



Review of Torta, S., & J. Torta. (2019). *3D Printing: An Introduction*

Dulles, VA: Mercury Learning and Information

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Published online: 10 December 2019
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3D Printing authors, Stephanie and Jonathan Torta, have published this book in hopes of inspiring future makers with seeing the benefits of 3D printing and understanding more completely each step of the 3D printing process, as well as learning how to troubleshoot potential issues. The book is organized into three main parts: Part 1 - An Overview of 3D Printing, Part 2 - Using Your 3D Printer, and Part 3 - Knowledge Base. The book also includes a disc with instructional videos, lessons, and printable 3D object files.

Each chapter in the corresponding parts is arranged with the learning objectives in question format (i.e. What are some types of 3D printers? What software can I use to create a 3D model?). This format makes it easy for the reader to find the specific answers they need more quickly. The layout of the book is visually appealing with colorful pictures and screenshots of software and 3D models. Sections and titles are color-coded as well to make the chapters easy to follow and find exact needs. 3D printing has very specific terminology with which beginners may not be familiar. The authors include key terms in text boxes throughout the chapters to help readers review these terms as they read and process the steps and understanding of 3D printing. Each chapter ends with “Applying What You’ve Learned” which contains questions, challenges, and discussion starters. The included DVD offers a wealth of information, and the authors reference throughout the sections when the DVD can or should be used. Though the instructions in the book are very clear in their steps, seeing the processes performed in the included videos is extremely helpful.

In Part 1 - An Overview of 3D Printing, the authors not only include a very thorough outline of types of printers, filament options and pros/cons, and how to obtain, create, and

fix 3D models, but they also cover how 3D printing can be used in industry and educational settings. 3D printing is becoming a well-known technology tool, but many people are not aware of the vast ways it can be used or why it has become such an important tool. Chapter 2 - 3D Printer Use in Industry - goes into detail with interviews, video links, and graphics of how 3D printing is being used in aerospace, architecture, dentistry, medicine, and even culinary arts. It is clear that the authors have done a thorough job of researching how beneficial 3D printing is for so many areas of our day to day life. Chapter 3 delves into how the education world also has seen the benefits of having 3D printers available in schools and libraries. Hands-on engagement, critical and creative thinking, learning through trial and error, and job ready skills are just a few of the benefits that teachers and students are receiving through 3D printing, according to the authors. The remaining chapters in Part 1 jump into the meat of 3D printing - types of 3D printers, materials and filament types, software and slicing applications, and ultimately printing. The authors have organized each of these chapters so nicely that beginners will have no trouble following along or finding what they need to start, and advanced users may also benefit from the extensive list of sources. The majority of the book is Part 1 since the main purpose of this book is to provide a thorough introduction to 3D printing.

Part 2 - Using your 3D Printer - serves as the troubleshooting section of the book. Even if instructions for 3D printing are followed precisely, there can be multiple issues that can occur with printers. Calibration is one of the most common problems, and Chapter 10 covers everything involving calibration with thorough details and images. 3D printers can be finicky, and the slightest bump or move can cause the calibration to be thrown off. The authors’ experiences with 3D printers is evident in their knowledge of suggestions on how to fix the calibration. Having had personal experience with 3D printers, calibration is the issue that my students and I deal with the most. Chapter 12: Challenges is a more advanced look at issues that can wrong with 3D printing. The authors

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discuss stress-strain analysis and orientation issues with helpful diagrams and again, very detailed step-by-step instructions that will make even the most novice users feel comfortable working with a 3D printer. The last chapter of Part 2 covers how to refine and finish the final product. From filing down the model to how to paint a 3D model, this chapter details the final steps of making a successful 3D model.

Part 3 - Knowledge Base - helps users expand their depth of 3D printing knowledge by giving instructions on what to look for when purchasing a 3D printer, as well as how to modify an existing 3D printer to better suit a user's needs. This section also offers an extensive list of maker communities and online resources for the reader to continue learning about 3D printing and the changes that continuously happen in our technological world.

For 3D printing beginners, this book is a go-to resource that will have readers printing quality models in no time. It is an extremely easy book to use because of its well-planned layout and detailed images, and though it does offer advanced

troubleshooting, the authors maintain a layman's approach to all concepts. *3D Printing: An Introduction* is the only print resource that will be needed for anyone delving into the 3D printing world.

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