

## **JEWELERS: THE NEXT GENERATION**



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### **INTRODUCTION: IDENTIFYING THE EDUCATION-TO-EMPLOYMENT CHALLENGE IN THE JEWELRY INDUSTRY**

With the current generation of master craftspeople preparing to “age off” the bench, the jewelry industry needs to know where to look for trained workers. This report will be on the educational programs, students, and training currently available to meet the industry’s needs. It will offer a current snapshot of working conditions and trends in the jewelry industry. A number of surveys were referenced to create this document. Programs like Gemological Institute of America (GIA); Texas Institute of Jewelry Technology, Paris, TX; Blaine Lewis' New Approach School; Fashion Institute of Technology (FIT) and MJSA’s BEaJEWELER™ programs are discussed. Demographic data, technical skills, training levels, the need for nationally recognized certifications and, from the apprentice level forward, ideas on how the jewelry industry can attract, train and retain its workforce are presented.

We incorporate insights from instructors in the field of jewelry education, trade organization outreach programs and jewelry business consultants. To complete the educational picture, we discuss the recent history of high school shop classes, as well as metals programs at community colleges and universities, to highlight challenges blocking entry to our field. By investigating the imminent issues the jewelry industry faces in regards to attracting and securing skilled workers, we have identified calls to action, which even the smallest jewelry business can help to implement.

The subject of education in the jewelry industry is a sensitive topic. Our first discovery in administering the survey we designed was that jewelry makers do not know nor agree on what job titles and roles mean. This debate regarding terminology may seem inconsequential within our own ranks, but it creates confusion when the public, industry and education each mean different things when using the same term, such as jeweler. Lost credentials like journeyman and master goldsmith add to the confusion. Donna Sweigart and Pat Madeja

et al. posed this question in their survey, “By breaking down the constructs of traditional titles, have we also opened ourselves up to being cast in the same category as the unskilled?”<sup>1</sup>

Compounding the confusion over job titles with the lack of verifiable industry-wide credentials only creates distrust in the minds of jewelry consumers. While the absence of transparent skill-level certifications within our industry leads to individuals assuming titles they do not have the skills to claim, it also interferes with relevant education and training pathways. If we as an industry cannot define our own job titles with clear terms that are mutually understood, how can educational institutions properly understand our work and help us create pathways for training?

The survey we designed to collect data for this paper, “A Snapshot of Jewelry Practice and Learning” (referred to in this paper as Snapshot), was completed by over 500 respondents from across the U.S. and Canada. Snapshot provides context and insight into expectations and realities from a wide variety of stakeholders in the jewelry field. In addition, this paper is informed by data from other surveys conducted by jewelry industry publications, university researchers and global consulting firms.

From higher education, a survey by professors Donna Sweigart and Pat Madeja et al. provided information from teachers, students and industry stakeholders regarding the current use of job titles to find the meaning of those roles in the creative, collaborative jewelry-making process. Their survey, “A Re-examination of Jeweler’s Titles and Nomenclature,” will be referred to in this paper as Titles. The article, “Digital Meets Handmade: Conversations about Jewelry Technology and Education,” from Troy Richards, Dean of Art and Design at FIT, and Professor Wendy Yothers of FIT, provides insight into how educational models are responding to changes in our industry.<sup>2</sup>

From jewelry retailers we accessed the survey results from *Instore* magazine’s “Big Survey,” referred to in this paper as Big Survey. With over 720 respondents, it is the largest analysis of retail jewelry businesses published in 2018. Data from the Big Survey were found to support and more fully illuminate jewelry industry findings reflected in Snapshot. A survey entitled “Survey of Makerspaces, Part 1 & 2” by authors Pepler, Maltese and Keune from Indiana University and Chang and Regalla of Maker Education Initiative provides information on what to many may currently be invisible education opportunities.<sup>3</sup> This survey is referred to in this paper as Makerspace.

Finally, we include data from the McKinsey & Co., “Education to Employment Challenge.” This survey, completed in 2018, was authored by McKinsey & Co regional directors Dominic Barton, Diana Farrell and Mona Mourshed. This global consulting firm surveyed 4500 youth, 2700 employers and 900 educational programs across nine countries to provide in-depth analysis of the mis-match between educational systems and industries.<sup>4</sup> This survey will be referred to in this paper as McKinsey.

# THE SURVEY FINDINGS: SNAPSHOT, BIG SURVEY, JEWELER'S TITLES, & MCKINSEY

## Who

In Snapshot, self-identifying bench jewelers were a majority of respondents, representing over 250 out of 518. Respondents to Snapshot and other surveys included jewelry manufacturers as well as craft practitioners, educational/training institutions and their students.

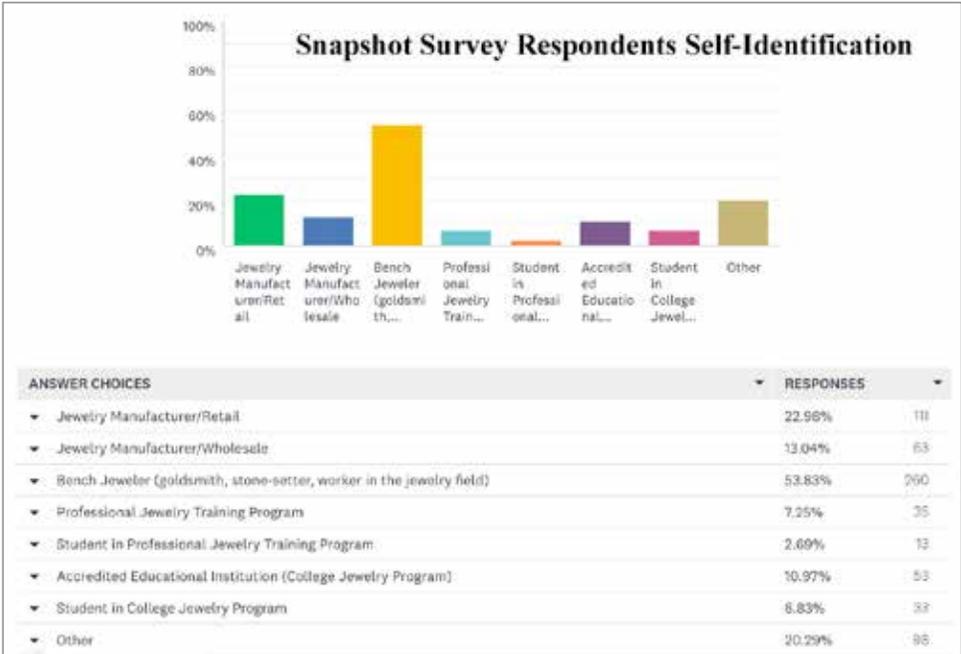
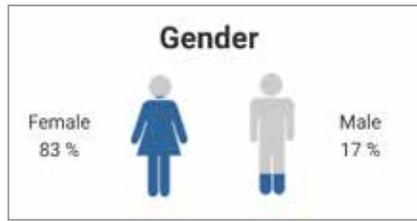


Figure 1 This screenshot illustrates what our survey results looked like.

## Gender

For the first time in the jewelry field, Snapshot included the LGBTQ community who are part of our industry, making up approximately 5%. Although there was no indication of actual job descriptions in Big Survey (primarily retail), male to female ratios were 60% men to 40% women.<sup>5</sup> Snapshot findings in the jewelry manufacturing field averages are 59% women and 37% men, which is almost a complete flip of Big Survey's numbers.

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*Figure 2 PayScale.com, an online employment website, posted these percentages for gender for jeweler’s job applicants that used their service.<sup>6</sup>*

The reversal of gender percentages between retail and manufacturing is echoed by enrollment estimates from professional jewelry schools. In jewelry training, Alan Revere, formerly of the Revere Academy in San Francisco, states that over the last 30 years there has been a gender shift among students. “In 1985 it was 80% men and 20% women. By 2017 it had become 20% men and 80% women.”<sup>7</sup> Blaine Lewis of the New Approach School in Knoxville adds that enrollment has “radically changed!” “When I first started teaching in 1995,” says Blaine, “95% of students were men, and in my last class it was 60% women.”<sup>8</sup> Equally, universities have seen this change. While 30 years ago it was around 50% men and 50% women, by 2018 the jewelry program at Alberta College of Art and Design (ACAD) was about 95% women.<sup>9</sup> Over 87% of students in college programs identified as women (Snapshot). The Academy of Art Jewelry Program in San Francisco, California, has 93% women and 7% men in its online courses, which is echoed in their graduate program where it is 91% women and 9% men.<sup>10</sup>



*Figure 3 Blaine Lewis teaching at the New Approach School in Knoxville, Tennessee, USA (Image courtesy of Blaine Lewis)*

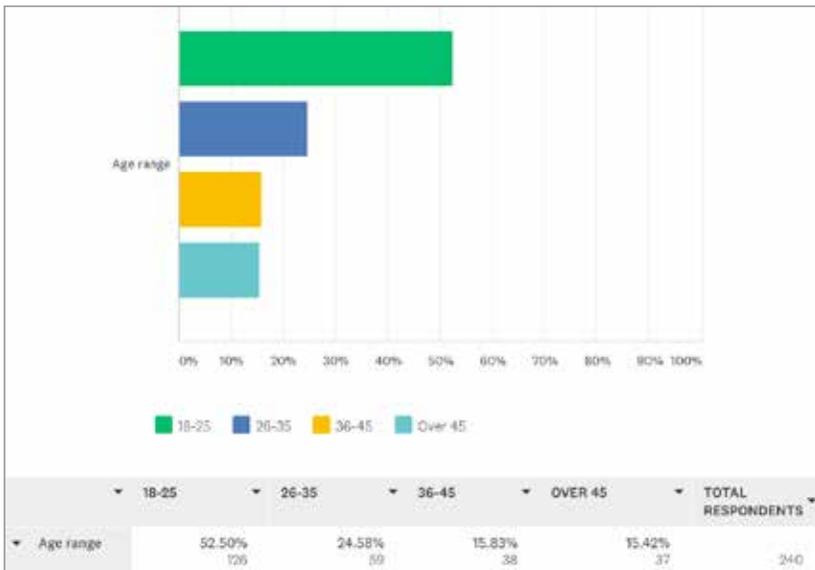
Not only did Snapshot reveal that there are more women in jewelry manufacturing than in the past but that this trend is accelerating with the next generation where an even greater number of women are projected to enter the field. Professional

jewelry training programs and college programs together indicate around 72% of their students are women. As manufacturers look for new employees, they will need to look at hiring women. The coming generation of workers and business leaders will be women. Current business leaders in the jewelry industry need to recognize this paradigm shift.

## Age

In Snapshot we asked about age in slightly different ways. Employers were asked the age range of their workers. Manufacturers report that 78% of their staff are currently over the age of 36 with more than 27% over age 45. Bench jewelers were asked at what age they learned their skills, with 52% saying they learned under the age of 25. Educators/students were asked the age range of students. Professional training programs say that 50% are between 18–25 while colleges say 82% are in that age range. This is supported by cognitive studies as being the prime age range for learning these kinds of intense motor-control skills.<sup>11</sup>

Overall, 52% of all Snapshot respondents identified the ages of 18–25 as the prime time for acquisition of skills. The Snapshot survey of professional jewelry training programs revealed that 34% of their students are over 36 years of age, while only 6% of students in college programs are over the age of 36. About 20% of the Snapshot respondents self-designated as “Other,” and 55% of these outliers were over age 36. Remarkably, professional jewelry training programs report an additional 17% being over 45, indicating there are mature individuals entering the jewelry field. Industry might want to look at these second-career individuals as a pool to draw from.

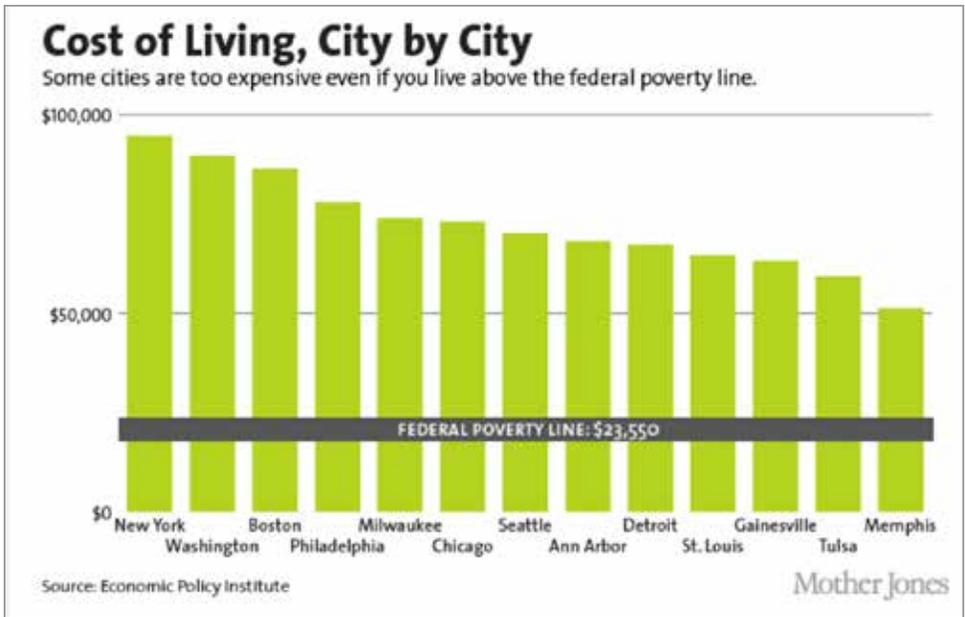


**Figure 4** This graph represents an example of the Snapshot survey’s reporting of age ranges for skill acquisition.

The average age of retail owners and employees, according to the Big Survey, was 51 years with over 69% of respondents having a median age of 59. This supports the premise that a current majority in jewelry retailers are beginning to age out of the business and are looking towards retirement.

## Pay

According to the Bureau of Labor Statistics (BLS), one would have to be making more than \$35.47 an hour to afford to live independently in major American cities.<sup>12</sup> Forty-eight percent (almost half) of bench jewelers report they are earning less than \$25 an hour (Snapshot). According to PayScale.com, an entry-level jeweler with up to five years' experience can expect to earn an average salary of \$25,000/year (or just \$12.50/hour).<sup>6</sup>

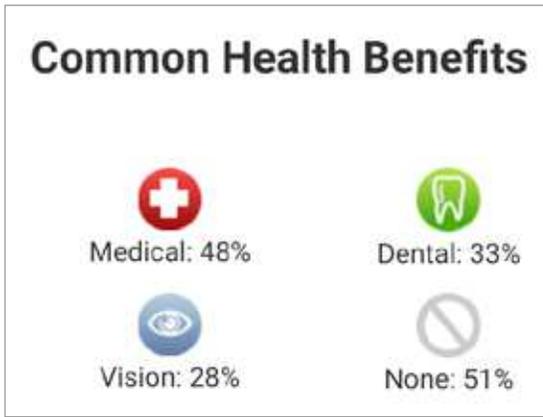


*Figure 5 With the federal poverty level being \$23,550, it becomes clear that while a bench jeweler's salary used to be enough to support a family, it now places you barely above the poverty line.<sup>13</sup>*

In terms of gender, men's earnings as reported in the Big Survey appear less limited with a full 30% claiming six-figure salaries (\$100,000 plus), while the earning potential for female jewelry workers tops out with 58% making less than \$40,000. Only 22% of all female respondents reported reaching six-figure incomes.

Our survey looked at potential earnings at the bench and disappointingly found that over 60% of jewelry manufacturers were unwilling to pay a new hire more

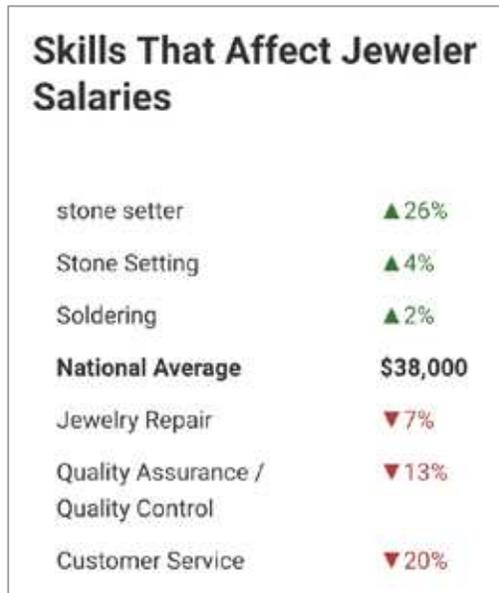
than \$20/hour (\$40,000/year) with a full quarter wanting to pay less than \$15/hour regardless of gender. An anonymous quote from the Snapshot survey highlighted this disparity: “Industry leaders, like Signet Jewelers, praise themselves as putting Customers First. However, they value their [bench] jewelers at the opposite end of the spectrum, consistently paying well below the average wage. As a former Jared shop manager in 2017, I could only offer \$10/hr to apprentices and \$15-16/hr to advanced jewelers.” Another respondent offered this comment: “Salaries are not commensurate with experience.” Not only are wages low, but so are benefits, with PayScale.com reporting that 51% of bench jeweler jobs do not offer health benefits.<sup>6</sup>



*Figure 6 This chart from PayScale.com shows the percentage of jewelry jobs that offer health benefits.<sup>6</sup>*

In the current job market, Amazon and Home Depot are both offering a \$15/hour wage to attract workers for entry-level freight handling positions.<sup>14</sup> With this competition for workers, an ever-increasing cost of living and the retirement of master goldsmiths, the jewelry industry needs to step up if it wants to compete, attract and retain talent in today’s job market.

Wayne Werner, a third-generation goldsmith from Baltimore says, “If a person wants to earn a living wage, then they have to leave [their current employer] and start their own business. This acts as a drain of skills on the jewelry industry. We have the great houses, Fabergé, Cartier, Tiffany’s, Boucheron, those houses were paying ateliers so that younger [craftspeople] could learn from the journeymen and the master craftsmen. This system still exists in Europe but has fallen apart in the U.S.”<sup>15</sup> Supporting this statement, PayScale.com reports that with 5–10 years’ experience as a bench jeweler, one can expect to earn a median salary of \$35,000/year, while if that same jeweler were to stay with that company another 10 years, they would realize a salary increase of only \$500 per year, maxing out at a career high of \$40,000.<sup>6</sup>



*Figure 7* Payscale.com offers this interesting insight that those who are willing to do repair work will pay for it by receiving a lower-than-average salary.<sup>6</sup>

Professional training programs reinforce low-pay expectations by informing their students that \$15–25/hour is what 67% of them should expect to be paid, with only 15% being able to make more than \$30/hour. College programs project that 50% of their students will be paid between \$15–\$20/hour and only 27% will be able to earn up to \$25/hour or more (Snapshot).

A CNBC analysis concludes the average college student graduated in 2018 with a student loan of \$37,172.<sup>16</sup> The State of Pennsylvania estimates a \$40,000 student loan repayment will cost about \$444 a month and requires an income of \$66,612.00/year to support payments.<sup>17</sup> According to *Forbes* magazine, “19% of workers reported compensation as the top factor for leaving a job or ‘hopping’ to jobs with a competitor. Lack of growth was cited as a reason by an additional 13% of younger workers as a reason to leave a job.”<sup>18</sup>

Here is a comment by a Snapshot respondent: “[It’s] more difficult each year for advanced bench jewelers to make a move into other markets without opening up a shop of your own. [I’ve] talked to over 70 retailers with one offer at 30% below the national average rate per hour, which is what I was making 20 years ago.” Another respondent offered, “We need to pay them a good living wage in return and offer them a career path forward with benefits that enrich their lives both within and outside of the workplace.”

In another article in *Forbes* by Louis Efron, he states, “Creating career paths that are well communicated and understood by employees is not something most companies do well. Even in the best-case scenario where managers are holding regular performance reviews with their employee, employees often don’t

understand how to move either horizontally or vertically in an organization.... But, for any employee that is worth retaining, a manager must make clear to them how and where they can move forward on their career path."<sup>19</sup>

One of the opportunities available to the jewelry industry is to retrain, to offer horizontal career-path engagement to its incumbent employees. "To be successful in this kind of economy, experts say workers have to be multi-skilled and able to retrain for new jobs throughout their career."<sup>20</sup>

This means that a bench jeweler can expand into CAD/CAM or other technical roles that engage them while providing a higher profit center for the business, thus justifying higher pay levels for the employee. A few successful industry organizations, such as Rio Grande, already incorporate this approach into their operations. In support of this, the McKinsey survey reports, "The rapid pace of technological change means that there is a need to upgrade incumbent workers skills."<sup>4</sup>

In an interview regarding compensation with David Geller, author of *Geller Blue Book for Jewelry Repair*, he said, "Shop profits should equal showroom profits" as a way to bring in the cash flow needed to provide equitable pay and benefits for bench jewelers.<sup>21</sup> For example, if a business is able to get a three-time markup on goods in a showcase, then that business should also be taking a three-time markup on repairs. Shops are not charging enough for labor in order to support and retain their bench jewelers with a living wage. It is the bench jeweler who provides the value and customization that today's client demands.

In the Big Survey, 67% of jewelry stores say that word-of-mouth marketing regarding their high craftsmanship is what differentiates them from other jewelers. In an interview with Blaine Lewis, he commented, "Many of the jewelry stores that went out of business in the last decade did not provide in-house services, they were just resellers. And those who make, repair and repurpose jewelry are doing well in today's marketplace."<sup>8</sup> A Snapshot response offered this insight: "It is a changing profession. I believe that a skilled craftsman or an original designer will always find a market if they are open to change and ready to adapt to new markets, tools, and technology."



*Figure 8 Custom-designed ring using CAD/CAM by Nanz Aalund (Image courtesy of Blue Heron Jewelry Co. Poulsbo, Washington, USA)*

Of jewelry stores that are currently thriving, “95% indicate that custom design and manufacture are a high profit center.” Onsite jewelry repair was one of the main points of distinction between successful businesses and struggling ones, “with 85% of those doing well reporting that repairs are a lucrative way an independent jeweler can stand out in a competitive marketplace.” When asked which area jewelry stores get their best return on effort and their best margin, the highest percentage was 39% in both these categories—twice as high as any other profit center. (The preceding statements are from the Big Survey.) It is clear that the need for highly trained goldsmiths to perform these services are essential to successful jewelry businesses.

## Industry Expectations

Where the data revealed known challenges was between industry expectations versus jewelry school and training program graduates. More than half of jewelry manufacturers expect recent graduates from any educational program to have advanced skills. Wholesalers seem a little more realistic with their core-skill expectations by being willing to accept a higher percentage with intermediate-level skills. While 90% of all manufacturers expect program graduates to be at an intermediate-skill level, over half (55%) expect to hire only at advanced levels (Snapshot).

Data from the McKinsey survey indicate that two-thirds of employers have little to no interaction with education. In the jewelry industry this means businesses are expecting to hire at journeyman-level skill sets while not offering support for skills training nor communicating to educational programs what skills and proficiency levels are required for hire. These advanced skill levels are not what most programs, either college or professional, can provide.

## Educator Expectations

While 70% of educators responded “yes” (McKinsey) when asked if they were preparing their students for employment, less than 50% of students believed their education would improve their chances of finding a job. One college-level jewelry program that is bucking this trend is the Fashion Institute of Technology (FIT) in New York City. “The change [in FIT’s curriculum] was driven by the shift in the industry,” states FIT Professor Wendy Yothers. “Newly minted jewelry designers and bench jewelers without experience cannot earn enough to be self-supporting. The labor market in New York is full of people who will work for less than \$16 an hour in a semi-skilled capacity at the bench. That’s not enough to enable our grads to move out of their mother’s basement in New Jersey.” To address this issue, Yothers initiated a redesign of the curriculum at FIT. “We asked the members of our industry what they needed to place our grads in a higher tier of salary and they answered, ‘Good model-makers and craftsmen who can read and correct an STL file to get the glitches out for production, designers who are Rhino literate

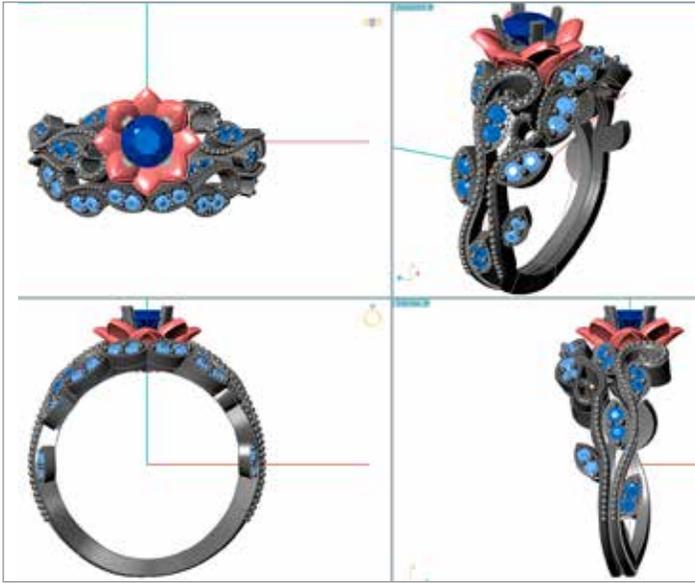
and who understand the materials, the making of jewelry well enough to design jewelry that can be produced both digitally, by hand, or with a combination of both as problem-solving/production tools."<sup>22</sup>

Remarkably, Snapshot revealed that 52% of current bench jewelers do not consider CAD/CAM skills to be applicable to them. Likewise, 20% of colleges and students across the field also clicked "not applicable" for CAD/CAM skills. An interesting statistic came from professional jewelry trade schools and their students, which indicated that 80% of graduating students are below intermediate skill levels in CAD/CAM, whereas 30% of industry is expecting to hire at advanced levels of CAD/CAM skills (Snapshot). This is a clear indication that if industry wants to move forward with this vital technology, it will need to step up and provide educational programs with state-of-the-art equipment to support the increasing demand by industry and students for training in CAD/CAM.

### **Expectation Mismatches**

A lack of good communication and mutually agreed-upon terms and job titles contributes to educators' misunderstandings of what industry needs, which led us to the Dunning-Kruger Effect (Cornell University, 1999). This study<sup>23</sup> illustrates how difficult communication can become when a person doesn't know how much they really don't know. The study reveals a cognitive bias in which relatively unskilled persons suffer illusory superiority, mistakenly assessing their ability to be much higher than it really is. Dunning and Kruger attributed this bias to a metacognitive inability of the unskilled to recognize their own ineptitude and evaluate their own ability accurately. Their research also suggests corollaries: Highly skilled individuals may underestimate their relative competence and may erroneously assume that tasks which are easy for them are also easy for others. They postulated that the effect is the result of internal illusion in the unskilled, and external misperception in the skilled. "The miscalibration of the incompetent stems from an error about the self, whereas the miscalibration of the highly competent stems from an error about others."<sup>23</sup> The Dunning-Kruger Effect has a direct bearing on the mismatch in expectations between industry practitioners and educational outcomes. This is the reason that what an educational program interprets as an advanced skill level and what a manufacturer thinks is an advanced skill level are two very different things. This mismatch is why it is important for industry to engage with and inform educators of their expectations.

An example of this mismatch from Snapshot is that 15% of colleges rated their graduates to be at advanced levels when working with gold, yet another 27% replied that working with gold was not applicable to their programs at all. In comparison, 40% of jewelry manufacturers, both retail and wholesale, are seeking advanced gold-working skill levels from new hires.



*Figure 9 Custom design by Nanz Aalund, "Vines and Roses" wedding set  
(Image courtesy of Blue Heron Jewelry, Poulsbo, Washington, USA)*

Of all manufacturers responding to Snapshot, 47% expect advanced skills in design for wearability, function, planning and production, while only 18% expected advanced illustration skills. This begs the question: How are these advanced designs to be communicated? One might think that CAD would be the obvious answer, yet when we look at the data, 25% of manufacturers marked CAD as not applicable. In regard to design for manufacturing processes, over 42% of wholesale manufacturers are looking to hire at advanced skills. In contrast, graduates will be at intermediate or lower skill levels by large margins, with professional training programs projecting that 65% of their graduates and college programs projecting 72% of their graduates will fall below advanced levels (Snapshot).

Regarding safety practices, schools think that 70% of their students are graduating at advanced levels. Jewelry manufacturers expect to hire with 90% intermediate to advanced skills in safety. While this would seem to be a case of educators approaching manufacturers needs, we suspect that this, too, is a mismatch in understanding of the scope of professional safety practices.

Of manufacturers, 80% expect to hire at intermediate to advanced skill levels for technical problem solving such as casting defects or production problems, of which over 35% of manufacturers expect new hires to be at advanced levels. Both colleges and professional programs say that 30% of their graduates are advanced in these skill sets, but we hear from respondents to Snapshot that this is not so. Here is an example of a manufacturer's comment: "We have been disappointed with basic Freedom skills and wax assembly skills coming out of some of the

schools. Too many beginner-level graduates, especially from the short programs. Speed has also taken a great deal of time for many new graduates to build up, and this notion of productivity should be instilled to a greater extent coming out of schools.”

The expectation of ability from manufacturers in repair, restoration and redesign is that 71% of new hires should be at advanced levels in these skills, while over 13% of college programs responded that this was not applicable (N/A) to their programs and 52% of other college programs cite only introductory levels in repair. Professional jewelry programs are expecting 27% of their students to be at advanced levels, while the majority (over 50%) of their graduates will be at intermediate levels.

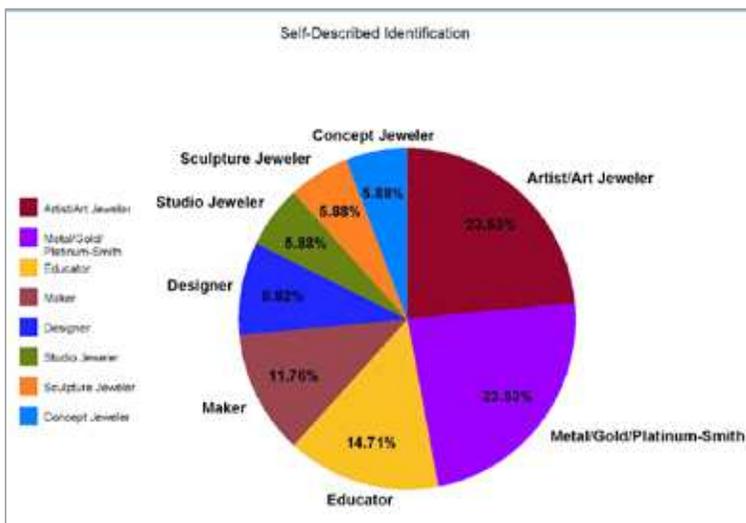
Ninety percent of industry is looking for intermediate to advanced skill levels in jewelry procedures such as construction, setting and finishing, with 45% expecting to hire at advanced levels in these skills. Professional jewelry training programs answered that 45% of their graduates are at advanced levels for these skills, an unusual match in our survey. Colleges expect 92% of their graduates to be at the intermediate to advanced levels for these procedures, but it is clear, again, that what industry means by “intermediate and advanced” is different from what colleges mean. Snapshot data indicate that jewelry industry members have inflated expectations of advanced skill sets as they look to hire.

If industry is to prosper, it needs to communicate with educators. Currently, both parties have unrealistic expectations, different meanings and evaluation levels for the skills we surveyed for. “With 40% of employers citing skills as the main driver for hiring, it is noticeable that less than 30% of employers interact with educators or training programs for their field. Our research strongly indicates that for any industry to get the workers it needs, those industries must engage with education” (McKinsey). In order to facilitate the commitment of current workers to stay in the field, jewelry businesses have to increase compensation and upgrade the skills of incumbent workers with additional training options.

## **Nomenclature**

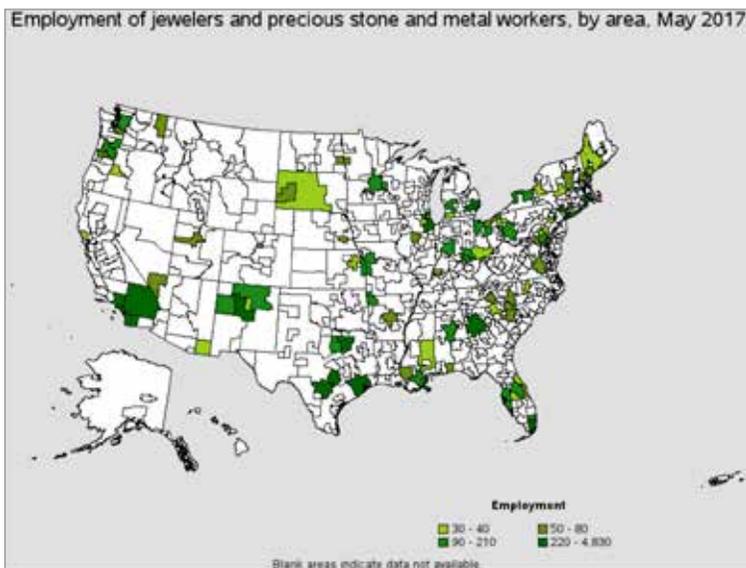
Names, titles and job descriptions mean different things to different participants across the spectrum of jewelry practice. In Snapshot, comments indicated there were a number who did not see themselves reflected in the categories we asked about. Art jeweler and studio jeweler were some of the names people called themselves, with 20% of the respondents self-designating as “Other.” Today, for example, the term “jeweler,” as mentioned earlier in this paper, has become a ubiquitous job title covering everyone from sales clerks to master goldsmiths. Other definitions of jeweler encompass manufacturing houses, chain stores and hobbyist craft makers. “Jewelry designer” is another term that has become increasingly vague over the last several decades. While once it was aligned with duties similar to an industrial designer (which might mean not actually making the jewelry), today it can mean a hobby maker, a craft workshop instructor or a CAD model maker. In job listings the description for jewelry designer often lists the hand skills required of a bench jeweler.<sup>24</sup>

The Titles survey from Donna Sweigart and Pat Madeja et al. offers this question: “Much of our research focused on how jewelers refer to themselves, but what about the titles we use to describe each other?” The Titles survey continues by asking some strategic questions: “What value do we place on each other’s skills? How much has changed? Which skills and how many skills is a single person expected to master?” In order to answer these questions, it was necessary for the authors to analyze terminology in the modern job market for jewelers. The Titles survey assessed online job listings from sources such as Indeed.com, Monster.com, LinkedIn.com and directly from websites of major jewelry companies such as Tiffany & Co. and Stuller. The job listings the Titles survey found fell into categories of designers (who hand illustrate), CAD model makers, and the traditionally titled (according to the task they perform) goldsmiths, silversmiths, machinists, polishers and stone setters. Most job listings seeking traditionally titled jewelry workers were, in actuality, looking for candidates with expertise in multiple areas such as casting, fabrication and setting. Tiffany & Co. was the only company who did not require a multi-skilled jeweler in any of its listings. Conversely, Mark Mann, formerly of the GIA, says that larger organizations do not use terms like bench jeweler or goldsmith but speak of jewelry industry specialists and generalists, with those at the master levels being multi-skilled generalists.<sup>25</sup> If we as an industry cannot define our own job titles with clear terms and certifiable career pathways to attain these titles, how can educational programs hope to offer relevant training?



*Figure 10 This is a chart from Sweigart and Madeja’s paper showing the makeup of their respondents.<sup>1</sup>*

In our research we discovered that, partly due to variances in nomenclature, statistical information on the jewelry industry can be hard to find. As an example, the map in Figure 11 from the Bureau of Labor Statistics (BLS) shows where jewelers are employed. The white areas are where no data were available.



*Figure 11* Accurate statistics can be hard to obtain as evidenced in this map where white areas show no data on jewelry employment could be collected.<sup>8</sup>

## EDUCATION TO EMPLOYMENT

In an interview with David Geller for this paper, he suggested that a way to improve the productivity of master craftsmen was to hire a “high school kid” to do polishing.<sup>21</sup> Unbeknownst to many in the jewelry business, the days of finding a high school kid “who’s good with their hands” to apprentice on the cheap are over. A confluence of minimum wage laws, push for college attendance by parents, and educational policies over the last few decades have all but eliminated this scenario as a possibility. To understand the changes which have created these circumstances, we need to examine the pressures facing education over the last 20–30 years.

### Career and Technical Education (CTE)

Career and technical education (CTE) has traditionally played an important role in U.S. high schools. The first federal law providing funding for vocational education was passed in 1917, even before education was compulsory in every state. The Smith-Hughes Act of 1917 preceded the passage of compulsory attendance laws; the last state to comply was Mississippi in 1918.<sup>26</sup>

By the 1950s, a different educational philosophy emerged—the theory that students should follow separate educational tracks according to ability. The idea was that the college-bound would take traditional academic courses (English, science, math) while receiving no vocational training and minimal art education. Those students not headed for college would take basic academic courses along with art classes and vocational training or “shop.”<sup>27</sup>

Vocational programs—such as carpentry, welding, or jewelry classes and many of the others available in U.S. high schools and vocational schools—were and continue to be seen as second-rate options for students who have behavioral problems, are from low income families or are otherwise dragging down the academic average. The dumping of underachieving students into vocational programs lowered the GPAs in those programs, thereby providing a rationale for eliminating those programs. As Ken Robinson, Ph.D. argues in his book, *Creative Schools*, “This academic/vocational caste system is one of the most corrosive problems in education. It need not be.”<sup>28</sup>

Due to this perception, involvement in CTE has been on the decline for several decades. Starting in the 1980s, states increased the number of core academic courses required for high school graduation and began mandating students take additional courses in math, language, and science. These additional requirements, along with a decline in funding and a growing perception that all young people should obtain college degrees, led to a sharp decline in CTE participation. Between 1990 and 2009, the number of CTE credits earned by U.S. high school students dropped by 14%.<sup>26</sup>

According to the *Journal of Industrial Education*, of the 48,000 U.S. shop (CTE) teachers in the mid-1980s, the average age was 55. Few new teachers were trained to take over those jobs once the older teachers retired, so administrators simply closed those programs.<sup>26</sup>

The need for trained technical workers didn't go away when shop classes began to be dropped from curriculums in the 1980s. In fact, according to the 2018 job-outlook report from the U.S. Bureau of Labor Statistics (BLS), the need is rising. BLS predicts, for example, that there will be more machinist jobs than skilled workers available over the next seven years. Compounding the problem is education reform in the form of No Child Left Behind (NCLB). While much of the original rhetoric in NCLB was about improving job readiness and employability, to accomplish its goal NCLB linked federal funding for schools to a demand for ever increasing standardized academic test scores and rising graduation rates.<sup>29</sup>

In 2015 the U.S. Senate re-authorized much of No Child Left Behind (NCLB) with a new legislation called Every Student Succeeds Act (ESSA), leaving in place standardized testing with federal funding tied to it. “In a tragic irony, this focus over the last twenty years has not improved vocational programs at all, but instead focused on testing narrow academic standards to maintain funding levels. Overall, the impact on students, schools and employability has been woeful.”<sup>30</sup>

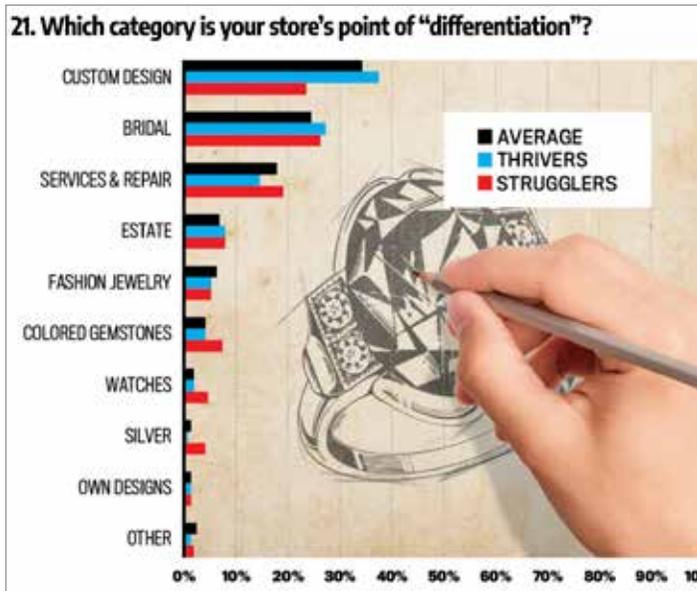
The modern workplace favors those with solid, transferable skills who are open to continued learning. Most young people today will have many jobs over the course of their lifetime, and a good number will have multiple careers that require new and more sophisticated skills. Nevertheless, today's shop classes and other CTE classes offered around the country are dwindling as more schools cut their CTE programs. Many CTE programs now try to push students towards postsecondary training in the form of apprenticeships or certification programs. But this requires industry to engage and provide relevant guidance for certificates and programs to be meaningful and function properly.

As an example, in 2013 the Los Angeles Unified School District, with more than 600,000 students, made plans to cut almost all of its CTE programs by the end of that year. The justification, of course, was the same reason for the 2018 teacher strike: slashed budgets. CTE programs (which include photography, aviation maintenance, audio production and jewelry arts) are expensive to operate. But in a situation where 70% of high school students do not go to college, it is strongly indicated that additional training of some kind is necessary.<sup>31</sup>

Keith Campbell, author of *On The Edge*, an online blog, said, “While I’ve seen some very successful technical and skilled-trades programs in community colleges and trade schools, they are largely successful because they hire teachers who are closely linked to manufacturing. They also have tremendous support from the manufacturing community, including suppliers that provide the very expensive equipment students need to get proper training and local manufacturing companies that offer internships with on-the-job training.”<sup>26</sup>

Historically, as a society we have relied on taxpayer funding to keep CTE and community college programs relevant and running. Currently, training is being left to the trade industries and manufacturers, i.e., those who make the products, often without providing any means for those products to be serviced. When there is no one to professionally install, repair or service those products, the consumers is left to pay the price by accepting shoddy workmanship or complete replacement. While this may seemingly benefit business in the short-term, it is an unsustainable model.

In retail jewelry, 79% of business owners reported that their “reputation for trusted service and jewelry-making skills” was the top factor in driving their continued success. This single factor of trustworthiness in jewelry-making skills was seen as being ten times more effective than other marketing and advertising strategies. Custom design was cited by 39% as providing the highest margins and best return for the effort, while an additional 61% credited custom design as their top “point of differentiation” from other jewelers (Big Survey). These findings reinforce the idea that well-trained goldsmiths are necessary to jewelry business success.



*Figure 12 From responses to question 21 in the Big Survey, we can see how important custom design and manufacturing are for a successful jewelry business. (Image from Instore magazine)*

While two-thirds of employers have little to no interaction with educators, among those who do, Eric A. Spiegel, President and CEO of Siemens Corp. U.S., stated, “Businesses have the responsibility to connect with the educational infrastructure to make sure skills are fulfilling business needs. Curriculum that is molded by industry itself produces skilled, employable graduates.”(McKinsey) Yet, few jewelry businesses support or interact with their local high school, community college, or university jewelry arts programs.

**REPORT ON PROGRAMS: CURRENT PATHWAYS**

In response to the need for the industry to engage and span the education-to-employment gap, MJSA (Manufacturing Jewelers & Suppliers of America) adopted the BEaJEWELER™ initiative. This is the progress they have made.

**BEaJEWELER™ Initiative Report**

While other jewelry-industry associations serve sales, security, and needs of retailers or gem dealers, MJSA is the only jewelry industry association expressly serving the needs of jewelry makers and manufacturers in the U.S. As the sole association for professional jewelry-industry makers and designers, MJSA delivers information about complex tools, intricate processes and B2B (business to business) services that jewelry makers need to stay current with the effective production of jewelry. The BEaJEWELER™ program was developed by the MJSA Education Foundation in collaboration with Blaine Lewis of the New Approach

School for Jewelers in Franklin, Tennessee. This foundation, as a non-profit subsidiary of MJSA, is suited to sustaining educational programs as stated in their bylaws.

Since the launch of the website “BEaJEWELER.com” in 2016, individuals seeking jewelry education have clicked on over 300,000 unique links to jewelry training programs. To the program’s credit, it has compiled a database of 198 jewelry training and educational programs nationwide; however, this database appears to be unvetted and untended. The participating schools maintain their current links to their websites and provide basic class schedule information. The number of searches for jewelry training programs (at the time of writing this paper) is over 317,470. This number indicates how many times the schools listed on the website have been viewed, indicating a lot of interest in jewelry education.

Unfortunately, there is no way to tell the number of jewelry companies that are checking into the BEaJEWELER.com program. No membership is required and jewelry businesses do not have to register to use the site. Where the BEaJEWELER™ program has enlisted schools from across the country that have jewelry classes, it is struggling to find professional jewelers who are willing to be mentors to suitable apprentice candidates.

While the BEaJEWELER™ program can be hard to find on the MJSA website, they are actively seeking the participation of jewelry industry members from every sector to participate in any way they can, but of the over 47,000 MJSA members, only 16 have signed up. The program’s goal—to build more robust hands-on/in-business training opportunities for those who have completed academic jewelry course work—is being stifled. Primarily, the lack of meaningful participation by jewelry business owners, who could directly benefit from this program, is a major obstacle.

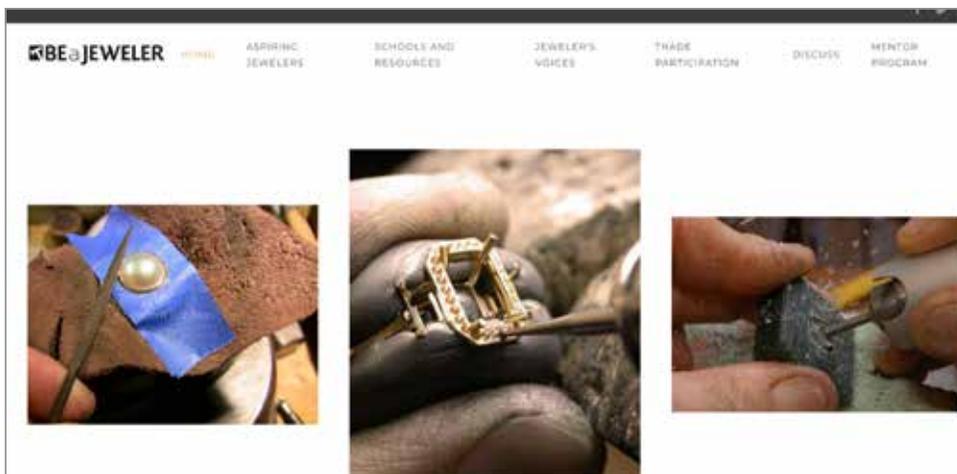


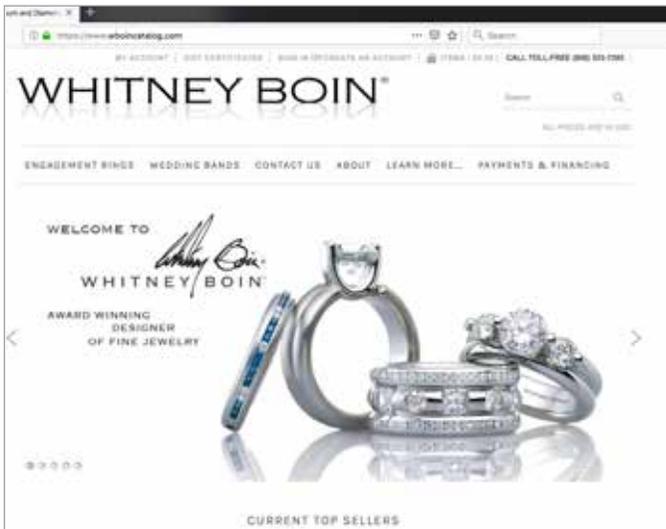
Figure 13 The BEaJEWELER.com web portal<sup>34</sup>

## Traditional Training Pathways

With changes to society and reductions in the number of “Mom and Pop” jewelry stores, the family training route common in the past has become less of an option, while it never served those who wanted to enter the field but were not part of a family jewelry business. In the 1990s, the creation of the Ganoksin Project and similar initiatives was partially fueled by a desire to make it easier for those outside the family training system to enter, to prosper. The Ganoksin Project continues to erode the secrecy that can be encountered in production workshops, where skilled workers might refuse to share information and hide their techniques. Anyone who has worked in the industry over the last 40 years has run across this behavior and, if the entry-level worker were female, it was often even more prevalent. So, for many, if you wanted to become a jeweler you needed to find the information from more standard educational paths. This section touches on some of the pathways into the field, with a view to the present situation. Current URLs for the educational institutions in this report are listed by order of appearance in the appendix to this paper.

## University

Universities can still provide a good beginning for someone entering the industry. Since the 1940s universities have had jewelry programs in their fine arts departments and, from the 1960s to the present, produced many jewelers who entered the field through craft fairs, working for other makers, and entry-level jobs in the jewelry industry. Throughout the 1980s those who stayed in the jewelry industry flourished as independent makers and designers. This became known as the American Jewelry Design Movement, examples being Whitney Boin, Michael Bondanza, Alan Revere, Barbara Heinrich, Jane Bohan, Thomas Mann, Paul Klecka and many more.



*Figure 14 Whitney Boin®, one of the pre-eminent designers from the American Jewelry Design Movement<sup>35</sup>*

Since then, there has been a shift in college programs as the instructors who valued trade skills retired and were replaced by fine art academics. This resulted in “echo chamber” environments in universities that looked inwards. Today, jewelry skills needed for restoration, working with gold, complex stone setting, business, customer interaction and high levels of hand skills are no longer valued as highly as conceptual, artistic, written and theoretical work. Note: Many students in the university system are very passionate about becoming skilled jewelers. They are motivated by the tactility and cultural importance of jewelry. University classes can serve as part-time training and can become an important component of a self-directed hybrid educational path into the jewelry industry. There are cases of people attending multiple schools in order to gain the skills and overview they want. In the last decade or so, there has been increasing budgetary and ideological pressure on college jewelry programs, resulting in reduced student-teacher contact time, reduced technical information and, in some cases, an increased disdain for jewelry industry practice. In Snapshot a Canadian educator stated, “Many institutions [offering jewelry programs] in Canada have directed their education away from technical skills for metalsmithing to place a greater emphasis on artist expression.” A bench jeweler provided this quote from Snapshot, saying, “Most jewelry programs in colleges and universities are not industry related, but if I see one more [metals] grad student making \$12 an hour at Jareds, I am going to scream.”

University student strengths lie in their problem-solving abilities, knowledge of jewelry history and exposure to diverse techniques as well as thinking and writing skills that are often not required in a trade education. Victoria Lansford and Sara Commers, jewelry business owners who were interviewed for this paper, mentioned they specifically hire graduates from college programs because they are looking for employees who have developed problem-solving capacities and have a passion for the material.<sup>36</sup> Todd Reed also hires for these reasons, with 85% of his bench jewelers being college graduates. Being the unique designer Todd Reed is, he has established in-house training for his staff, bringing their skills to the level of excellence he requires.<sup>37</sup>

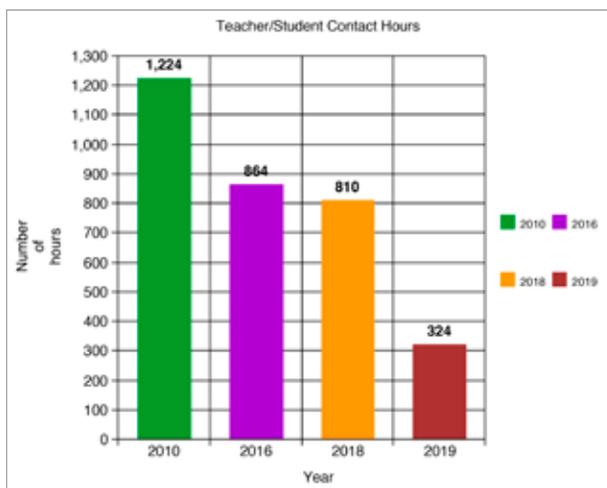
State universities are normally quite affordable (under \$6,000 a year) and some, like Tyler School of Art in Philadelphia, have great facilities with a multi-million-dollar 3D printing lab. Tyler has a number of graduates working in the jewelry industry with their path into it being through their digital skills. At Alberta College of Art and Design (ACAD), Charles Lewton-Brain’s former institution, this was evidenced by having graduates in every manufacturing shop in Calgary. They had a manufacturing overview but hand skills were at intermediate levels. However, their digital abilities in CAD/CAM and laser use got them in the industry door, and several years later their hand skills were exceeding industry standards.<sup>9</sup> From Snapshot: “I have found that individuals coming from a college BA or BFA background lack the technical skillset acquired in jewelry trade school or apprenticeship; however, those who find a path to study both end up uniquely positioned to not only produce unique work but also to speak with elocution on their work and jewelry as a whole.”

Unfortunately, there has been a loss of jewelry programs in state universities across the U.S. For example, in Washington state alone, Central Washington University, Western Washington University, the University of Washington and other smaller programs at community colleges have all disappeared over the last few decades. It is not a lack of demand but rather an imposition of barriers to attendance by administrations at universities. These changes have been going on for some time, causing programs to reduce staff, technicians and student numbers.

For instance, in the ACAD jewelry program in Calgary, Canada, in the last five years courses were reduced from 25 to 7. When jewelry history, jewelry design, gem setting and the 3D digital class were taken away from the jewelry program, it was evident that this was a purposeful reduction of skill-based teaching. With changes in teaching hours, student/teacher contact in jewelry during the four years of education went from 1,224 hours to a maximum of 324 contact hours in the course of a degree. This kind of reduction is quite common in North American university-based jewelry education.<sup>9</sup>



*Figure 15 Reduction in number of jewelry courses at ACAD by year is an example of how colleges have removed jewelry skill-based classes.<sup>9</sup>*



*Figure 16 This image shows reductions in the number of contact hours a student would have with a jewelry instructor at ACAD during their college program.<sup>9</sup>*

### Community Colleges

Community colleges began in the 1860s. One of the factors that led to community colleges and universities developing craft (and jewelry) programs was the 1918 Smith-Sears Vocational Rehabilitation Act and the establishment of government vocational training mandates, in concert with veterans’ organizations.<sup>38</sup>

Development was accelerated with the 1944 G.I. Bill. By the 1960s community colleges were opening at the rate of one per week in the expectation of diplomas, resulting in higher wages. Community colleges became ever more vocationally specialized in the 1970s and 1980s even while continuing to concentrate on preparation for four-year degrees. In 2016 it was noted that 49% of all students graduating from a four-year college had enrolled in a community college in the previous ten years.<sup>39</sup>

Vocational training remains an important role for community colleges, but an increase in immigration prompted a greater need for English as a Second Language (ESL), which has altered priorities and budgets in community colleges. Even though their mandate and direction has changed, community colleges could be seen as a very important recruiting tool for the jewelry industry for several reasons. Their role includes the idea of job and career training, and they respond to the pressure from the industries they train for. Their students include people wanting to improve their lives, upgrade, retrain for another career or move towards a university education. Some community colleges in North America have good jewelry programs. Where community colleges excel in vocational training, the industries concerned are engaged with the curriculum by providing feedback. Examples include EMS (Emergency Medical Services) training, dental technicians and welding. In programs where industry did not engage with the community college, those programs languished.

Unfortunately, many jewelry programs at community colleges have been closed over the last 20 years due to the lack of industry involvement, high cost of equipment, ventilation, health and safety issues. Some have survived as continuing education programs, no longer offering college credits for jewelry classes. In both universities and colleges, the role of continuing education should be mentioned. Short courses, workshops, and perhaps some sequential classes in jewelry skills may be offered. These continuing education classes can be a recruiting method for the jewelry field. A small number of students will use continuing education classes to gain skills needed for jewelry industry employment. If industry becomes engaged with continuing education courses, it can be a way for manufacturers to propose curriculum and find potential new hires and trainees.<sup>40</sup>

There are some successful jewelry programs in community colleges with some programs moving towards granting a four-year degree. The following schools cited here are just examples:

- George Brown in Toronto is an example of an excellent community college/trade-school program that brings academic rigor and solid skill sets to the education of its students. It is currently the most important jewelry training option in Canada.
- Texas Institute of Jewelry Technology in Paris, Texas, has been a good contributor to jewelry industry education. The teachers at this program are dedicated and pass the JA Masters-level certification tests. Class sizes are small with a 1:12 teacher-student ratio. Paris, Texas, is affordable at under \$4000 a year. The curriculum is tested against industry needs and they attend many industry trade shows to consult with leaders in the jewelry field.
- Vancouver Community College has a multi-year jewelry program which prides itself on job placement, with 98% of their graduates working in an arts-related field five years after graduation. Karin Jones, an instructor there, comments, "Starting pay in jewelry repair or manufacture usually doesn't pay as much as the jobs our students are finding in other arts-related positions, and there isn't the same level of personal satisfaction." (Snapshot)



*Figure 17 Vancouver Community College jewelry program web page. It is worth noting that most images from schools had a young woman pictured as a jeweler. Are these programs consciously marketing this career to women?*

*(Image source: <https://www.vcc.ca/programscourses/program-areas/program-highlights/jewellery-and-gemmology/>)*

### **Professional Trade Schools**

There is a long history of small trade schools in North America. Most of them were private (up to 70%) and continue to be so. Blaine Lewis of the New Approach School in Knoxville, Tennessee, suggests that many jewelry trade schools were strongly affected by the invention of the quartz watch in 1969, because a good part of their training and income was supported by watchmaking. He says a number of small trade schools went out of business, thus reducing the pathways into the jewelry industry.<sup>8</sup> Small regional trade schools had an intimate and responsive association with the jewelry industry in their areas. Today, for a region the size of North America there are relatively few private trade schools operating for the jewelry industry. A number of the schools present in the 1980s have closed in the last few years. For instance, one of the most well-known schools, the Revere Academy, closed upon the retirement of Alan Revere in 2018. These regional trade schools were an important part of the fabric of American jewelry education, with thousands of working professionals and aspiring jewelers attending classes and workshops to upgrade their skills.

### **GIA**

The Gemological Institute of America sets the gemology standard for North America, and their bench jeweler program does a reputable job of introducing trainees to the skills of the trade. Along with prospective goldsmiths, there are anecdotal reports of the sons and daughters of overseas factory owners taking the courses so they can better understand jewelry manufacture when they return to their country of origin. GIA is large and very well equipped by donations through industry because of their non-profit status.

## New Approach School

Blaine Lewis began teaching with traveling workshops and has now been an educator for over 30 years at his New Approach School located in Knoxville, TN. He organized Tiffany's in-house program and pioneered the use of large-screen televisions and magnification for teaching jewelry techniques, which is now considered the normal method. His teaching practice utilizes great visuals, kinetics and cognitive processing techniques in the curriculum. In the three-month intensive at New Approach students, rapidly progress gaining the skills it would normally take three years to acquire. He has taught national and international students. A number of professional jewelers, college professors and metals graduates have studied with him to upgrade their skills. Blaine has a staff of instructors as well, and the new facility has multiple classrooms to respond to industry's future needs.



*Figure 18 A classroom at the New Approach School, designed to facilitate excellent instruction (Image courtesy of Blaine Lewis)*

## North Bennett Street School

This program originated in 1881 and has always been vocationally oriented. Their founding mission was to enable immigrants to adjust to their new country by learning the skills needed for gainful employment.<sup>41</sup> The jewelry program was historically quite traditional in its technical and teaching methods, utilizing the "Sloyd" system of manual training. This Swedish method focuses on the development of character, intellectual capacity and hand skills, which includes an understanding of tools, materials and processes. It also encourages a great sense of care and a commitment to excellence. In the last decade or so, a number of vigorous, bright female instructors changed the curriculum and have led the school towards a more current, contemporary stance while still maintaining the vocational goals and outcomes for its graduates.

## École de Joaillerie de Montréal

This combination institution is part vocational, part craft/art jewelry center and is a provincially supported school. Like its sister school in Quebec City, it is a Cégep, which offers apprenticeship support and vocational training in jewelry to young people and retraining for older workers. The courses help provide Quebec with employable jewelry industry people but also train entrepreneurs. At a recent Quebec craft fair, almost all of the successful jewelers had graduated from one of these two schools. Examples of the courses available at the École de Joaillerie de Montréal are short intensive workshops, semester-long classes as well as professional training at industry-approved levels while also providing a bridge into design and art jewelry courses. They are required to engage with industry to maintain currency in their Cégep programming



*Figure 19* The École de Joaillerie de Montréal successfully bridges jewelry design, art jewelry and trade instruction. (Source: <http://www.ecoledejoaillerie.com/?lang=en>)

## Craft Centers and Schools

Craft centers are often community based and offer classes in various media. Some were founded by the Public Works projects in the 1930s during the Depression. They serve a broad range of practitioners as well as aspiring jewelers. Often craft centers can act as a bridge to industry when teachers who work in the jewelry industry are there to encourage people to pursue a career in the field. While most jewelers acquire their skills in their late teens and early 20s, there are a noticeable number of Snapshot respondents who are older. Thirty percent of all respondents reported learning their skills after age 36 and, of those, fifteen percent learned after the age of 45. This points to interest generated by the do-it-yourself (DIY) movement from the early 2000s and possibly by individuals seeking a second

career. A number of entrepreneurs in the jewelry field came into the industry or increased their skills and understanding through craft centers. A Snapshot survey quote: “A huge part of this field is non-professional hobbyists and schools catering to these people.”

Just a few examples will suffice, but there are hundreds of craft centers worthy of mention. Most craft schools will not have a focused, coordinated curriculum towards certification but may have some courses that are sequential in a technique, usually at basic, core-skill levels.

- Lill Street in Chicago is an example of a large community craft and art hub, with over 5000 students in different subjects. Their jewelry classes can be many weeks long. They are, for instance, offering 31 different jewelry classes and workshops the spring of 2019.
- The 92nd Street Y in New York City is an important example. This is a major community arts center started in the 1930s with world-class instructors (e.g., Itzhak Perlman teaches violin). They have four jewelry studios and have one of the most vigorous jewelry programs around with over sixty classes a week in addition to short workshops. There are over 1,500 students a year just in jewelry courses. They have an international jewelry residency and support an ongoing lecture series with the top fashion and jewelry designers in the world. The director, Jonathan Wahl, says, “Professional industry jewelers attend classes to refine their skills.”<sup>42</sup>
- Bainbridge Artist Resource Network (BARN) was started in 2012 as the Bainbridge Island Community Woodshop. Craft practitioners in fibers, metals and glass came together to share the costs and space needs of having larger industrial tools in a makerspace. They received donations of jewelry-, wood- and metal-working tools (including CNC mills), looms, glass working, 3D printing and jewelry casting equipment. The community raised \$7.5 million for a new facility for BARN, which was dedicated in 2017. There is a well-equipped 12-bench jewelry studio with a separate room for raising. In 2019, BARN will launch certification programs in four of the studios including one in jewelry and it was granted accreditation by the State of Washington WorkForce Coordinating Board for four certifications, one of which will be Advanced Jeweler’s Apprentice.
- Mendocino Art Center in northern California is an example of a craft and art school that operates year-round and has a strong summer following. There are a number of important craft schools that are known for their spring/summer/fall sessions. Mendocino has a history going back to the 1940s and has been influential in the development and reputation of the town and that area of California. Students come from across North America and from around the world. They have jewelry skills workshops and short courses.



*Figure 20 As a community-based craft center, Bainbridge Artist Resource Network has received state accreditation for conferring certificates in jewelry apprenticeship. (Image source: <https://bainbridgebarn.org/youth/>)*

Other such crafts schools of renown include:

- Penland School of Craft in Penland, North Carolina
- Haystack Mountain School of Crafts in Deer Isle, Maine
- Arrowmont School of Arts and Crafts in Gatlinburg, Tennessee
- Touchstone Center for Crafts in Farmington, Pennsylvania

All of these craft schools offer jewelry workshops and have had thousands of students, some of them from the jewelry industry. The majority of students are craft oriented, serious hobbyists and those who are tied into craft-related jewelry production. Nanz Aalund notes that many of the instructors at these craft schools are also represented in the American Craft Council shows.

Another type of craft school is a self-identified jewelry-specific school, oriented towards aspiring jewelers and second careerists. They often have experienced jewelry-industry people involved as students or teachers and do offer sequential courses and quality courses on subjects like gem setting or engraving. A number of their students move on to have careers in the field, own companies or sell work but are usually outside the jewelry industry's sphere of notice. They often rent benches to people, and so, like micro spaces, can provide equipment to support on-line learning. Industry might consider partnering with these schools as ways to train their staff. Examples:

- Quench Jewelry Arts in Minneapolis, Minnesota
- Metalwerx in Waltham, Massachusetts
- Creative Side in Austin, Texas
- JAI (Jewelry Arts Institute) in New York City

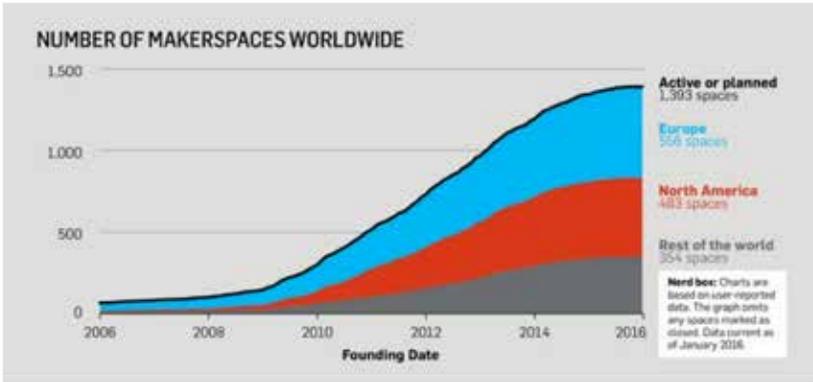


*Figure 21 Quench Jewelry Arts is one of a number of dedicated jewelry craft schools across North America. (Image source: <https://quenchjewelryarts.com>)*

## The Makers Movement and Makerspaces

The Maker Movement was introduced to Santa Fe Symposium® audiences by Nanz Aalund in her 2018 paper and presentation on Future Trends in Jewelry Design. She wrote, “In a society overwhelmed by the onslaught of screen engagement and digital surveillance, this cultural trend is an attempt to maintain humanity through highly tactile engagement. These movements value artisanal and handmade, with a reverence for materials.”<sup>43</sup> It is quite clear that people need effectance, to have agency on things, to make objects. Author and educator Mick Broderick writes, “Our increasing urbanization has largely removed us from the need to get our hands dirty—yet there is an almost primal desire to understand how things work and to embrace the materiality of things.”<sup>44</sup>

It is clear that people need to make. The Maker Movement is important as a potential recruiting area for the jewelry industry. The reduction in education for making objects has fostered growth in the DIY and Maker Movement, prompting the development of shared workshop spaces and dedicated micro spaces. A 2015 survey pointed out that 1.8 million Americans attended makerspaces that year. There are several thousand makerspaces, collectives where tools, learning and making skills are shared and fostered. In 2016, there were 14 times as many as in 2006. They are sometimes called Hackerlabs, Fablabs or Innovation labs. Steve Davee, a director at Maker Ed, points out that such places have been around for a while: “We called them woodshops, home-ec centers, model shops, and computer labs.”<sup>45</sup>



*Figure 22* Since 2006, there has been a 14 times increase in the number of makerspaces worldwide.<sup>45</sup>

Artisan’s Asylum in Boston, Massachusetts, is an example of a makerspace with a dedicated, well-equipped jewelry workshop. About 180 people rent studios and over a thousand members buy access to the classrooms and workshops. Karen Christians, founder of Metalwerx, also created a full jewelry-teaching workshop and casting studio at Artisan’s Asylum, where classes continue to be held. Members are about one-third artists, one-third engineers and one-third scientists. Their equipment includes massive laser cutters, CNC tooling, a 3D printing lab and other high-tech equipment.

### Micro Spaces

Across North America in the last decade or so, there has been a rise of what we are calling “micro spaces.” As with the Maker Movement, this is a response to the removal of shop classes.

A micro space is a small, well-equipped workshop that rents out benches and equipment access. It is an owner’s workshop/studio that they subsidize by bench rental and teaching introductory classes. Where they become visible beyond their immediate community is when they expand to bringing in well-known teachers. These micro spaces are a pathway towards a jewelry practice and serve as a recruitment pathway to further education and into the jewelry industry.

A more advanced version of a micro space is the Vancouver Metal Arts School, where a single skilled industry professional, Gerold Mueller, offers small classes, often under 10 students a year, in a program lasting up to three years. It emulates the German apprenticeship training method in combination with a design education. He provides 22 consecutive workshops/courses.<sup>3</sup>

## Online Education Options

“The difficulty we face is finding appropriate training when we would like to provide advancement for our employees or increase the skill level to meet our design and production needs.” (Snapshot)

In today’s educational environment there is a greater need to construct one’s own pathway. Someone entering the jewelry field today may have a composite, hybrid education whose components are self-directed. Dan Bellamy comments in the Snapshot survey, “You can teach yourself how to become a jeweler if you are willing to invest the reading and viewing time, and have aptitude, and a drive to become proficient at the career.” One of the oldest jewelry-specific sites (co-founded by Charles Lewton-Brain with Hanuman Aspler in 1996) is the Ganoksin Project, now administered by Seth Rosen of International Gem Society. Besides thousands of technical articles, there are over 400 technical videos created by jewelers for jewelers. Ganoksin also has some online video access for purchase. With 30% of all respondents to Snapshot reporting that they learned their skills after age 36, this may point to individuals seeking information for a second career.

One part of putting together a self-directed learning program is online education. In colleges students are continually using YouTube for their education, especially when it comes to technical information. A college student commented in Snapshot, “Most techniques are learned through independent study via student groups or through online resources such as YouTube or metalsmithing sites.” Professionals are accessing online videos for upgrading and retraining, too, while the development of online certification in advanced techniques and organized training curriculums still need professional oversight.

The problem with many web-based jewelry instructional videos is there has been no educational vetting, no cross-checking for accuracy, no verification of correct procedures or safety considerations. Many are done by single individuals with nothing more than ambient music as a background, while other video producers, like Nancy Hamilton,<sup>46</sup> offer basic information oriented towards the hobbyist. While the videos may be fun to watch, they lack pedagogical organization and curriculum sequencing to be effective educationally. Many video makers are not trained instructors and though the procedure shown may be good technique, there is little actual instruction commonly provided by professional educators. While reputable companies like Rio Grande have YouTube channels that organize their videos by subject, most of what is publicly available is very hobby oriented and basic information from questionable sources. This may be useful for initial recruitment to the field but not good enough for professional training or upgrading.

In our research we found several professional-level trainings on subscription-based sites. These provide an opportunity for a shop owner to upgrade their employees’ current skill levels.

- Brad and Debby Simon’s *Bench Television*, for instance, is training from a bench jeweler’s point of view.
- Andrew Berry’s *At the Bench* website has 6,500 members and has served more than 17,300 students over the last four years.

- Kent Raible is an example of an award-winning, professionally skilled goldsmith who teaches online (Figure 23).
- Hans Meevis is another example of a jeweler who has professional projects outlined and taught through downloaded video.



*Figure 23* New to offering online education, Kent Raible provides Masters classes in traditional goldsmith hand skills. (Image source: <https://www.goldenspherestudios.com>)

- Jewellery Training Solutions offers online curriculum based on the Australian apprenticeship system with serious professional, modular training content. This seems to be the most organized trade-oriented curriculum we have found online. Since starting they have had over 4,800 students, of which about half are paid or subscribed. They have partnered with jewelry businesses to create in-house training.
- The Academy of Art based in San Francisco, California, has an academic course with both online and onsite options. They are the only online jewelry program to offer fully accredited MA and BFA degrees, according to Director Charlene Modena and Instructor Karen Chesna.<sup>10</sup> The online and onsite programs provide the same curriculum, and the school has several “hybrid’ students,” which means they are taking some courses in both programs. Students have to buy their own equipment. Tiffany & Co. has visited their program, looking to hire talent.<sup>10</sup>

### Online Invisible pathways

With the growing number of women taking jewelry classes over the last three decades, one might wonder where the jewelers/metalsmiths have gone. Why is the jewelry industry lacking for skilled bench jewelers when there are potentially more than enough new students eagerly paying to learn technical skills? One

student made this comment in their Snapshot response: “The hard part was finding someone willing to apprentice me. Willing to take on a student. This is the part that is failing in our industry, a lot of doors are closed and information is shut off.” With doors shut to them, many former jewelry students have opted to start their own businesses. In Snapshot, 20% of those who self-designated as “Other” reported earning over \$52,000 a year with 65% of them claiming intermediate to advanced business skills. This 20% seem to be self-employed online entrepreneurs who are relatively invisible to the traditional jewelry industry. Using social media to augment their businesses, some are able to offer employment opportunities as well as training to newly graduated jewelry students.

As examples of jewelry businesses started by women who have also provided training for college-educated metalsmiths in their businesses, Sara Commers, owner of Commers Custom Design (a traditional jewelry-store model) in Minneapolis, Minnesota, and Victoria Lansford, business owner in Atlanta, Georgia, (an artist-based business model) and author of *Ancient Techniques in Contemporary Art*, have flourished by utilizing more nimble and progressive pathways.



**Figure 24** Sara Commers outside of her new 3,000 sq. ft. jewelry studio in Minneapolis, Minnesota (Photo courtesy of Sara Commers)

These two business women belong at the opposite ends of the spectrum for the jewelry field, yet they both own and operate jewelry businesses that have employed and trained primarily female graduates from jewelry/metals programs at liberal arts colleges with a successful result. Both businesses remain small with a maximum of four (75% female) employees, yet they are able to offer above-average wages of \$25–\$32/hour and provide skill advancement training to their employees.<sup>36</sup>



*Figure 25 Model Pat Vasquez-Cunningham is wearing Victoria Lansford's chased and repoussé pieces. (Image source: <https://victorialansford.com/product/circes-revenge/>)*

Both of these business women remain relatively invisible to large corporate jewelry business because of their agile utilization of internet collaboration, intimate online marketing presence and online sales. The jewelry industry would be well served to emulate the business practices of these business owners. Todd Reed has also been successful hiring college-trained women as have these business owners and entrepreneurs.<sup>37</sup>



*Figure 26 Todd Reed's home page for his website (Image source: <https://toddreed.com/>)*

## CONCLUSION

As we confirmed with results from both the Big Survey and Snapshot, master craftspeople are “aging off” the bench. We offered a current overview of working considerations, gender balance, pay issues and perceptions of skill levels expected by different parties in the industry. From the Big Survey we learned that 67% of successful jewelry stores say that word-of-mouth marketing regarding their high craftsmanship is what differentiates them from other retail jewelers. Also, Big Survey reported that a reputation for high-quality craftsmanship is 10 times more effective than other marketing strategies. Of thriving jewelry stores, 95% indicate that custom design and manufacture is the highest profit center.

Constant posts on social media from jewelry industry members searching for professionally skilled workers indicate the need for craftspeople trained in these skills. As a response to this, MJSA has undertaken the BEaJEWELER™ program. With 47,000 members who could directly benefit from this program by finding talented workers, one would think that MJSA could expect greater participation than the mere 16 who have signed up to be mentors.

In this paper we have identified the following factors which create barriers that the jewelry industry needs to overcome if they hope to attract and retain future employees. Lack of involvement with education is one factor, but there are others: lack of fair wages, lack of on-the-job training, lack of career advancement and gender bias. These factors not only create barriers for new workers wanting to enter the field but actively work to reduce retention of incumbent employees. We have identified several calls to action for the jewelry industry, which are things that can be done to improve employee sustainability and growth.

To address the jewelry industry’s abdication of its role in communicating with educators, here are a number of actions jewelry businesses could take to improve this situation.

- Jewelry businesses, regardless of size, can reach out to get involved with education. Business owners can engage with local high school shop classes, community college metals programs and maker/micro spaces by sponsoring presentations and meetings.
- Industry members can support and work with trade organization outreach efforts through MJSA’s BeAJeweler™ program.
- Jewelry businesses can support employees in continuing their gemological and jewelry education, “always improving their knowledge and keeping up with trends in jewelry and ethical business practices.”<sup>47</sup>
- Jewelry industry members can share existing professionally developed jewelry curriculum (DACUM) information and industry needs with educational programs.<sup>48</sup>
- Jewelry companies and professional organizations can join forces to affect curriculum at any given college program by endowing a Chair, thereby having much greater impact on curriculum change.

George Brown College, Toronto, Ontario, Canada, has these industry relationship engagement options listed on their website.<sup>49</sup> These points provide a synopsis of ways to get involved:

- Hire students, recent graduates or alumni.
- Host a work placement, apprenticeship or internship.
- Become a program advisory committee member to help develop curriculum.
- Participate in an applied research project.
- Support students financially through scholarships.
- Collaborate on community-focused projects.

Lack of fair wages is the number one reason people do not pursue careers at the bench in the jewelry industry. It also drives employees to leave a current employer and start their own business. Charging correctly for labor provides the cash flow necessary to pay workers a livable wage and offer additional benefits like health insurance and sick leave. As well as inadequate compensation, a lack of on-the-job training and career advancement possibilities are reasons people will leave a job.

Systemic bias against women in the jewelry industry has barred them from entering, receiving in-house training for skills, and prospering, as summed up with this Snapshot quote: “They won’t give you the training, and they won’t hire you if you have a degree.” Because the ratio of women seeking professional training is higher than men coming to the industry, women will be the future leaders in the jewelry industry and this is an opportunity for jewelers to recognize and support women to sustain growth in the field.

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## APPENDIX

URLs of educational institutions mentioned in this paper, listed by order of their appearance

BEaJEWELER™, <http://www.beajeweler.com/>

MJSA, <https://mjsa.org/>

Ganoksin Project, <https://www.ganoksin.com/>

Tyler School of Art, <https://tyler.temple.edu/programs/metals-jewelry-cad-cam>

George Brown College,

<https://www.georgebrown.ca/programs/jewellery-arts-program-f114/>

Texas institute of Jewelry Technology, <http://www.parisjc.edu/index.php/pjc2/main/tijt>

Vancouver Community College,

<https://www.vcc.ca/programscourses/program-areas/program-highlights/jewellery-and-gemmology/>

GIA, <https://www.gia.edu/gem-education/program-graduate-jeweler>

New Approach School, <https://newapproachscool.com/>

North Bennet Street School,

<https://www.nbss.edu/full-time-programs/jewelry-making-repair>

École de Joaillerie Montréal, <http://www.ecoledejoaillerie.com/?lang=en>

Lill Street, <https://lillstreet.com/department/metalsmithing-jewelry>

92nd Street Y, <https://www.92y.org/Class/Jewelry-All-Levels>

BARN, <https://bainbridgebarn.org/>

Mendocino Arts Center, <http://www.mendocinoartcenter.org/>

Penland School of Craft, <https://penland.org/>

Haystack Mountain School of Crafts, <https://www.haystack-mtn.org/>

Arrowmont School of Craft, <https://www.arrowmont.org/>

Touchstone Center for Craft, <https://touchstonecrafts.org/metals-jewelry-workshops/>

Quench Jewelry Arts, <https://quenchjewelryarts.com/>

Metalwerx, <https://metalwerx.com/>

Jewelry Arts Institute, <http://jewelryarts.com/>

Vancouver Metal Arts School, <https://www.vancouvermetalartschool.ca/>

Artisan's Asylum, <https://artisansasylum.com/>

Simon's Bench Television, <http://benchtelevision.com/>

Berry's At the Bench, <http://www.atthebench.com/>

Kent Raible, <https://www.goldenspherestudios.com/>

Hans Meevis, <https://www.jewelry-tutorials.com/jewelry-making-class-list.html>

Jewelry Training Solutions, <https://jewellery-training-solutions.thinkific.com/>

Academy of Art, <https://www.academyart.edu/academics/jewelry-metal-arts/>

AGS, <https://www.americangemsociety.org/page/agrcodeofethics>