

# TO INVEST OR NOT TO INVEST

## 6 Reasons Our Lab Embraced a 3D Printer



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# To Invest or Not To Invest – 6 Reasons Our Lab Embraced a 3D Printer

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3D Printing has been gaining traction in a variety of industries – for dental labs, this method of manufacturing has been slow in adoption. There’s several reasons for the latency, but like most new technology, we’ve found the advantages of integrating 3D printing are starting to outweigh the disadvantages. Golden Ceramic has gone through an exhaustive review of the technology as well as several options – we determined the time was right to incorporate this advanced method of fabrication for 6 key reasons. Let’s begin with a definition shared by [Form Labs](#):

“(SLA) 3D Printing - Stereolithography (SLA) is an additive manufacturing — commonly referred to as 3D printing — technology that converts liquid materials into solid parts, layer by layer, by selectively curing them using a light source in a process called photopolymerization. SLA is widely used to create models, prototypes, patterns, and production parts for a range of industries from engineering and product design to manufacturing, dentistry, jewelry, model making, and education.”

Now let’s re-look at a modern definition for the dental industry as outlined by [Dental Review](#):

“...3D printing faithfully reproduces complex CAD detail with virtually no loss of surface resolution and none of the wastage associated with other manufacturing processes. It is extremely good at producing highly detailed and complex surfaces. In the case of metal dental frameworks, for example, dental specific, CE marked Co-Cr alloys can be used, with

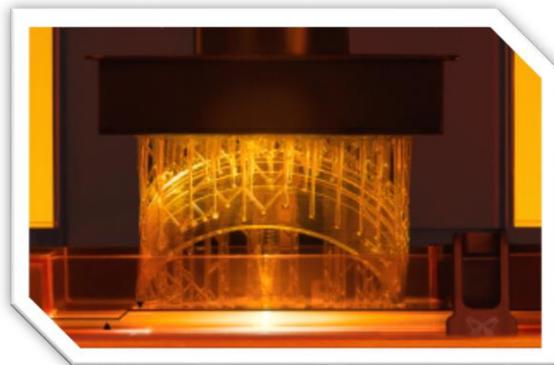


the final parts manufactured within an ISO 13485 quality system. Put simply, a layer of metal powder, 20 microns thick, is consolidated with a super fine laser beam and the dental framework is built up layer-by-layer.”

The modern definition provides a framework to better understand what’s a reasonable expectation from a significant investment. For Golden Ceramic Dental Lab, we used the definition as a minimum benchmark and then integrated criteria which augments our facility’s fabrication and/or service capabilities, as follows:

1. **Meaningful Technology** – This is one of the first questions we always ask ourselves prior to dedicating an immense amount of time on additional research. Is this new technology a convenient distraction that only has short-term value, or is this technology with viable long-term value? Digital dentistry is moving at lightning speed. We don’t anticipate there will be a slow down for years to come, but we are keenly centered on making sure our investment decisions provide an enhanced level of service for our dental practioner partners now and in the future.

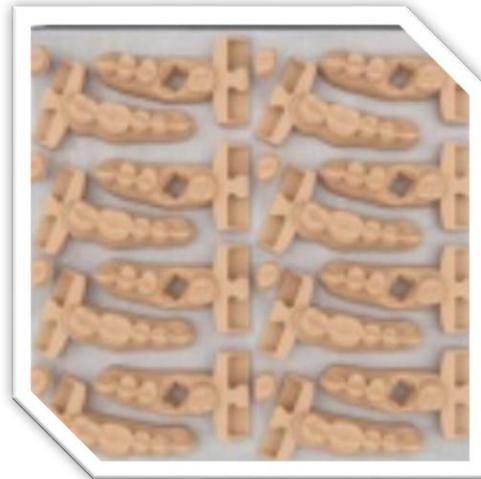
2. **Consistency and Quality** – These are the two most important expectations we strive to achieve regardless of the fabrication process. The 3D printer is a valuable tool to help achieve these quality control metrics – as defined - “No Loss of surface resolution, and no waste associated to other traditional manufacturing methods”– these attributes reflect the accuracy of the final product derived from 3D printers. To move beyond advertising rhetoric, we tested and tested again, until we had the confidence the attributes were more than empty words within a piece of sales collateral.



The above is an example of the curing process. As the laser contacts a thin layer of resin it chemically hardens, bonding with nearby layers, creating a fully dense, watertight part.

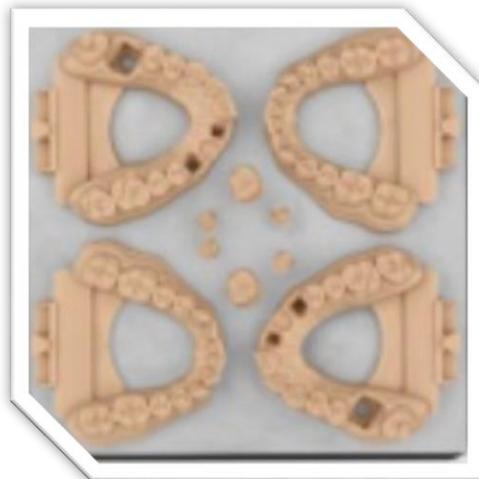
3. **Responsiveness and Reliability-**

The 3D printer must be able to reliably handle myopic detail, including complex surfaces. Assuming the printer can deliver against the prescribed capabilities, the primary value is derived through time efficiency – does this technology allow us to be more responsive to our dental partners while reliably providing a final product that meets all the specifications? From a patient perspective, lengthy turn-around times for any manufactured solution simply draws out the stress of a procedure. When there’s a reliable solution that allows our lab to reduce turn-around times we see that as a win-win-win paradigm.



For a dental model to be effective for checking restorations such as crowns or bridges, it is critical that it can be used to check the marginal adaptation of the restoration. A good marginal fit is key to the long term clinical success of the restoration. Large marginal gaps can negatively impact acceptance rates of restorations, potentially leading to decay and premature loss of the restoration.

4. **Patient Comfort** – many dentists are shifting their practice to a more “patient centric” approach – adopting procedures, solutions, and administrative processes that revolve around the convenience of the patient. The 3D printer eliminates the need to have a patient bite down on gooey, uncomfortable, and foul-tasting clay to create a mold/model for manufacturing everything from a crown to orthodontics. We have seen an increase in several of our dental practice partners making this shift to provide a better patient experience.



5. **The Perfect Marriage of Art & Science** - The low cost and high speed of desktop 3D printing changes the design workflow. Working with a personal 3D printer allowed us to generate rapid iterations of designs and the freedom to attempt unconventional ideas. Teams that work in multiple locations with multiple printers can print and verify designs independently,



sharing physical objects over digital channels. Being able to manually test the feel and fit of physical models, just like those generated with traditional methods of model fabrication, is an essential step in the dental workflow. It is integral to the success of a final procedure.

6. **Rapid Prototyping** – Prior to making the investment in our Form 2 3D printer we outsourced to a printing bureau. This created a layer of management complexity which impacted our dental partners – a much longer time frame for production, back and forth phone calls, and shipping – all contributed to needless delays.

Some might find it surprising that cost wasn't listed as one of our top 5 considerations. It certainly played a role in our decision, but we have found that the time we've taken to truly understand the value in all of our digital equipment pays off for both our lab, as well as our dental partners. The key learning for our lab:

**Details matter.**

[Golden Ceramic Dental Lab](#) is invested in exceeding our dental partner's expectations. We recognize smart technology provides our dental partners with easier, faster, and on-demand access when it's convenient for their practice, not the other way around – we quickly understood the value of having our virtual lab function as part of your offices. This is only one way we work to exceed your expectations. [Schedule a demo today](#), and we'll show you how our Dental Practice Management System will save you valuable time and money.

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