

3D Printing Design Document

<i>Business Purpose</i>	Creality is a 3D printer manufacturer. Their printers range from beginner models to more advanced models. Each year, new consumers with beginner models struggle with understanding the many different aspects of creating successful 3D prints. The goal is to implement this training to ensure all new users feel confident on their journey into 3D printing and to reduce the number of customer service calls due to frustration.
<i>Target Audience</i>	New users of the Creality Ender 3 (various models) printer
<i>Training Time</i>	30 minutes – 1 hour eLearning course
<i>Training Recommendation</i>	After new users finish assembling their new Ender 3, there is often an uneasy feeling because 3D printing is like learning a foreign language. There are so many aspects to physically fine tuning the printer and then using the slicer to produce the best possible prints. This e-learning course will introduce these topics to the users in a scenario based environment through interactivity with knowledge checks. Users will be able to access this course via QR code/link that will be found in the printer box. There will also be a reference tool to help them recall information from the eLearning course that can be placed near their printer for a quick reference.
<i>Deliverables</i>	<ul style="list-style-type: none">• 1 Storyboard (with script) outlining the Beginner's Guide to 3D printing course• 1 eLearning module using Storyline – Beginner's Guide to 3D printing• 1 3D printing Troubleshooting Guide – Job Aid• 3 videos, developed in Camtasia (with narration)<ul style="list-style-type: none">○ How to level the build plate○ How to calibrate e-steps○ How to adjust the z-offset
<i>Learning Objectives</i>	<p>At the end of the training, learners will be able to:</p> <ol style="list-style-type: none">1. Identify the different components and the function of these parts on an Ender 3 printer.2. Recognize the steps needed to correctly level the build plate and fine tune the printer.3. Describe the different types of filaments used in 3D printing.4. Manipulate settings in the slicer to obtain the desired printed object.
<i>Training Outline</i>	Introduction <ul style="list-style-type: none">• Welcome• Navigation• Objectives• Scenario introduction

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Topic: Identify the parts and function of an Ender 3 printer (LO 1)

- Scenario
- Identify parts and show the function of each part using images
 - Motherboard
 - X-axis gantry
 - Hot end assembly
 - Filament spool
 - Z-stop
 - Build plate
 - X-stepper motor
 - Y-stop and stepper motor
 - Power Supply
 - Dual Z axis
 - Interface
- Knowledge Check

Topic: Level the build plate (LO 2)

- Scenario
- Learn the 5 steps to successfully level the build plate
- Video (how to level the build plate)
- Knowledge check

Topic: How to fine tune the printer (LO 2)

- Scenario
- Under Extrusion
 - Steps to calibrate e-steps
 - Video (How to calibrate e-steps)
- Draft - Possible solutions to solve draft issues
- Nozzle
 - Too close
 - Too far
 - Just right (squish)
 - Video (How to adjust the z-offset)

Topic: Types of Filaments (LO 3)

- Scenario
- Each type of filament will include the chemical name for the abbreviation and different characteristics.
 - PLA
 - TPU
 - PETG

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- ABS
- Knowledge check

Topic: Print Settings (LO 4)

- Scenario
- Each of these print settings identifies general guidelines, features, and some ways to troubleshoot.
 - Bed Temperature
 - Nozzle Temperature
 - Speed
 - Layer Height
 - Retraction
 - Infill
 - Initial Layer Speed
 - Initial Fan Speed
 - Bed Adhesion
 - Supports
- Knowledge check

Assessment

Summary

Conclusion

Assessment Plan

The final assessment for this module is a 5-question quiz. Learners must earn 80% or higher (4 correct questions) in order to pass.

Question 1 & 2 assesses LO 2

Question 3 assesses LO 3

Question 4 assesses LO 4

Question 5 assesses LO 1

If a learner does not pass on the first attempt, they will be able to review the quiz questions and the correct answers and retake the quiz. This process is available an unlimited number of times.
