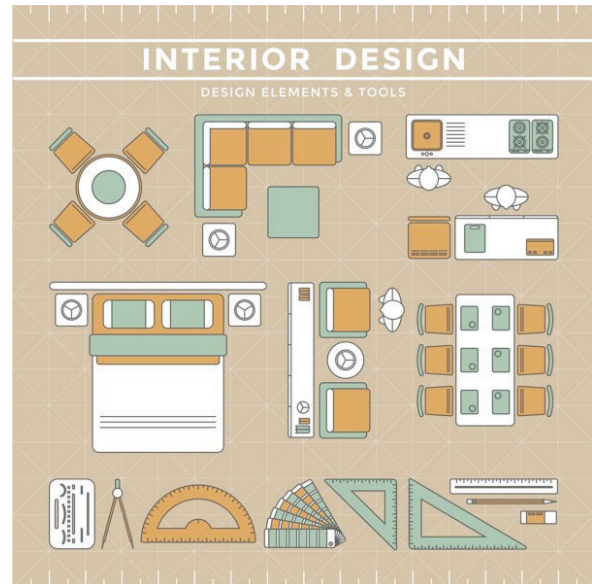# Interior Design Tools and Equipment

WHAT DOES an interior designer do? Do you know the difference between an interior designer and an interior decorator? Interior designers create functional living spaces that are safe and aesthetically pleasing. They determine and select lighting, color schemes, and materials for a given space. Interior designers draw and read blueprints and are familiar with safety regulations and codes for interior spaces. Designers also work closely with architects, engineers, and construction workers to ensure a space is both functional and beautiful. Interior decorators furnish a space with fashionable or beautiful items.

Objective:

☑ Identify interior design drafting tools and equipment, computer-aided design (CAD) software, and interior design trends.

Key Terms:

2020 Design
2D
3D
3D HomePlanner
ArchiCAD
AutoCAD
color scheme
computer-assisted purchasing (CAP)
computer-aided design (CAD)

Design CAD 3D Max Drawing
drafting
drafting table
drafting templates
floor plan
Google SketchUp
interior decorator
interior design
interior designer
level

open concept
plotter
plotting
rendering
scale-ruler
tape measure
Vectorworks
Wonderful Interior Design App

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Understanding Interior Design Tools and Equipment

Interior design is a complex artistic profession in which creative and technical solutions are applied within a structure for a built environment. Solutions are functional, culturally expressive, attentive to life-safety codes, and aesthetically attractive. In the United States and Canada, interior designers must be licensed or registered and able to document their formal education. Many states and provinces require the NCDIQ certification (National Council for Interior Design Qualification).

An **interior designer** is a professional who applies "creative and technical solutions for a structure that is functional, attractive, and beneficial" to a client's quality of life and culture. An interior designer uses drafting tools and equipment as well as knowledge of color, psychology, and safety codes and tools (National Council for Interior Design Qualification). An interior designer oversees the design of a given space that sometimes includes elements of the building exterior. An interior designer must consider design elements,

FIGURE 1. Interior designers use drafting tools and equipment. They also use knowledge of color, psychology, and safety codes and tools.

principles of design, and current trends. In addition, an interior designer must communicate to others in the design process to complete the development of a given space.

An **interior decorator** is a person who furnishes a space with fashionable or beautiful items. An interior decorator requires no formal training or licensure.

DRAFTING TOOLS AND EQUIPMENT

Equipment

Drafting is technical or mechanical drawing that visually communicates how something works or is constructed. Drafting symbols, units of measurement, and notation systems help decode the blueprint, floor plan, etc. A **floor plan** is a scale diagram of a room or building drawn as if seen from above. A floor plan shows the relationship between rooms, spaces, and other physical features at one level of a structure.

A **drafting table** is a work surface for creating drawings or sketches and may be adjusted up or down to suit the drafter or designer. It may be collapsible and may have a limited work

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surface. Some tables have a large drawing surface and are typically a stationary piece with drawers and various drawing attachments as well as lighting.

Tools

Sketching tools include pencils, rulers, erasers, compass, protractor, and graph paper.

Scale-Ruler

A **scale-ruler** is a measurement tool with a range of calibrated scales (ratios) for drawing and measuring from reduced scale drawings (e.g., blueprints and floor plans). For example, if the scale is in ¹⁄₂-inch increments, each ¹⁄₂ inch represents 1 foot. Scales are calibrated in feet and inches or in metric measurements.

FIGURE 2. A scale-ruler is a measurement tool with a range of calibrated scales (ratios) for drawing and measuring from reduced scale drawings, such as blueprints and floor plans.

Drafting Templates

Drafting templates are stencils that create uniform architectural and interior design shapes on floor plans and blueprints. Templates are scaled to size: ¹⁄₈, ¹⁄₄, or ¹⁄₂ inch. Templates create accurate shapes for floor plan drawings and drafting purposes: kitchens, bathrooms, bedrooms, home and office furniture, banquet furniture, cabinets, plants, and other construction and design accessories.

Tape Measure

A **tape measure** is a flexible ruler (cloth, plastic, fiberglass, metal strip, etc.) with linear measurement markings. It is used to calculate measurements of a room or space as well as furniture or design elements. Soft tape measures are made from cloth and are used to measure curved and angled lines and surfaces. Stiff tape measures are made from metal and are for straight line and surface measurements.

Level

A **level** is an instrument that indicates whether a surface is flat and even. Plumb is vertical, and level is horizontal. A level is used on horizontal and vertical surfaces to ensure shelves, pictures, light fixtures, or other accessories are "straight." Using a level involves adjusting the work piece until the "bubble" in the level is centered between two lines on the instrument's surface.

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Color Scheme

Color scheme guides and swatches allow a designer to identify color use with a client for a particular design space. A **color scheme** is an arrangement of colors based on a color system (e.g., a color wheel) that is applied to an illustration, design, or artwork. Guides are used to show an assortment of sample colors for furniture, paint color, flooring, fabrics, and other features. Guides help designers plan a room and give clients a visual sample.

Computer-Aided Design (CAD)

Computer-aided design (CAD) is software that creates a 2D or 3D visual interpretation of a floor plan or design space. CAD software is much faster to use than drawing by hand and allows for emphasis on smaller details (e.g., cabinetry, flooring, color schemes, and lighting). **2D** (two-dimensional) visuals are a blueprint or floor plan that shows length and width. **3D** (three-dimensional) visuals are images or models that provide the perception of depth (in addition to length and width). Both 2D and 3D images are referred to as renderings. A **rendering** is a drawing that depicts a designer or a builder perspective of a given room or floor plan. It is the process of generating an image from 2D or 3D models in digital or raster graphics: the final appearance of a model or animation.

FIGURE 3. This is a 3D CAD rendering of a modern interior.

COMPUTER-AIDED DESIGN (CAD) SOFTWARE

Google SketchUp

Google SketchUp is a CAD drafting software that allows for the creation of 2D and 3D models. SketchUp is a Google product available in various models and with various accessories. Free versions are available but are limited, and the pro-version has a price tag. Software properties and limitations include:

♦ Downloads are easy.
♦ It is user-friendly.
♦ The software creates realistic 2D floor plans and 3D models.
♦ It is able to import photos of custom items and spaces to design a floor plan around the space or add accessories into the floor plan.
♦ Visualizing 3D models can be difficult because curved surfaces are difficult to create or incorporate into the floor plan.

♦ A rendering program is basic but is compatible with other software packages.

♦ The basic version is limited in floor plan options and accessories. Most users tend to upgrade to the pro-version.

Wonderful Interior Design App

The **Wonderful Interior Design App** is CAD software for interior design by Belight Software and is easy to learn. A basic version and an upgradeable professional version are available. The professional series is more extensive and detailed; it allows access to more features. It has an unlimited number of stories, colors, upscale materials and applications, and wall cutouts. Software properties and limitations include:

♦ It creates high-resolution images.

♦ It is compatible with other software, including Google SketchUp.

♦ The software creates 2D floor plans and 3D models.

♦ No software tutorial is available.

♦ It has limited templates: room sizes and shapes.

♦ It is compatible with Apple MAC only.

3D Homeplanner

3D Homeplanner is a CAD program for interior design from dmlights. It is an easy-to-learn program. Software properties and limitations include:

♦ It provides an ease of modifying floor plans by adjusting wall and floor measurements.

♦ It has customizable materials with software upgrades.

♦ The program has a large selection of furniture categorized by room.

♦ It includes a 3D preview option.

♦ It includes some, but not all, architectural features of other CAD programs.

♦ The program requires constant Internet access; no offline mode is available.

ArchiCAD

ArchiCAD is CAD software for architects and interior designers from GRAPHISOFT. This CAD program includes the ability to make complex shapes. Software properties and limitations include:

♦ Floor plans are saved as PDF files.

♦ It has the ability to quickly create 3D models from 2D floor plans.

♦ The software houses numerous interior design object templates/profiles.

♦ It is available to Mac and Windows users.

♦ The software is expensive and difficult to master if the person is not AutoCAD fluent.

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- It requires AutoCAD to view 2D floor plans.
- The software is unable to be opened with other software.

AutoCAD

AutoCAD is 2D and 3D computer software that allows interior designers, architects, and engineers to draft blueprints and floor plans for construction and manufacturing purposes by Autodesk. AutoCAD is the most popular software among designers. Software properties and limitations include:

FIGURE 4. This is a CAD-created 3D cross-section of a residential house.

- It produces detailed floor plans.
- The software is easy to use with 3D and animation options.
- It is expensive and difficult to learn compared to other CAD programs.
- It is unable to open floor plans with other software.

DesignCAD 3D Max Drawing

DesignCAD 3D Max Drawing is 2D and 3D computer software for interior designers and architects by TurboCAD. The software is relatively easy to learn. Software properties and limitations include:

- It allows for an instant exchange of 2D and 3D information to view both types of floor plans as they are created.
- Numerous tools and upgrades are available.
- Extra resources are available, such as online resources and the capability to chat with experts.
- Rendering, simulation, visual details, and animation of floor plans are available.
- Software is slow and is incompatible with other software.

2020 Design

2020 Design is a kitchen and bath CAD software program from 20-20 Technologies, Inc. The software is an import from Google SketchUp and is primarily designed for kitchen and bath cabinetry. Properties and limitations include:

- It has the ability to create realistic 3D renderings (photos) of kitchens and baths.

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- CAP is available on 2020 Design. **Computer-assisted purchasing (CAP)** is the ability to include catalog prices from retail stores to be entered in to the CAD software. This property makes pricing, shipping costs, and product availability easy for architects, engineers, and interior designers to calculate for a specific floor plan.
- 2020 Design is expensive software.

Vectorworks

Vectorworks is a CAD software geared primarily to interior designers, although it is available for architects and other designers from Vectorworks, Inc. Software properties and limitations include:

- It is easy to use integration of 2D floor plans to 3D models.
- The software has built-in worksheets, including material lists, budget lists, cost sheets, and a scheduling calendar.
- Various effects can be applied to the floor plan.
- It is inexpensive compared to other software.
- It supports other formats, such as PDF, Google SketchUp, and 3D.
- There is an extra charge for high-resolution images.
- Plotting in batches is difficult. **Plotting** is printing floor plans, designs, or images using a CAD printer. Another name for a CAD printer is a **plotter**.

INTERIOR DESIGN TRENDS

Obviously, trends in interior design change, just as clothing trends change. Yet some repetition from previous eras is often seen.

Design Types

Interior design types include traditional, modern, and contemporary.

Traditional

Traditional design is elegant and luxurious, with antique furnishings and neutral colors with touches of deep colors: reds, blues, greens, and browns.

FIGURE 5. This traditional bedroom has an antique chair, neutral colors, and red accents.

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Modern

Modern design is an open concept: sleek and clutter free. The dominant color concept is black and white, with touches of primary colors. **Open concept** is the creation of common spaces in which the rooms have no walls or doors between (other than bathrooms, bedrooms, and office spaces), and beams carry the weight of the floor above. The goal of open concept floor plans is clean traffic flow. Modern designs include angles and curved lines. Floor plans reference the eras of the 1920s to the 1950s.

FIGURE 6. Modern design is an open concept—sleek and free of clutter. It includes angles and curved lines. Floor plans reference the eras of the 1920s to the 1950s.

Contemporary

Contemporary design is constantly changing. Some similarities to modern floor plans exist, such as open concept. However, contemporary design uses more neutral colors, with softer lines and angles than a modern design. Contemporary designs reference the 1960s to 1980s eras and are considered "retro" (because of the timeframe).

FIGURE 7. This contemporary living room uses neutral colors and soft lines.

10 Material Trends

Wood, glass, marble, leather, plant designs, metal, accent colors, floor tile, open concept, and color schemes are all material trends that can drastically alter the appearance of a room.

Wood

Hard, natural wood is available in oak, hickory, maple, walnut, cherry, beech, and birch. It is used for furniture, such as chairs, tables, bookcases, and flooring.

♦ Soft wood accents—pine, cedar, and fir—are best suited for closet spaces and accent pieces because they hold shape best.

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- ♦ Raw wood surfaces are unvarnished and in a natural state, which gives a pale appearance to the interior.
- ♦ Wood wallpaper creates a cottage-like feel and is currently trending.
- ♦ Wood flooring is trending dark versus golden or light.
- ♦ Wood grain ceramic tiles are trending in bathrooms and kitchens, areas in which wood is not sanitary or resistant to moisture.

Glass

Decorative mirrors, cut glass, mosaic tiles, vases, and candleholders are trends found throughout the interior of homes and offices.

Marble

Marble is expensive when used for countertops, tabletops, chairs, accent wall tiles, and floors. Marble accessories are more reasonably priced (e.g., vases, bath vanity, wastebasket items, nooks, and niches).

Leather

Leather is from animal sources and is often used for furniture and floor tiles. It is also used as an accent wall application.

Plant Designs

Leaf prints and patterns on wood furniture are currently trending.

Metal

Brass, chrome, and steel are trending metals. Brass provides a soft, warm gold. Bronze pairs well with cooler hues. Brass is currently replacing many chrome and steel accents.

Accent Colors

Color accents—in the form of pillows, curtains, rugs, and picture frame accessories—"dress up" walls and furniture by adding hints of color ("pops of color") throughout the space. Accessories are often updated seasonally.

Floor Tile

Ceramic floor tiles are trending, especially as applied in patterns: herringbone, diagonal, running bond, checkerboard, pinwheel, basketweave, modular, and windmill. Hexagon shapes are trending in kitchen and bath backsplashes. Ceramic tiles are more durable and aesthetically pleasing. However, they cost more than linoleum. Wood grain tile is currently trending.

Open Concept

Open concept living spaces that give a cohesive flow to a space are trending in kitchens and family rooms. In some cases, bath and shower installations are designed in open concept.

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ONLINE CONNECTION: Tips for Small Space Interior Decorating

Color, texture, and style are important elements for decorating a room. Mistakes are often made when designing small interior spaces. When is it okay to paint a room or accent wall a rich, dark color? What does wall-to-ceiling storage bring to an interior room? What do large mirrors and/or large artwork add to a space? What is the effect of grouping artwork? Is it okay to mix wood, metal, and glass? Why or why not? Watch the YouTube video "5 Design Mistakes" people make when designing a small space at https://www.youtube.com/watch?v=yTpP88zEgD4. Then, answer the questions.

Do dark colors typically advance or recede? Do you think the dark accent wall makes this room look bigger or smaller? Why?

Color Schemes

Color schemes: Black, white, and gold provide a tasteful, stylish, and interesting approach. However, neutrals and grays are trending color schemes in home, hotel, and spa interiors.

Summary:

Interior design is a complex artistic profession in which "creative and technical solutions are applied within a structure for a built environment." An interior designer is a professional who applies "creative and technical solutions for a structure that is functional, attractive, and beneficial" to a client's quality of life and culture. An interior decorator is a person who furnishes a space with fashionable or beautiful items. Various CAD software options are available. Interior design types include traditional, modern, and contemporary. Interior design involves being aware of trends. Wood, glass, marble, leather, plant designs, metal, accent colors, floor tile, open concept, and color schemes are all material trends that can drastically alter the appearance of a room.

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Checking Your Knowledge:

1. What is your "walking definition" of interior design?
2. Describe three essential drafting tools and equipment used by interior designers.
3. What is CAD? List three CAD programs for interior design.
4. What is your favorite interior design style? What makes it your favorite?
5. Describe five current interior design material trends.

Expanding Your Knowledge:

How have online communities (e.g., Pinterest) influenced interior design trends? How have advances in technology (e.g., 3D printing) impacted interior design options? A recent interior design trend is augmented reality (AR)? What is AR? In what way has AR simplified interior design? Do some research. Then type two to three pages on your findings.

Web Links:

Elements of Interior Design
https://insidespacedesign.wordpress.com/2013/05/29/the-7-elements-of-interior-design-2/

The Future of Interior Design
http://www.psfk.com/2016/05/dennis-williams-augment-technology-and-interior-design.html

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Home Decorating Ideas and Interior Design Tips
http://www.hgtv.com/design/decorating

Interior Design vs. Interior Decorating
http://interiordec.about.com/od/educationandcareers/a/InteriorDesignvsInteriorDecorating.htm

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