

APPENDIX B

*Drafting and Design 11 and 12
Grade Collections*

DRAFTING AND DESIGN 11 AND 12: GRADE COLLECTION

This section begins with an overview of the comprehensive resources for this curriculum, then presents Grade Collection charts for each grade. These charts list both *comprehensive* and *additional* resources for each curriculum organizer for the grade. Each chart is followed by an annotated bibliography. Teachers should check with suppliers for complete and up-to-date ordering information. Most suppliers maintain web sites that are easy to access. There is also a chart that shows the alphabetical list of Grade Collection titles for each grade and a blank template that can be used by teachers to record their individual choices.

MEDIA ICONS KEY



Audio Cassette



CD-ROM



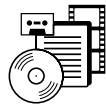
Film



Games/Manipulatives



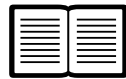
Laserdisc/Videodisc



Multimedia



Music CD



Print Materials



Record



Slides



Software



Video

OVERVIEW OF COMPREHENSIVE RESOURCES FOR DRAFTING AND DESIGN 11 AND 12

- *3ds max 4*
(Grades 11 and 12)

With this comprehensive and professional 3D modeling, animation and rendering software package, students can bring their ideas to life using advanced tools for modeling and animating objects and characters. Features of the software program include multiple methods of simple to advanced model creation and animation, technical visualization presentations, texture exploration and creation, unlimited surface treatment, and a flexible user interface.

Included in this software package is *Character Studio 3*, a powerful extension that provides several methods to build, refine and animate skeletons and skins. This “plug-in” includes features for crowd and advanced behaviour animation; bi-ped and animation of two-legged creatures; motion flow editing; free-form animation; advanced inverse kinematics; foot-step driven animation; and much more.

- *Architecture: Residential Drawing and Design*
(Grades 11 and 12)

This print package provides the basic information necessary for planning various types of dwellings. It presents basic instructional in preparing architectural working drawings, using traditional as well as computer-based methods. The resource progresses in a logical, well thought-out manner through the design process of a residential structure, and includes modelmaking and drafting techniques. It also serves as a reference for design and construction principles and methods. The lesson plans, objectives, and teaching strategy ideas are all well-defined.

The entire resource package includes a 34-chapter, 688-page text; a 368-page student

workbook; a substantial teacher resource binder containing detailed chapter information, strategies, answer keys, and an extensive overhead transparency collection; and an instructor’s manual.

- *AutoCAD 2000i*
(Grades 11 and 12)

This is a comprehensive, all-encompassing CADD program supports drawing of objects in 2- and 3-dimensions. It offers tutorial assistance via a help option, as well as online and Internet support. Work can be done in metric and imperial units, including many dimensioning options. Object linking and embedding are compatible with other PC software applications.

Overall, the program certainly meets the needs of students who wish to pursue post-secondary education or a career in drafting and design and related fields. The entire software package includes four books and two CD-ROMs. Authorized courseware, such as student workbooks, are also available.

- *AutoCAD LT 2000i*
(Grades 11 and 12)

This comprehensive resource focuses on 2-dimensional CADD and facilitates drawing of a variety of different objects. Drawings can be produced in both metric and imperial units. This CADD package also meets a number of needs and skills required for students pursuing a post-secondary education or career in drafting and design and related fields.

This program offers tutorial assistance as well as Internet support, and is fully compatible with *AutoCAD 2000i*. Files can be saved in a variety of formats.

Note: This resource would need to be supplemented with a software package that provides 3-dimension modeling capabilities.

- *Autodesk Inventor 4*
(Grades 11 and 12)

Autodesk Inventor is a feature-based, solid modeling, CADD tool for creating and developing mechanical design in a 3D environment. This intuitive software program is innovative in its approach to creating mechanical objects. It allows the user to derive parts, solid model them, and create a variety of layouts and assemblies. The parametric modeling features allow for sketching, geometry, constraining features, and adjusting sizes.

- *Basic Technical Drawing*
(Grade 11)

This print resource provides beginning drafting students an excellent introduction to the essentials of technical drawing. Previous experience is non-compulsory. The textbook is laid out in 17 chapters, covering 591 pages and includes a complete glossary and appendix.

The accompanying student workbook and teacher's resource binder are very informative and helpful regarding teaching strategies and resources. The teaching strategies are especially helpful for non-experts.

- *Chief Architect V7.0*
(Grades 11 and 12)

This intuitive, easy-to-use architectural software package allows students to produce architectural and interior design plans easily and quickly. While drawing in 2D, the designer is actually modeling in 3D; this results in both exterior and interior 3D rendered views. Walk-through animations can also be created. The 721-page reference text is also available in Acrobat PDF format and incorporates seven tutorials. A 2D CADD component is also included.

- *Exploring Drafting*
(Grade 11)

This comprehensive introductory print resource focuses on basic drafting fundamentals and basic geometric construction, and progresses in a logical, well thought-out manner. Drawings are constructed in a step-by-step manner to demonstrate drawing principles that will allow students to progress into CADD. Content includes modelmaking, design, and manufacturing processes, in addition to the core material. Each section of the textbook ends with a vocabulary summary, a "test your knowledge", and suggestions for outside activities.

The accompanying teacher's resource binder corresponds to the textbook's 25 chapters and 416 pages. It contains well-defined objectives, lesson plan suggestions, teaching strategy ideas, tests and answer keys, as well as a variety of overhead transparencies. The resource package also includes student worksheets and a solutions manual.

Note: This resource is best suited for grade 11 students, as more advanced subject matter is somewhat lacking for the grade 12 level.

- *Freehand Sketching for Engineering Design*
(Grades 11 and 12)

This is a print resource which thoroughly covers sketching and design with respect to drafting fundamentals. Students can transfer design ideas to paper using freehand sketching techniques, which, in turn, can then be utilized when creating instrument and CADD drawings.

The layout of the text is set up with fundamental sections that include appropriate exercises related to the respective core section. Drafting fundamentals are introduced throughout the text. Material

covered includes 3D modeling, orthographic, isometrics, auxiliary views, sectional views, and dimensional practices reflecting standard instrument and CADD drafting techniques.

- *Mechanical Drawing CAD-Communications* (Grades 11 and 12)

This print resource package comprises a teacher’s resource binder, textbook, and student workbook. The resource provides a comprehensive overview and in-depth information of all aspects of mechanical drafting fundamentals and incorporates CADD concepts throughout. Diagrams are clear, interesting, and relevant. AutoCAD procedures are incorporated with drafting fundamentals. Student activities are well laid-out with solutions in the teacher’s binder. The teacher’s resource binder gives sample lesson plans, course organization, and suggested teaching strategies.

The resource package includes a floppy disk with exercises and problems that can be downloaded for student and teacher use.

Note: Teachers may want to adapt some of the lesson plans that make specific references to the United States, e.g., the American Flag.

- *RenderWorks* (Grades 11 and 12)

RenderWorks rendering module “plugs-into” *VectorWorks*, enabling users to create photorealistic renderings from within the main drawing area. *RenderWorks* eliminates the time spent on exporting and reapplying textures in other rendering programs.

Features include:

- procedural shader-based texture creation
- image-based texture creation
- hard and soft shadows
- true anti-aliasing
- full control of the texture mapping projection, orientation, offset, scale, and rotation

- transparency
- reflections
- refraction
- *Solid Edge* (Grades 11 and 12)

Solid Edge is a comprehensive solid modeling software package that is capable of realistic rendering and animation of 3D components and assemblies. Users are able to model consumer products and mechanical and furniture designs in 3D; easily assemble 3D parts; create 3D parts or assemblies from 2D working drawings; model sheet metal developments along with 3D piping models; create realistic rendering of resulting designs and animations.

The integrated online tutorials and the three user- and course texts enable students to quickly learn the various features.

- *VectorWorks* (Grades 11 and 12)

This comprehensive CADD program combines 2D drafting and 3D modeling with presentation features, spreadsheet capability, and built-in scripting. *VectorWorks*’ features that streamline and enhance the design process include:

- multiple undo/multiple redo
- round walls
- wall styles
- walls from polygons
- layer and class standards
- roof modeling functionality
- fixed length dimensioning

The learning exercises cover the basic concepts of the program. Additional, more comprehensive tutorial books are available for purchase.

RenderWorks is recommended to accompany *VectorWorks*, particularly in terms of 3D rendering of solid 3D objects.