of America. These letters are a part of our history and our heritage that will never change. <https://www.ffa.org/>

To read about a recent success story using the FFA as a platform, check out the Tennessee Association of Professional Surveyors (TAPS) Spring 2022 Newsletter - Presidents Report by Andrew Stokes. TAPS set up an exhibit booth at the 94th Annual State Convention in Gatlinburg, TN, and was able to grab the attention of hundreds of kids over a two-day convention. In total there were 3200 people in attendance and they were able to have almost 500 sit down and watch their 3-minute video about a career in surveying.

https://www.taps-inc.com/mediafeed/search?ext=pdf&keyword=&type=application/pdf&folder=4&page_title=Newsletters&sort=created_at&sort_reverse=true

Overall, many of the above programs would benefit from "Career Ambassadors:" surveyors who are trained to present at events like Trig-Star and educate students for competitions like Future City. One thought is to have state land surveying associations create learning centers to train such ambassadors, who would then be prepped and ready to jump into various events and spread surveying awareness.

Become an Industry Partner

Career programs are effective because of local industry partners also contribute to student learning through mentoring, curriculum development, site visits, internships and other workplace learning experiences being presented in class. They will also sometimes lead to paid internships for students. These collaborations will provide mutual benefits for students and employers, by providing high-impact learning to students and opportunities for employers to recruit diverse students. By hosting a student intern, it is not only an investment in the future workforce, but also an opportunity to provide work-based learning opportunities for students that will create value and benefits to your organization in numerous ways:

A few ways becoming an Industry Partner will help you are:

- Increase your visibility for recruitment.
- Connect with career-minded students.
- Diversify with new, motivated team members.
- Contribute to a vibrant local workforce.
- Build a Foundation for long-term relationships.
- Becoming trusted resource for network members.

Present at schools and fairs

A less formalized by equally valuable way to reach students is by presenting in schools and hosting booths at career fairs and events. One of the essential parts of a presentation is bringing the right tools to the presentation. Know who your audience is, and know that you need to stand out amongst the rest in order to keep their attention.

School Presentations

The vast majority of schools would be thrilled to have surveying professionals get involved with students and conduct presentations. The problem is they have no idea who to reach out to. That's why surveyors need to take the first step and volunteer our team. Often once you make your availability known, educators will be knocking down your door with opportunities.

For elementary school students, presentations and talks can be simple. How did a road get



paved? How did the house or apartment building that a student lives in get built? Illustrating the surveying component of the process can be fun for young school children.

As mentioned above in the Trig-Star section above, middle school history classes could be a prime group of students to target when it comes to surveying awareness. Documentaries often feature surveyors. An interesting exercise would be to compile short clips from various documentaries and send them to schools or show them as part of a speaker presentation.

One powerful message would be to send brand-new young surveyors into the high school classroom. Some of our profession's younger surveyors were in the shoes of high school students only a decade ago. Hearing how surveying has shaped their early career may be even more powerful than hearing about the successes of a senior surveyor.

Career Fairs



School career counselors also need to be brought into the loop to understand what surveying is and how to feature it to the students they serve.

There are opportunities to present to school counselors at conferences and seminars or send written pamphlets and content for them to file in their offices.

We need to emphasize the role of surveying in buzzy fields like environmental waste and climate science that are attractive to young students and the innovative technology students would be using in the profession.

State & County Fairs

One conference participant started a casual conversation with a STEM teacher that turned into a 2-hour conversation about opportunities to bring surveyors to STEM Fairs. The very next week, he had four schools calling him asking him about coming to judge.

Other conference attendees had just finished taking shifts at a surveying booth at the Minnesota State Fair, one of the largest state fairs in the world.

Having your state association at these fairs is a great opportunity for exposure. The attendees took turns taking 4-hour shifts and showing off a sandbox. It attracted children and adults alike.



In Nevada, there are similar plans to bring a sandbox to the Nevada State Fair in June. And at a recent Nevada STEM event, a joint booth shared with ACEC featured a surveying comic book, stickers, and posters to promote the profession.

Tap into non-traditional education



Traditional K-12 often gets the lion's share of volunteering and attention, but a focus on alternative high schools and homeschooling could also be extremely beneficial.

For example, UCLS recently paired up with an alternative high school to run a drone program. The students are now graduating with the ability to fly drones with LIDAR pucks in them. They're doing it for fun, but they don't even realize that the world of surveying exists. If we are able to tap into and educate students in unique programs like that, it's an opportunity worth jumping on.

Charter and Waldorf schools are other alternative schools that often prize hands-on learning. Often they have smaller, more focused classes with kids who are more engaged than a cafeteria presentation at a public school filled with a hundred

students.

Meanwhile, there is a national umbrella for homeschooling. Homeschooling presents an avenue that has never really been examined. Parents may be interested in surveying curriculum from two perspectives; both the historical perspective and the modern technology perspective.

Once conference attendee formerly volunteered with a parochial school and met with students for two hours per week for one semester. The two hours would be spent teaching students about surveying skills such as drafting. Today, you could easily do the same thing covering drones and more exciting modern topics.

Provide professional opportunities

Finally, suppose you run a company and are serious about filling your ranks with new surveyors. In that case, you should strongly consider fleshing out programs like job shadowing, internships, and educational boot camps.

Job Shadowing & Internships



Consider giving students the opportunity to experience the day in the life of a surveyor firsthand. Bring them along in your truck, and have them sit next to you at the computer. Let them see the ins and outs of a real day in order to see if it's interesting to them.

Job shadowing also doesn't have to be just for K-12 students. It's also a good opportunity for people who are looking to switch careers and aren't sure what to do next. Our surveying chapters could easily undertake Outreach to companies who would be willing to set up job shadowing programs.

Internships are the next logical step up from job shadowing. If students are still interested in learning more after shadowing you, hire them for a summer internship so they can experience doing the work themselves.

Target your local community colleges if high schoolers don't seem ready to take on an internship. One attendee's company has hosted interns for the entire summer, where they were cross-trained between the field and the office.

Summer & Bootcamps



SURVEYING TECHNOLOGY Summer Camp 2022

An exciting first-time boot camp is taking place this summer at Vincennes University in Indiana. A teacher in the program has created a three-day summer boot camp for kids. Day one will be an introduction to surveying. Next, it will cover field notes and then pacing.

From a society standpoint, boot camps could be set up regionally and run for one week, with parents able to drop off their middle school students and head to

work. Surveying volunteers could donate a day or two of their time to help run the camp and educate participants.

Another option would be a bite-sized weekend camp or camping trip.

Advertise to all ages

Stepping up our K-12 education and outreach efforts will take something that's new to most surveyors: advertising. Specifically, reaching young people on the platforms they use most, with content that resonates with them.

We will need to create modern, fresh, and eye-catching content to link exciting professional work like drones, helicopters, high-rise buildings, and climate science with land surveying. Today's surveying work goes far beyond property boundaries, and it's time for us to let the world know it.

This will likely mean doing things like:

- Hiring a professional marketing firm
- Creating a national logo for the surveying profession
- Updating videos like the ones on landsurveyingcareer.com
- Getting active on social media
- Taking professional photos and footage
- Using hashtags effectively



It will take communal action to begin speaking with one professional voice and creating valuable content that can be cross-promoted and used by different regions. But it's a critical step that will move our profession forward.

Roundtable attendees left the outreach session planning to pool financial resources between 13 western states, create a new video, and build up a budget for additional assets.

It's clear that social media videos like those popular on TikTok are extremely short and have a clear hook that draws viewers in. New advertisements and sponsored content for the Young Surveyors Network should follow this same philosophy.

Perhaps it's also time to supplement our photo collections full of rocks and trees with more interesting content like Go-Pro footage of the day in the life of a surveyor, or a time-lapse of a project from beginning to end.

In short, we need to work on our professional branding. It needs to be visual, compelling, and speak to our target audience: those who don't know anything yet about surveying.

Adult Outreach Initiatives

Students in the K-12 range aren't our only target audience when it comes to recruiting new surveyors. In fact, there are many qualified adults seeking career changes and who may already possess some of the building blocks of survey knowledge.

Ex-Military



Every day, individuals phase-out of a career in the military and find themselves ready for a new profession. There are existing programs like Helmets to Hardhats and Hiring Our Heroes that seek to do this very thing.

We should look to create our own such program for the land surveying profession (one attendee mentioned the same "Service to Surveying.")

Since the end of the conference, the California Land Surveyors Associations (CLSA) has already started working on this program and the Nevada Association of Land Surveyors (NALS) will be joining in on this initiative. Both CLSA and NALS are looking for members

who are willing to mentor military personnel and provide them with guidance to a successful future. If you are able to help, please reach out to either info@californiasurveyors.org or nals@nvlansurveyors.org.

The key to attracting military hires is by working with the recruiting firms and transitional career counselors that servicemen and women meet with when they separate from the military.

That is the stage where we need to make land surveying awareness happen. We need to establish a liaison between army bases and surveying professionals so that interested candidates can get information and transition quickly.

The best person one attendee hired last year was an ex-army serviceman. A former major, he was extremely disciplined and had a background in geospatial work.

The army reserve is another untapped market, with workers who are eager to fill in empty time and gain access to the gear and equipment they need.

The only caveat with military hires is that often, they can make more money in other fields rather than start from "zero" in the surveying profession. The more we can help them capitalize on making a career in survey quicker, the better.

General Adults

What are the characteristics that make up a good surveyor? It's a question we posed at the Outreach Roundtable event. Here are some of the answers:

- Serious
- Engaged
- Inspired
- Hardworking
- Disciplined
- Accountable
- Humble
- Confident
- Honest
- Curious
- Inquisitive
- Team player
- Strong communicator
- Critical thinking skills

Surveying is often portrayed as a physical job based on literal manpower. Yet many adults, including many women, are extremely well-suited to the life of being a surveyor.

We need to start thinking about not just how we advertise the profession, but how we make it a welcoming one for women and minorities.

In terms of advertising, we should showcase the diversity that is possible within surveying.

Instead of just showing surveying equipment in professional brochures, we should show more people. Instead of emphasizing the physical labor and the construction side of surveying, we should also emphasize the educational aspects.

And when out in the field, we should do things like let women carry their own equipment and act like identical members of the team, according to one female conference attendee.

Finally, to attract new adults we also need to provide flexibility and convenience when possible, and provide decent health benefits so that we can attract and retain good employees.

Getting Surveyors Involved

Outlining these incredible outreach opportunities is one thing, but executing them is another matter. In order to tackle some of the initiatives brainstormed above, we need active surveying professionals to step up to the plate.

Join your local outreach committee

Are you a member of your local state society, Young Surveyors Network, outreach committee, or workforce development committee?

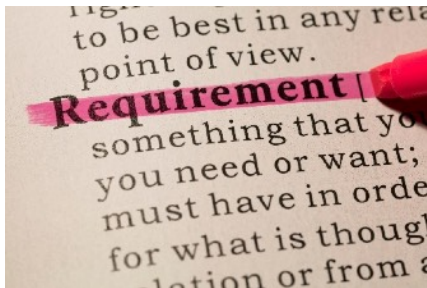
Not all surveyors have easy access to leadership roles and committee activism. Some states and regions have thriving professional groups, and other areas hardly have any to speak of, or are begging for volunteers behind the scenes.

Whenever possible, we should make our societies more inclusive. For example, consider changing your bylaws to include more voting members in your state society and encourage more involvement at the chapter level.

Information should be clear and standardized so that committees aren't operating in silos and interested professionals know exactly who to reach out to get involved in their chapter or apply for a board position.

The best way to take action is to get started. Join your local outreach committee, or ask about forming one. It requires energy, but positive momentum is contagious. It's more than possible to change a lackluster outlook on Outreach. It just takes determined individuals ready to spark change.

Make outreach efforts a requirement



This may sound controversial at first, but one surefire way to increase outreach involvement in the surveying profession is to make it a requirement.

Consider that many surveyors attend conferences in order to accrue professional development hours. Yes, attendees learn, have fun, and benefit from the conference seminars. But sometimes, they show up in the first place because it's a professional requirement.

The same philosophy can be used to establish a culture of Outreach, just like we use required PDH to establish a culture of continued learning.

For example, Nevada has a new law that requires two hours of ethics and one hour of state statute update education per year. A change to the NAC administrative code was all it took.

If every professional surveyor was required to have a certain number of mentoring hours per year as a licensing requirement, it would immediately boost outreach efforts.

Yes, it would rely on the honor system. And yes, nobody likes to be "volun-told" what to do. But it's also true that what starts as a requirement can be the boost someone needs to form a rewarding habit. And there's no doubt that Outreach and mentorship are some of the most rewarding activities there are.

We also brought up this very topic in a recent Round Table Tuesday session. We discussed the options of being able to apply a few hours of Outreach to our continuing education requirements, as we do for writing an article or presenting at our conferences. Again, I think this is something we should bring to the attention of each licensing board!

Quick - Road map on how we get started with the school students

First step:

Create a presentation for each grade school level. We need to tailor our speeches to our audience. Develop a presentation for kids in K-5th grade (elementary school). Then one for 6th to 8th grade (middle school) and one for 9th to 12th grade (high school). We need to





create two separate presentations for both the middle school and high school, one for math students and one for history students.

We also need to develop an entire road map for each state for a path from elementary school all the way through college graduation and onto completing the state licensure exam.

Second step:

Start writing letters and reaching out to the schools and introducing yourself. See if there is an opportunity to speak with the students in any of the science, technology, engineering, history, or math classes about a career in the

land surveying profession. Once you have the connections, start scheduling your presentations.

Another option for a second step would be getting out to all the school counselor's conferences. Both in your local state and on the national level. We need to let the counselors know about our profession, so they can promote it to their kids. If they do not know about our profession, they can not help us promote it.

Third step:

On the day of your presentation, bring the young surveyors with you and bring the best tools you have. Bring the largest drones you own, the 3D scanners with a laptop presentation, the robotic total stations, etc. You need to grab the students attention and hook them with the tools and make sure they are aware they are coming into a profession that uses the latest and greatest technology.

Side note: Make sure you create a repetitive message and hit the same schools repeatedly; make sure you also know which elementary schools feed into the middle school and then feed into the high school, so you hit the same kids repeatedly.



About the Author

Trent Keenan, PLS, WRS, CFedS. Trent's surveying career started when he was 19 and now spans over twenty-five (26) years, including ten (10) years in the public sector working for a large utility company, and fifteen (16) years in the private sector, with 14 of the 16 years being the President / Founder of Diamondback Land Surveying. He has served through all officers positions of both the



Southern Chapter and State Association of NALS (Nevada Association of Land Surveyors), received the Meritorious Service Award for NALS in 2013, and was honored as the NALS Surveyor of the Year (2015) as well as receiving the NALS Von Schmidt Award in 2021. He is a past-President of NALS (2015), Current, Editor of The Nevada Traverse Publication (NALS), Current Secretary/ Treasurer for the WestFed (The Western Federation of Professional Surveyors) Board and current Director from NALS, Current Treasurer on The Nevada Land Surveyors Education Foundation Board (NLSEF), Current Vice President on the Southern Nevada Chapter of the NALS, Moderator/ Facilitator/ Founder of Mentoring Mondays for the Land Surveying Profession as well as Wisdom Wednesdays, and a proud sponsor and brand ambassador for Get Kids Into Survey (GKiS). He is currently licensed in 5 Western States (Arizona, California, Nevada, Utah & Washington). He is also a Certified

Federal Surveyor and a Nevada Water Rights Surveyor. He has been an active board member in NALS since 2007 and a regular member since 1997.