As technology has advanced, so have the skills high school students need to be exposed to. Adopting innovative technologies and new applications within a technological education classroom help provide students with a better understanding of industry practices and labour market trends. The inclusion of laser technology within a design or manufacturing environment is a prime example of how traditional “shop” programs can reinvent themselves, and better prepare students for postsecondary programming or an apprenticeship.

As a curriculum consultant for one of Canada’s largest school boards, I support all manner of technological education programming. These range from computer based design classes to the traditional “shop” classes. Over my 20 years as an educator I have seen a shift away from the traditional skill based learning associated with technological programs, to more problem solving and design focused approaches. There are multiple factors influencing this trend, one of which is the allure of cutting edge practices or technologies. While the newest hardware / tool has great appeal, there are inherent dangers of being on the cutting edge. Does the technology invested in have the staying power to justify the expense or is it a “bridging” technology which is quickly made obsolete by the next iteration? This discussion is often centred around laser engravers and cutters. My response to this discussion is YES, lasers are worth the investment.

In our school board we have several schools that have invested in CO2 powered laser units, of the 40 - 60W strength. These units have performed well, however carry a huge economic burden, from initial purchase, to installation, to consumable expenses for replacement filters. As we have piloted this type of solution it has become clear that these units greatly exceed the requirements of the majority of our students. Most students are simply cutting corrugated containerboard, etching glass, or engraving plywood. All of which can be done with a laser of lesser power or another subtractive manufacturing method. Based on these observations, I believe diode lasers to be a better solution for us.

The Endurance laser given to me will be used to investigate;

- performance level of diode lasers,
- software solutions,
- professional learning resources for educators,
- online resources,
- health as safety ramifications for staff and students.
- Curriculum connections to STEM subjects and potential for collaborative projects.

My plan is to begin my investigation with a multi functioning machine solution. The laser will most commonly be connected to a CNC mill but could also be a 3D printer. Key areas of focus will be easy of installation and cost, build volume reduction, precision and maintenance. The second stage will be to evaluate these solutions against those of our CO2 units and potentially explore dedicated diode units as a next phase of our project.