

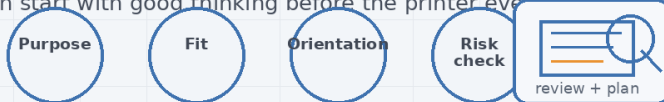
MAXXESHOP3D

Beginner

Assessment & Planning Before the Print Starts

What this resource explains

This beginner resource explains what should be checked before a print begins: what the part is, how big it is, whether it fits the bed, which side should face down, and whether the model looks easy or risky to print. The goal is to show that good prints often start with good thinking before the printer even moves.



How to stop before printing, assess the job clearly and plan the basic settings that give the model the best chance of success.

Skill Pathway

Expert

Advanced

Intermediate

Developing

Beginner

Beginner Level • Assessment & Planning

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Resource overview

Many failed prints begin long before the first layer. They begin when the model is sent to the printer without enough thought about size, position, supports, material or print time. Beginner users often focus on the excitement of starting the print, but strong results usually come from pausing first and making a few basic decisions carefully.

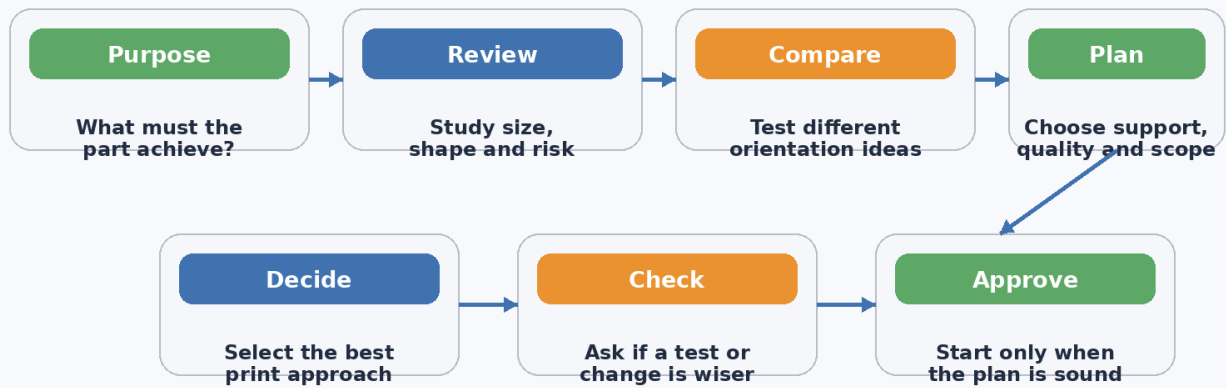
Assessment and planning matter because a printer can only follow the instructions it is given. If the part is too large, poorly placed, upside down or likely to need support, the machine will still try to print it. A simple pre-print plan helps catch those issues early and prevents wasted time, wasted plastic and disappointment.

Indicative level	Beginner
Suggested use	First design-to-print lessons, beginner slicing sessions, teacher-guided planning
Best suited to	Students learning that print success starts before pressing print
Learning focus	Purpose, fit, simple orientation and obvious risk spotting
Related resource areas	What is 3D Printing • Initial Printer Setup • Bed Leveling & Calibration

Why assessment and planning should happen before every print

A printer is very literal. It does not decide whether a model is sensible to print in its current form; it only follows the instructions it is given. That is why users must assess the job first. Even a simple object can fail if it is too tall, too thin, badly placed or started with an unsuitable underside.

At beginner level, assessment and planning should feel like a pre-flight check. The student looks at the model, thinks about how it will sit on the bed and considers whether the print looks easy, uncertain or risky. That short pause before printing can prevent many common errors.

Diagram 1 • Assessment and planning sequence for better prints

Key idea: the print should be assessed before slicing so obvious problems are noticed early.

This diagram supports the beginner explanation by showing the main assessment and planning stages that should happen before a print begins.

Critical planning steps and why they matter

Activity area	What students do	Why it matters
Identify the purpose of the part	Ask what the print is meant to do and whether appearance or strength matters more.	Purpose helps guide decisions about size, quality and how carefully the part must be printed.
Check size and bed fit	Confirm the part fits the build plate and is not scaled too large or too small.	A model that does not fit properly or is incorrectly sized may fail or be unusable.
Choose a stable orientation	Place the model so it sits on a sensible surface instead of balancing on a small edge.	Good orientation improves first-layer contact and reduces the chance of collapse or detachment.
Look for obvious supports	Notice overhangs, bridges or features hanging in the air.	Recognising support needs early helps avoid impossible or weak print starts.
Estimate whether the print seems easy or risky	Make a simple judgement before starting.	This encourages students to think, not just click print automatically.

Step 1: Understand what the part is supposed to do

Before a model is sliced, the student should ask a simple question: what is this print meant to do? Some parts are decorative and mainly need to look neat. Others need to hold weight, fit another object, or survive repeated use. Even at beginner level, this matters because the aim of the print affects how carefully the rest of the choices should be made.

A student who understands the purpose of the part is more likely to notice important details. For example, a display model may tolerate a different orientation from a functional clip or bracket. A name tag may not need the same strength as a part that must be pressed or bent during use. Planning starts to improve when the purpose of the part becomes clear.

This step is taken because good decisions come from knowing the goal. If the user does not know what success looks like, it becomes much harder to choose the right size, placement and level of care before printing.

Step 2: Check whether the model fits and sits sensibly

A beginner should always check whether the model fits the printer's bed and whether it has been scaled to a sensible size. Sometimes a model is accidentally imported too large or too small, and the student may not realise this until the print is already under way. A quick check in the slicer prevents that mistake.

The way the object sits on the bed matters just as much as its size. A print that rests on a broad flat surface usually has a better chance of starting well than one balanced on a narrow edge or tiny point. That is because the first layer needs enough contact with the build plate to stay in place while the rest of the part is built above it.

This step is taken because the first layer supports everything that follows. If the model does not fit well or does not sit in a stable way, the printer begins at a disadvantage before the real job has even started.

Diagram 2 • Beginner assessment workflow



Language to use at beginner level

Orientation • Overhang • Build plate • Scale • Support • Risk check

The workflow diagram above shows how assessment, comparison and final planning work together at beginner level.

Step 3: Look for features that may need support or extra thought

When students first look at a model, they should try to notice whether any parts appear to hang in the air. Long overhangs, steep shapes and bridges may still be printable, but they deserve attention before the print begins. Beginners do not need perfect judgement at first; they simply need to learn to stop and ask whether the printer can really build each feature layer by layer.

This check matters because the printer creates the model from the bottom upward. If a feature has little beneath it, the filament may sag, curl, droop or fail altogether. In many cases, early awareness of these risky features leads to better orientation or a decision to use support.

The step is taken because assessment is about seeing problems while they are still easy to solve. A model with obvious unsupported areas should not be treated the same way as a simple block-shaped print.

Step 4: Make a simple pre-print judgement before pressing print

A beginner should finish planning with a simple decision: does this print look straightforward, slightly uncertain or clearly risky? That judgement helps students move away from automatic printing and toward thoughtful printing. Even if they still need teacher guidance, learning to pause and rate the print is a valuable habit.

The purpose of this step is not to make beginners afraid to print. Instead, it teaches them that planning is part of making. A thoughtful student might decide to rotate the model, ask for help with support, or choose a smaller test print before committing to the full job.

This step is taken because many printing problems are preventable when someone stops to think before starting. A short planning decision often saves far more time than it costs.

Key planning reminders

- Assessment should happen before settings are changed.
- Orientation is a planning decision, not an accident.
- Support, finish, strength and time often compete with each other.
- A small test can save hours when risk is high.

Suggested classroom discussion

- What does this model need to do once printed?
- Which orientation best matches that purpose?
- What risk would justify a test print or redesign first?
- How would you explain the final plan to another operator?

Vocabulary focus

<p>Orientation</p> <p>How the model is positioned on the print bed before printing.</p>	<p>Overhang</p> <p>A feature that extends outward and may not have much support underneath.</p>	<p>Build plate</p> <p>The bed surface on which the print begins.</p>
<p>Scale</p> <p>The size of the model compared with its intended dimensions.</p>	<p>Support</p> <p>Extra printed material used to hold difficult features while printing.</p>	<p>Risk check</p> <p>A quick judgement about how likely a print is to start and finish successfully.</p>

Why this level matters

Beginners who learn to assess before printing waste less material because they catch obvious problems before the printer is committed to the job.

This skill also builds confidence. Students start to understand that successful printing is not luck; it comes from making sensible decisions before the print begins.

Teacher extension prompt

Show students two simple models and ask which one is safer to print first. Then ask them to explain which parts of their judgement come from size, orientation or visible unsupported areas.