2012
Saskatchewan Curriculum

Construction and Carpentry 10, 20, 30

Ministry of Education

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Clark Bymoen, Teacher
Prairie Spirit School Division
Saskatchewan Teachers' Federation

Janet Foord
Saskatchewan School Boards Association

Ken Harder, Teacher
Saskatchewan Rivers School Division
Saskatchewan Teachers' Federation

Cathy Herrick
Living Sky School Division
League of Educational Administrators, Directors, and Superintendents

Valerie Johnson, Teacher
Good Spirit School Division
Saskatchewan Teachers' Federation

Dr. Cyril Kesten
Faculty of Education
University of Regina

Orest Murawsky, Director
Indian Teacher Education Program
University of Saskatchewan

Ivan Tam
College of Education
University of Saskatchewan

Jerry Peters, Teacher
Chinook School Division
Saskatchewan Teachers' Federation

In addition, the Ministry of Education acknowledges the Construction and Carpentry working group members:

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Introduction

The Construction and Carpentry curriculum is designed with modules to complete three 100 hour courses. Modules also can be selected to use in survey courses in the middle and secondary levels. Each module contains a single learning outcome with a number of indicators showing the depth and breadth of student learning required in each module. Middle-level programs should focus on modules labelled as Introductory.

Curriculum Features

Curricula in the Practical and Applied Arts (PAA) have several features unique to this area of study. The reasons for inclusion of these features in all PAA curricula are to encourage flexibility in school programming, to establish clearly transferable skills, and to ensure the practical emphasis of the program.

PAA curricula contain all courses in a **single document** whether it is one course such as Entrepreneurship or a series of five courses as in Autobody. This feature allows schools and teachers the flexibility to choose modules supportive of their students' needs as well as utilize the available facilities and equipment. The order and number of outcomes in a course can vary between schools as long as the integrity of the discipline and the required 100 hours per course are maintained.

All PAA curricula are designed using **modules**, each with a single outcome for students to achieve. To aid teachers and schools in course planning, each module is designated as Introductory, Intermediate, or Advanced. Modules also may have prerequisites which must be completed by the student as the knowledge (factual, conceptual, procedural, metacognitive) is cumulative. Core modules are compulsory modules that must be covered in pure courses of study for developmental or safety reasons. Each module provides a suggested time to aid teachers in planning their courses. Each module may take more or less than the suggested time depending on factors such as background knowledge of the students.

A third unique feature of PAA curricula is the inclusion of an optional **Extended Study** module in each course. The Extended Study module allows teachers to create their own outcome and indicators relevant to the purpose and areas of focus for the subject to meet their students' needs. As innovations occur in the knowledge and technology of various areas of study, the Extended Study modules are one way that teachers can ensure their programs stay current with industry practice.

Work Study modules contained in all PAA curricula encourage personalized learning and development of community relationships. Work Study is designed as a work-based learning portion of a course to

provide off-campus educational opportunities for individuals or small groups in a work setting. Planning and assessment are managed by the teacher while the learning opportunity is provided by an expert in the community. Practical skills developed in school are directly transferred to a work environment.

Another feature unique to the Practical and Applied Arts is the availability of **module tracking** within the provincial Student Data System. This service, provided by the Ministry of Education, allows teachers to enter completed modules into the Student Data System to create a record and printout of all PAA modules experienced during a students school career. This record can be provided to students in their report cards, for use in a portfolio or inclusion on a résumé.

Transferable skills are a desirable aspect of lifelong learning. Transferable skills developed in PAA are many and varied, from operating large stationary power equipment to utilizing video editing software. The practical nature of these transferable skills enriches students' lives as they transition into post-secondary life. In Canada, two taxonomies of transferable work skills have been produced. The Conference Board of Canada developed a list of Employability Skills and Human Resources and Service Development Canada identified a series of Essential Skills. Students will be familiar with both of these taxonomies from their learning in grade 8 Career Education.

More details on the above curriculum features are provided in the Practical and Applied Arts Handbook available on the Ministry of Education website.

Core Curriculum

Core Curriculum is intended to provide all Saskatchewan students with an education that will serve them well, regardless of their choices after leaving school. Through its components and initiatives, Core Curriculum supports student achievement of the Goals of Education for Saskatchewan. For current information regarding Core Curriculum, please refer to *Core Curriculum: Principles, Time Allocations, and Credit Policy* on the Saskatchewan Ministry of Education website. For policy and foundation documents related to the components and initiatives of Core Curriculum, please refer to the Ministry website at *www.education.gov.sk.ca/policy*.

Broad Areas of Learning

Three Broad Areas of Learning reflect Saskatchewan's Goals of Education and express the desired attributes for Saskatchewan's grade 12 graduates. The Practical and Applied Arts contribute to the Goals of Education through helping students achieve knowledge, skills, and attitudes related to these Broad Areas of Learning.

Lifelong Learners

Related to the following Goals of Education:

- *Basic Skills*
- *Lifelong Learning*
- *Positive Lifestyle*

In the course of learning during Practical and Applied Arts classes, students will gain a positive sense of identity and efficacy through development of practical skills and knowledge. Practical and Applied Arts curricula are closely related to and informed by careers found in Saskatchewan and, therefore, are directly connected to lifelong learning, whether in a professional career or through hobbies and personal interests.

Sense of Self, Community, and Place

Related to the following Goals of Education:

- *Understanding and Relating to Others*
- *Self-Concept Development*
- *Spiritual Development*

To engage in the Practical and Applied Arts, students not only need to use knowledge and skills but also must interact with each other. Through the Practical and Applied Arts, students learn about themselves, others, and the world around them. They use their new understanding and skills to explore who they are, who they might become, and how they can contribute to the larger community in which they live. Practical and Applied Arts programming should vary by school to reflect the community at large. Community projects can play a key role in Practical and Applied Arts classes and connect the school more closely to the community.

Engaged Citizens

Related to the following Goals of Education:

- *Career and Consumer Decisions*
- *Membership in Society*
- *Growing with Change*

Engaged citizens have empathy for those around them and contribute to the well-being of the community as a whole. Practical and Applied Arts students learn how new skills and abilities enable them to make a difference in their personal lives as well as in their family and community. Skills and abilities gained in Practical and Applied Arts classes build a sense of confidence which encourages students to participate effectively in their world.

Cross-Curricular Competencies

The Cross-curricular Competencies are four interrelated areas containing understandings, values, skills, and processes that are considered important for learning in all areas of study. In the Practical

K-12 Goals for Developing Thinking:

- *Thinking and learning contextually*
- *Thinking and learning creatively*
- *Thinking and learning critically.*

K-12 Goals for Developing Identity and Interdependence:

- *Understanding, valuing, and caring for oneself (intellectually, emotionally, physically, spiritually)*
- *Understanding, valuing, and caring for others*
- *Understanding and valuing social, economic, and environmental interdependence and sustainability.*

K-12 Goals for Developing Literacies:

- *Constructing knowledge related to various literacies*
- *Exploring and interpreting the world through various literacies*
- *Expressing understanding and communicating meaning using various literacies.*

K-12 Goals for Developing Social Responsibility:

- *Using moral reasoning processes*
- *Engaging in communitarian thinking and dialogue*
- *Taking social action.*

and Applied Arts, the Cross-curricular Competencies also relate to lifelong learning through career development and transitions to post-secondary training, education, and work.

Developing Thinking

Learners construct knowledge through application of prior experiences in their lives to new contexts. The Practical and Applied Arts not only present new contexts but present them in real world situations. For example, students will solve problems, test hypotheses, design models, and analyze products during Practical and Applied Arts classes.

Developing Identity and Interdependence

Developing identity includes exploring career opportunities through the Practical and Applied Arts. As students gain in experience in various Practical and Applied Arts classes, they create a sense of efficacy to contribute not only to their own well-being but also to those around them. The Practical and Applied Arts provide effective interaction between students, as well as opportunities to contribute skills and abilities to the larger community.

Developing Literacies

Literacies provide many ways to express a personal understanding of the world. Literacy in the world of the Practical and Applied Arts can mean interpreting symbols on a welding diagram or creating a computer code for an interactive media website. The use of technology to communicate ideas and information is key to many of the Practical and Applied Arts.

Developing Social Responsibility

Contributing positively to one's natural, social, and constructed environments underlies the knowledge and skills developed through the Practical and Applied Arts. Individual interests and talents can be nurtured through the Practical and Applied Arts and directed toward contributions to the community. Projects including teamwork, consensus building, and diversity enhance the development of social responsibility.

Purpose and Areas of Focus for Construction and Carpentry

The purpose of Construction and Carpentry is to expose students to the processes and skills needed to construct a typical residential dwelling as well as explore some of the many skilled trades careers associated with residential construction.

Areas of Focus identify the key components that students are expected to know, understand, and be able to do upon completion of the learning in a Practical and Applied Arts curriculum. Because PAA curricula generally contain more learning than one course (1 credit), the Areas of Focus are not meant to be attained completely after 100 hours of learning. The Areas of Focus for Construction and Carpentry are to:

- safely develop life-long carpentry skills in a supportive environment
- utilize a variety of hand tools, portable power tools and stationary power tools
- investigate and demonstrate the construction techniques required in a typical residential dwelling
- construct projects indicative of personal skills levels and appropriate to community needs.
- become aware of the many different occupations required to bring a house to completion.

Teaching Construction and Carpentry

Teachers and students need to develop an atmosphere and attitudes placing safety at the top of every plan and activity in Construction and Carpentry. Safety is a responsibility of each individual who enters a construction area, whether at school or on a worksite. Saskatchewan historically has a mediocre injury rate when compared nationally. This has begun to turn around as the unintentional injury rate drops as a culture of safety evolves in the workplace. Key developmental concepts of construction safety can be fostered from the beginning in schools. A key resource for high school classes is the Saskatchewan Construction Safety Association which offers the Saskatchewan Construction Orientation Training (SCOT) program to high school students in Saskatchewan.

The modules in Construction and Carpentry are designed for students to build skills in making calculations, using tools safely, and understanding how housing systems work. These skills also need to

be demonstrated through practical application. Projects, if not directly related to residential construction, should challenge students to interpret plans, utilize tools, and pay attention to details. High-quality skills should translate into high-quality projects.

Students and teachers alike will find a tremendous amount of industry terminology in this curriculum. The glossary at the back is comprehensive, but a number of good resources will still be required to develop a working knowledge of the terminology required to be competent in the construction trades.

While actual blueprints have gone the way of the dinosaurs, the amount of detailed plans and drawings produced for projects and residential structures has multiplied. Drafting modules have been included in the Suggested Course Configurations to provide extra learning opportunities and practice at reading technical drawings. Community projects provide an array of opportunities for Construction and Carpentry classes. Several large-scale projects in the province have students spending an entire semester building a house with community partners. Every city and town in the province presents opportunities for school classes to complete projects to fill a need in the community. Teachers and students are encouraged to contact local governments, parks, service clubs, or any number of organizations to seek partnership opportunities where students can demonstrate their growing skill level and contribute to society at large.

Teaching for Deep Understanding

For deep understanding, it is vital that students learn by constructing knowledge, with some understandings provided directly by the teacher. As an example, basic understanding of the effects of changing the pitch on a roof is something that the teacher can demonstrate and name for the students; however, first the students could explore the important ideas by experimenting with different pitches. Demonstrations by the teacher in the Construction and Carpentry class often form a significant portion of the instruction, but the students must have adequate practice time to construct their own understandings of the feel of adequately demonstrating the required skill.

Teachers can analyze the outcome in each module to identify what students need to know, understand, and be able to do. Teachers also need to create opportunities for students to explain, apply, and transfer understanding to new situations. This reflection supports professional decision making and planning effective strategies to promote students' deeper understanding of ideas.

Construction and Carpentry skills and understandings are constructed when students engage in deliberate activities utilizing key concepts of the subject area. When students participate in classes where they are told what to do, how to do it, and when to do it, they cannot make the strong connections necessary for learning to be meaningful, easily accessible, and transferable. The learning environment must be respectful of individuals and groups, fostering discussion and self-reflection, the asking of questions, the seeking of multiple answers, the opportunity for application, and the construction of meaning.

Inquiry

Inquiry learning provides students with opportunities to build knowledge, abilities, and inquiring habits of mind that lead to deeper understanding of their world and human experience. The inquiry process focuses on the development of compelling questions, formulated by teachers and students, to motivate and guide inquiries into topics, problems, and issues related to curriculum content and outcomes.

Inquiry is more than a simple instructional method. It is a philosophical approach to teaching and learning, grounded in constructivist research and methods, which engages students in investigations that lead to understanding and skills within the discipline as well as knowledge that is applicable across disciplines. For example, understanding the physics of gravity and load on a span will support understanding of floor framing and rafters/trusses.

Inquiry builds on students' inherent sense of curiosity and wonder, drawing on their diverse backgrounds, interests, and experiences. The process provides opportunities for students to become active participants in a collaborative search for meaning and understanding. Students who are engaged in inquiry:

- construct deep knowledge and deep understanding rather than passively receiving it
- are involved and engaged directly in the discovery of new knowledge
- encounter alternative perspectives and conflicting ideas that transform prior knowledge and experience into deep understanding
- transfer new knowledge and skills to new circumstances (e.g., the workplace)
- take ownership and responsibility for their ongoing learning of curriculum content and skills.

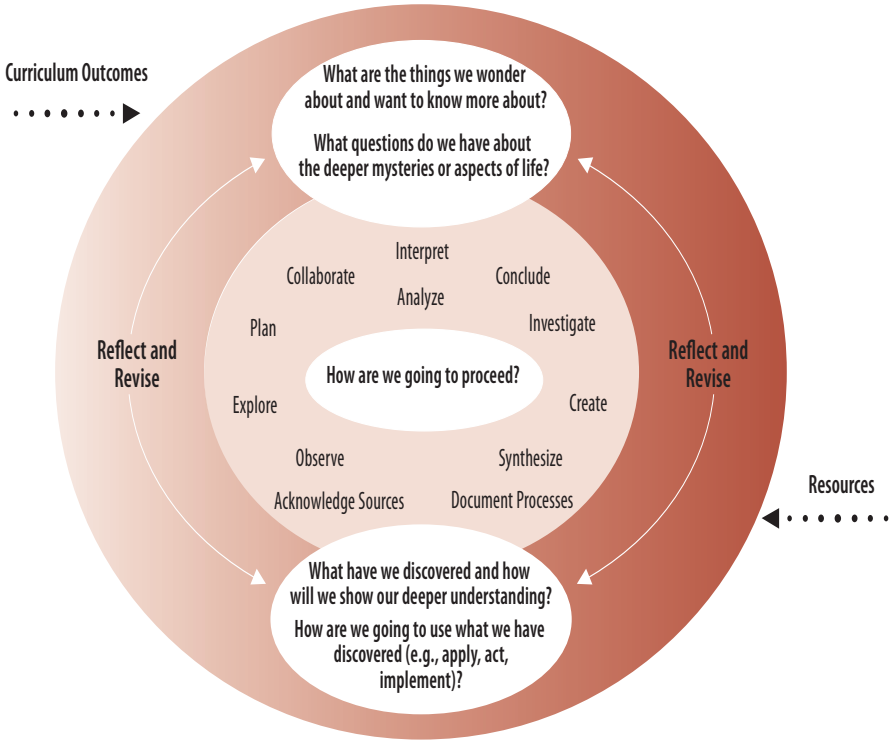
(Adapted from Kuhlthau & Todd, 2008, p. 1)

Inquiry is a philosophical stance rather than a set of strategies, activities, or a particular teaching method. As such, inquiry promotes intentional and thoughtful learning for teachers and children.

(Mills & Donnelly, 2001, p. xviii)

Inquiry learning is not a step-by-step process but rather a cyclical process with parts of the process being revisited and rethought as a result of students' discoveries, insights, and construction of new knowledge. The following graphic shows the cyclical inquiry process.

Constructing Understanding Through Inquiry



Inquiry prompts and motivates students to investigate topics within meaningful contexts. The inquiry process is not linear nor lock-step, but is flexible and recursive. Experienced inquirers move back and forth through the cyclical process as new questions arise and as students become more comfortable with the process.

Well-formulated inquiry questions are broad in scope and rich in possibilities. They encourage students to explore, gather information, plan, analyze, interpret, synthesize, problem solve, take risks, create, develop conclusions, document, reflect on learning, and develop new questions for further inquiry.

In the Practical and Applied Arts, inquiry encompasses creating solutions to challenges through the practical application of understandings and skills. This includes processes to get from what is known to discover what is unknown. When teachers show students how to solve a challenge and then assign additional/similar challenges, the students are not constructing new knowledge through application but merely practising. Both are necessary elements of skill building in the Practical and Applied Arts, but one should not be confused with

the other. If the path for getting to the end situation already has been determined, it is no longer problem solving. Students must understand this difference as well.

Creating Questions for Inquiry in the Practical and Applied Arts

Teachers and students can begin their inquiry at one or more entry points; however, the process may evolve into learning opportunities across disciplines, as reflective of the holistic nature of our lives. Developing questions evoked by students' interests is essential, with the potential for rich and deep learning. Compelling questions initiate and guide the inquiry, and give students direction for discovering deep understandings about a topic or issue under study.

The process of constructing inquiry questions can help students grasp the important disciplinary ideas situated at the core of a particular curricular purpose or area of focus. These broad questions will lead to more specific questions that can provide a framework, purpose, and direction for the learning activities in a lesson or project, and help students connect what they are learning to their experiences and life beyond school.

Effective questions in the Practical and Applied Arts are the key to initiating and guiding students' investigations, critical thinking, problem solving, and reflection on their own learning. Such questions include:

- What is the best solution to creating a strong roof in this circumstance and for this purpose?
- Which elements of design will produce the desired audience impact in a graphic arts project for a media campaign?
- Which visual effects will be most effective in engaging an audience on a website?
- What community needs can be met by applying these skills in horticulture?

The above are just a few examples of questions to move students' inquiry towards deeper understanding. Effective questioning is essential for teaching and student learning, and should be an integral part of planning. Questioning also should be used to encourage students to reflect on the inquiry process as well as the documentation and assessment of their own learning.

Questions should invite students to explore concepts within a variety of contexts and for a variety of purposes. When questioning students, teachers should choose questions that:

- encourage students to make use of the knowledge and skills of the discipline

Effective questions:

- *cause genuine and relevant inquiry into the important ideas and core content*
- *provide for thoughtful, lively discussion, sustained inquiry, and new understanding as well as more questions*
- *require students to consider alternatives, weigh evidence, support their ideas, and justify their answers*
- *stimulate vital, ongoing rethinking of key ideas, assumptions, and prior lessons*
- *spark meaningful connections with prior learning and personal experiences*
- *naturally recur, creating opportunities for transfer to other situations and subjects.*

(Wiggins & McTighe, 2005, p. 110)

- are open-ended, whether in answer or approach, and may have multiple answers or multiple approaches
- empower students to explore their curiosity and unravel their misconceptions
- not only require the application of skills but also encourage students to make connections and are applicable to new situations
- lead students to wonder about a topic and construct new questions as they investigate this newly found interest.

(Adapted from Schuster & Canavan Anderson, 2005, p. 3)

Reflection and Documentation of Inquiry

An important part of any inquiry process is student reflection on their learning and the documentation needed to assess the learning and make it visible. Student documentation of the inquiry process in Construction and Carpentry may take the form of reflective journals, notes, drafts, models, projects, photographs, or video footage. This documentation should illustrate the students' strategies and thinking processes that led to new insights and conclusions. Inquiry-based documentation can be a source of rich assessment materials through which teachers gain an in-depth look into their students' understandings. These types of documentation can be utilized in any Practical and Applied Arts course.

Students must engage in the communication and representation of their progress in building skills and understandings. A wide variety of forms of communication and representation should be encouraged and, most importantly, have links made between them. In this way, student inquiry can develop and strengthen understanding through self-reflection.

Module Overview Chart

Module Code	Modules	Suggested Time (hours)
COCA1	Module 1: Safety (Core)	3-5
COCA2	Module 2: Wood (Core)	2-5
COCA3	Module 3: Manufactured Building Products (Core)	2-3
COCA4	Module 4: Project Estimating (Core)	2-3
COCA5	Module 5: Alternate Building Materials and Processes (Core)	2-3
COCA6	Module 6: Measuring and Layout (Core)	4-8
COCA7	Module 7: Hand Tools (Core)	4-8
COCA8A	Module 8A: Portable Power Tools (Core)	5-8
COCA8B	Module 8B: Portable Power Tools (Core)	5-8
COCA9A	Module 9A: Stationary Power Tools (Core)	5-8
COCA9B	Module 9B: Stationary Power Tools (Core)	5-8
COCA10	Module 10: Fasteners and Adhesives (Core)	2-5
COCA11A	Module 11A: Wood Project (Optional)	10-50
COCA11B	Module 11B: Wood Project (Optional)	20-50
COCA11C	Module 11C: Wood Project (Optional)	20-50
COCA12	Module 12: Project Finishing (Optional)	5-10
COCA13	Module 13: Career Opportunities (Core)	3-5
COCA14	Module 14: Building Layout (Core)	2-5
COCA15	Module 15: Foundations (Core)	2-5
COCA16	Module 16: Floor Framing (Core)	5-10
COCA17	Module 17: Wall Framing (Core)	10-15
COCA18	Module 18: Roof Framing (Core)	10-15
COCA19	Module 19: Roofing Materials and Installation (Optional)	2-7
COCA20	Module 20: Windows and Doors (Optional)	4-8
COCA21	Module 21: Exterior Finishing (Optional)	10-15
COCA22	Module 22: Insulation and Vapour Barrier (Optional)	2-5
COCA23	Module 23: Interior Finishing (Optional)	10-15
COCA24	Module 24: Stair Framing (Optional)	3-8
COCA25	Module 25: Introductory Cabinet Making (Optional)	10-20
COCA26	Module 26: Intermediate Cabinet Making (Optional)	10-20
COCA27A	Module 27A: Work Study Preparation (Optional)	3-5
COCA27B	Module 27B: Work Study Preparation (Optional)	3-5
COCA28A	Module 28A: Work Study Placement (Optional)	25-50
COCA28B	Module 28B: Work Study Placement (Optional)	25-50
COCA29A	Module 29A: Work Study Follow-up (Optional)	2-4
COCA29B	Module 29B: Work Study Follow-up (Optional)	2-4

COCA88	Module 88: Apprenticeship in Saskatchewan (Optional)	3-5
COCA99A	Module 99A: Extended Study (Optional)	10-25
COCA99B	Module 99B: Extended Study (Optional)	10-25
COCA99C	Module 99C: Extended Study (Optional)	10-25

Note: When recording modules from this curriculum in the Module Recordkeeping section of the Student Data System (SDS), please be sure to use the modules with the prefix COCA. Modules for the previous curriculum continue to be in the SDS with the prefix CONST in order to maintain the integrity of the data for students who completed modules from that curriculum.

Suggested Course Configurations

Module Code	Modules	Suggested Time (hours)
	Construction and Carpentry 10	
COCA1	Module 1: Safety (Core)	3-5
COCA2	Module 2: Wood (Core)	2-5
COCA3	Module 3: Manufactured Building Products (Core)	2-3
COCA4	Module 4: Project Estimating (Core)	2-3
COCA6	Module 6: Measuring and Layout (Core)	4-8
COCA7	Module 7: Hand Tools (Core)	4-8
COCA8A	Module 8A: Portable Power Tools (Core)	5-8
COCA9A	Module 9A: Stationary Power Tools (Core)	5-8
COCA10	Module 10: Fasteners and Adhesives (Core)	2-5
COCA11A	Module 11A: Wood Project (Optional)	10-50
COCA12	Module 12: Project Finishing (Optional)	5-10
COCA13	Module 13: Career Opportunities (Core)	3-5
COCA99A	Module 99A: Extended Study (Optional)	10-25
	Optional Modules from the Drafting Curriculum	
DRAF02	Module 2: Basic Manual Drafting Tools and Procedures	10-15
DRAF03	Module 3: Sketching and Freehand Drawing Fundamentals	5-15
DRAF06	Module 6: Basic Dimensioning	15-20
	Minimum	**100**

Module Code	Modules	Suggested Time (hours)
	Construction and Carpentry 20	
COCA8B	Module 8B: Portable Power Tools (Core)	5-8
COCA9B	Module 9B: Stationary Power Tools (Core)	5-8
COCA11B	Module 11B: Wood Project (Optional)	20-50
COCA14	Module 14: Building Layout (Core)	2-5
COCA15	Module 15: Foundations (Core)	2-5
COCA16	Module 16: Floor Framing (Core)	5-10
COCA17	Module 17: Wall Framing (Core)	10-15
COCA25	Module 25: Introductory Cabinet Making (Optional)	10-20
COCA27A	Module 27A: Work Study Preparation (Optional)	3-5
COCA28A	Module 28A: Work Study (Optional)	25-50
COCA29A	Module 29A: Work Study Follow-up (Optional)	2-4
COCA99B	Module 99B: Extended Study (Optional)	10-25

	Optional Modules from the Drafting Curriculum	
DRAF12	Module 12: Working Drawings	15-20
DRAF13	Module 13: Floor Plans	20-25
DRAF15	Module 15: Wall Sections	10-20
DRAF31	Module 31: Reading Technical Documents (Blueprints)	2-5
	Minimum	**100**

Module Code	Modules	Suggested Time (hours)
	Construction and Carpentry 30	
COCA5	Module 5: Alternate Building Materials and Processes (Core)	2-3
COCA11C	Module 11C: Wood Project (Optional)	20-50
COCA18	Module 18: Roof Framing (Core)	10-15
COCA19	Module 19: Roofing Materials and Installation (Optional)	2-7
COCA20	Module 20: Windows and Doors (Optional)	4-8
COCA21	Module 21: Exterior Finishing (Optional)	10-15
COCA22	Module 22: Insulation and Vapour Barrier (Optional)	2-5
COCA23	Module 23: Interior Finishing (Optional)	10-15
COCA24	Module 24: Stair Framing (Optional)	3-8
COCA26	Module 26: Intermediate Cabinet Making (Optional)	10-20
COCA27B	Module 27B: Work Study Placement (Optional)	3-5
COCA28B	Module 28B: Work Study Placement (Optional)	25-50
COCA29B	Module 29B: Work Study Follow-up (Optional)	2-4
COCA88	Module 88: Apprenticeship in Saskatchewan (Optional)	3-5
COCA99C	Module 99C: Extended Study (Optional)	10-25
	Optional Modules from the Drafting Curriculum	
DRAF14	Module 14: Foundation Plans	5-15
DRAF16	Module 16: Elevations	10-20
DRAF29	Module 29: Surveying	10-15
	Minimum	**100**

Modules: Outcomes and Indicators

Module 1: Safety (Core)

Suggested Time: 3-5 hours | **Level: Introductory** | **Prerequisite: None**

Outcome	Indicators
Demonstrate safe work habits and an attitude of working safely with tools around others to prevent unintentional injuries.	a. Demonstrate an attitude of working safely for the benefit of self and others. b. Integrate high standards of safety practice into personal work habits including use of personal protective equipment (PPE). c. Act consistently to focus on personal tasks while maintaining a consciousness of others working in proximity. d. Analyze shop and workplace situations to identify hazards and seek solutions. e. Discuss and assess fire and injury procedures in the shop and/or worksite.

Note: While a single safety module has been included, safety must be the primary focus for students each day.

Module 2: Wood (Core)

Suggested Time: 2-5 hours | **Level: Introductory** | **Prerequisite: None**

Outcome	Indicators
Demonstrate an understanding of tree growth and lumber production.	a. Investigate the structure and growth of common lumber trees including concepts such as pith, heartwood, and annual rings. b. Classify common woods as softwoods or hardwoods and consider whether open- or closed-grained. c. Represent the path of dimensional lumber from falling a tree to retail sales in a lumber yard. d. Describe and identify common wood defects such as warp, check, cup, and bow. e. Investigate and discuss the effects of moisture on dimensional lumber. f. Assess current logging practices in Saskatchewan and Canada, and express an opinion about the sustainability of the wood product industry.

Module 3: Manufactured Building Products (Core)

Suggested Time: 2-3 hours | **Level: Intermediate** | **Prerequisite: Module 2**

Outcome	Indicators
Demonstrate an understanding of how a variety of wood products are manufactured.	a. Compare the manufacturing processes and categories for various engineered structural wood panels (i.e. plywood, oriented strand board, and composite panels). b. Classify the common uses of non-structural panels such as hardwood, plywood, medium density fibreboard (MDF), hardboard, and particleboard. c. Summarize the advantages of glued-laminated timber (glulam) over conventional timber beams. d. Justify the use of wood I-joists and floor trusses over traditional joists in residential construction.

Module 4: Project Estimating (Core)

Suggested Time: 2-3 hours | **Level: Introductory** | **Prerequisite: Module 2**

Outcome	Indicators
Demonstrate the calculation of material usage to arrive at a project cost.	a. Describe the difference between the nominal size and the actual size of lumber. b. Utilize the appropriate formula to calculate the number of board feet in a given project. c. Calculate the cost of a project given a material list and the cost of the lumber and hardware.

Note: Work in this module supports outcomes WA10.4 and WA10.5 of grade 10 Workplace and Apprenticeship Math.

Module 5: Alternate Building Materials and Processes (Core)

Suggested Time: 2-3 hours | **Level: Advanced** | **Prerequisites: Module 3**

Outcome	Indicators
Investigate various innovative building materials and processes and identify their relative advantages or disadvantages over wood and wood products.	a. Investigate some recent innovations in residential building (e.g., low-E argon windows, insulated concrete forms, recycled plastic decking), and compare them to traditional products and methods. b. Research and report on energy efficient and resource efficient alternatives in residential construction.

Module 5 continued	c. Compare the efficiency advantage of manufacturing building materials to traditional materials (e.g., lifespan, reduction of waste, recycling of materials). d. Identify the relative advantages and disadvantages of metal framing versus traditional wood framing. e. Investigate the growing trends of residential construction in Saskatchewan such as using straw bales.

Module 6: Measuring and Layout (Core)

Suggested Time: 4-8 hours | **Level: Introductory** | **Prerequisite: Module 1**

Outcome	Indicators
Demonstrate proficiency and accuracy when measuring materials.	a. Demonstrate accurate measurement to 1/16" with a pocket tape measure. b. Demonstrate how to draw a line parallel to a board's side with a combination square. c. Calculate area, perimeter, and volume using simple formulas and a tape measure. d. Demonstrate how to draw a line at 90 and 45 degrees using a framing square. e. Demonstrate how to check for level and plumb using a carpenter's level. f. Investigate a number of other measurement devices (e.g., plumb bob, sliding T-bevel, tramel points, dividers).

Module 7: Hand Tools (Core)

Suggested Time: 4-8 hours | **Level: Introductory** | **Prerequisite: Module 6**

Outcome	Indicators
Demonstrate proficiency with a variety of hand tools to accomplish cutting, shaping, smoothing, and boring of wood.	a. Identify the hand tools in the shop and describe their function. b. Assess a task and identify the hand tools best suited to accomplishing the task. c. Demonstrate the correct technique when provided a hand tool. d. Describe safety precautions for each hand tool used in the class including correct PPE.

Module 8A: Portable Power Tools (Core)

Suggested Time: 5-8 hours | **Level: Introductory** | **Prerequisite: Module 1, 7**

Outcome	Indicators
Develop proficiency using a variety of portable power tools.	a. Demonstrate the correct use of a jigsaw including cutting curves and replacing the blade. b. Demonstrate the proper use of a drill including selecting and changing bits, batteries, and bit direction. c. Demonstrate the proper use of a router including changing a bit, setting the depth, and identifying a number of common bits and their cuts (e.g., rabbet, dado, cove, flush trim). d. Demonstrate the proper technique for marking stock and using a biscuit joiner including adjusting for the size of biscuit.

Note: The tools listed in Modules 8A and 8B can be interchanged depending on individual capability and equipment availability to complete a project.

Module 8B:Portable Power Tools (Core)

Suggested Time: 5-8 hours | **Level: Intermediate** | **Prerequisite: Module 8A**

Outcome	Indicators
Develop increasing proficiency with a larger number of portable power tools.	a. Demonstrate the proper technique for making crosscuts, rip cuts and cutting panel products with a circular saw as well as changing the depth of cut and selecting and installing the correct blade. b. Demonstrate the proper technique for cutting with a reciprocating saw including selecting and installing the correct blade. c. Demonstrate the proper use of a pneumatic nailer and/or stapler including loading the nails/staples and connecting and disconnecting the air hose (if applicable). d. Demonstrate the proper technique for using an electric sander including replacing the sandpaper.

Note: The tools listed in Modules 8A and 8B can be interchanged depending on individual capability and equipment availability to complete a project.

Module 9A: Stationary Power Tools (Core)

Suggested Time: 5-8 hours | **Level: Introductory** | **Prerequisite: Module 8A**

Outcome	Indicators
Develop proficiency with operating a variety of stationary power tools.	a. Demonstrate the safe use of a tablesaw and/or radial arm saw including setting the fence, setting the depth of cut, and selecting and installing the correct blade. b. Demonstrate the safe use of a mitresaw including adjusting the angle of the cut and changing the blade. c. Demonstrate the proper use of a bandsaw to make straight and irregular cuts as well as select and install the correct blade. d. Demonstrate the proper use of a drill press including how to adjust the depth of the hole, the tilt of the table, and the speed of the bit.

Note: The tools listed in Modules 9A and 9B can be interchanged depending on individual capability and equipment availability to complete a project.

Module 9B: Stationary Power Tools (Core)

Suggested Time: 5-8 hours | **Level: Intermediate** | **Prerequisite: Module 9A**

Outcome	Indicators
Demonstrate increasing proficiency with an increasing number of complex stationary power tools.	a. Demonstrate the correct use of a jointer to dress the edge of a board. b. Demonstrate how to dress a board using a jointer, table saw and thickness planer (if all are available). c. Demonstrate how to use a thickness planer to remove material safely from a board in a series of passes to achieve a desired thickness. d. Demonstrate the correct use of a shaper/router table including how to start and stop, direction of feed, depth adjustment, and bit replacement.

Note: The tools listed in Modules 9A and 9B can be interchanged depending on individual capability and equipment availability to complete a project.

Module 10: Fasteners and Adhesives (Core)

Suggested Time: 2-5 hours | **Level: Introductory** | **Prerequisite: Module 1**

Outcome	Indicators
Develop proficiency in using fasteners and adhesives effectively.	a. Identify a number of types of nails, screws, and bolts, and determine the characteristics of each to select the best fasteners for the given task. b. Identify a number of solid and hollow wall anchors to determine the appropriate one for the given task. c. Identify a number of connectors and hangers to determine the appropriate one for the given task. d. Identify some common glues and mastics to determine the appropriate product for a given task.

Module 11A: Wood Project (Optional)

Suggested Time: 10-50 hours | **Level: Introductory** | **Prerequisites: Module 1, 2, & 6**

Outcome	Indicators
Demonstrate basic woodworking skills to complete a simple project.	a. Identify the needed tools, skills, timelines, and safety practices associated with a given project. b. Transpose measurements from a plan to material. c. Cut lumber and/or sheet material. d. Demonstrate safe and efficient use of required tools. e. Assemble using the appropriate joinery and/or fasteners. f. Apply a finish to the project (if required).

Module 11B: Wood Project (Optional)

Suggested Time: 20-50 hours | **Level: Intermediate** | **Prerequisites: Module 3, 4, 7, 9B, 11A**

Outcome	Indicators
Demonstrate increasing proficiency of woodworking skills to complete and assess a project.	a. Identify efficient methods for completing the selected project. b. Identify safety considerations including hazards created by power tools and other people in the work area. c. Demonstrate proficiency with selected layout tools to minimize material waste. d. Create the required components through cutting, shaping, and boring of material.

Module 11B continued

e. Assemble and finish the project according to the specifications of the plan.

f. Participate in the assessment of personal skills, attitudes, and work habits as well as the final product.

Module 11C: Wood Project (Optional)

Suggested Time: 20-50 hours | **Level: Advanced** | **Prerequisite: Module 11B**

Outcome

Demonstrate increasing proficiency to complete a project of one's own choosing and assess personal skills.

Indicators

a. Identify the most effective methods for completing the chosen project.

b. Identify all safety considerations involved with working with others in a limited space as well as strategies for cooperation.

c. Demonstrate increasing proficiency and accuracy with selected layout tools.

d. Create the required project components through cutting, shaping, and boring of material.

e. Assemble and finish the project according to the specifications of the plan.

f. Create an assessment of personal skills, attitudes, work habits, and the final product.

Module 12: Project Finishing (Optional)

Suggested Time: 5-10 hours | **Level: Introductory** | **Prerequisite: Module 11A**

Outcome

Investigate a variety of different methods and products to select an appropriate project finish.

Indicators

a. Investigate and explain the advantages and disadvantages of oil-based and water-based as well as transparent and semi-transparent products.

b. Choose the appropriate product for finishing a project (e.g., shellac, paint, stain, oil, wax).

c. Investigate and create a plan for prepping the wood to the proper degree before applying a finish.

d. Demonstrate the proper technique for applying and cleaning up the finish.

Module 13: Career Opportunities (Core)

Suggested Time: 3-5 hours | **Level: Introductory** | **Prerequisite: None**

Outcome

Explore and evaluate the career development and occupation opportunities in the field of construction and carpentry in Saskatchewan, Canada, and globally, including post-secondary education programs.

Indicators

a. Identify specific examples of occupational skills and occupations required in the construction trades.

b. Investigate programs offered by the Saskatchewan Apprenticeship and Trade Certification Commission and technical institutes in carpentry.

c. Investigate job opportunities in the construction trades.

Module 14: Building Layout (Core)

Suggested Time: 2-5 hours | **Level: Intermediate** | **Prerequisite: Module 6**

Outcome

Demonstrate the ability to accurately locate a building on a given site.

Indicators

a. Demonstrate an understanding of reading a plot plan including property lines, building lines, grade, elevation, benchmark, and easements.

b. Identify why building permits are required and provide general information to acquire a building permit.

c. Identify the reasoning for building codes and examine a building code book.

Module 15: Foundations (Core)

Suggested Time: 2-5 hours | **Level: Intermediate** | **Prerequisite: Module 14**

Outcome

Demonstrate an understanding of pilings, footings, and basement wall construction.

Indicators

a. Identify the differences between cement and concrete including concepts such as aggregates and additives.

b. Investigate and explain the processes for placing concrete forms, pilings, footings, basement walls, and large pads.

c. Explain the theory and process of how to finish concrete.

d. Determine the advantages and disadvantages of alternate foundations such as wood construction and insulated concrete forms.

Module 16: Floor Framing (Core)

Suggested Time: 5-10 hours | **Level: Intermediate** | **Prerequisite: Module 14**

Outcome	Indicators
Demonstrate a basic knowledge of the procedures and techniques involved in framing the floor of a typical residential construction.	a. Demonstrate understanding of common framing terms such as on centre, trimmers, joists, rim joists, blocking, joist hanger, beams, span, and subfloor. b. Compare the advantages and disadvantages of traditional joists, trusses, manufactured joists, glulam, and steel I-beams. c. Demonstrate the industry standard of framing a floor opening.

Module 17: Wall Framing (Core)

Suggested Time: 10-15 hours | **Level: Intermediate** | **Prerequisite: Module 16**

Outcome	Indicators
Demonstrate the procedures for framing and sheathing walls in residential construction.	a. Demonstrate how to frame a wall and partitions using plates, studs, and corner posts based on 16" on centre. b. Demonstrate the proper technique for framing a rough door and window opening including using jack studs, cripples, and headers (lintels). c. Demonstrate how to raise a wall to plumb and square including installation of temporary bracing. d. Demonstrate the correct method of applying exterior sheathing.

Module 18: Roof Framing (Core)

Suggested Time: 10-15 hours | **Level: Advanced** | **Prerequisite: Module 17**

Outcome	Indicators
Illustrate practices used in various roof designs using the correct terminology.	a. Demonstrate the layout and cut of a common rafter including determining line length, location of bird's mouth, fascia, and soffit cut lines. b. Identify the characteristics and purposes of components of rafter assemblies such as common rafters, ridgeboard, ceiling joists, and collar ties. c. Demonstrate an understanding of industry standard practice to apply roof sheathing.

Module 18 continued

d. Investigate and describe the advantages and disadvantages for roof styles such as gable, gambrel, shed, mansard and hip.

e. Investigate roof truss systems and determine their advantages and disadvantages over site-built rafters.

Module 19: Roofing Materials and Installation (Optional)

Suggested Time: 2-7 hours | **Level: Advanced** | **Prerequisite: Module 18**

Outcome	Indicators
Demonstrate an understanding of a number of materials and practices as applied to the roofing of residential buildings.	a. Demonstrate a working knowledge of roofing terms such as underlayment, a square, deck, courses, lap, exposure, and flashing. b. Demonstrate an understanding of the correct method of applying shingles to a roof. c. Investigate and describe the advantages and disadvantages of various roofing materials such as asphalt, rolled roofing, wood shingle and shakes, metal, and tiles.

Module 20: Windows and Doors (Optional)

Suggested Time: 4-8 hours | **Level: Advanced** | **Prerequisite: Module 17**

Outcome	Indicators
Demonstrate an understanding of how to select and install windows and doors using industry standards.	a. Identify window parts, types, styles, cladding, and glazing, and justify selections for a given purpose. b. Demonstrate how to install a window paying attention to the house wrap, levelling using shims, caulking, and flashing. c. Identify styles and parts of a door and frame. d. Demonstrate how to install and plumb an exterior door. e. Demonstrate the installation of door locksets.

Module 21: Exterior Finishing (Optional)

Suggested Time: 10-15 hours | **Level: Advanced** | **Prerequisite: Module 17**

Outcome	Indicators
Understand the purpose and application of exterior finish to a residential building.	a. Identify the purposes and installation procedures of building paper and/or housewrap. b. Investigate common types of exterior finishes (e.g., vinyl, stucco, wood siding) and explain their relative advantages.

Module 21 continued

c. Demonstrate the procedures to install siding including starting, corners, buildouts, and openings.

d. Demonstrate the procedures to install soffit and fascia.

e. Explain the purpose and installation procedures for eavestroughs and downspouts.

Module 22: Insulation and Vapour Barrier (Optional)

Suggested Time: 2-5 hours | **Level: Advanced** | **Prerequisite: Module 21**

Outcome	Indicators
Demonstrate an understanding of insulation and vapour barrier and industry standard techniques for application.	a. Investigate various types of insulation materials (e.g., fibreglass, spray foam, rigid foam) and explain their relative R-value. b. Demonstrate proper techniques of installing a selected type of insulation. c. Identify various types of ventilation and their relationship to moisture control within a residential building.

Module 23: Interior Finishing (Optional)

Suggested Time: 10-15 hours | **Level: Advanced** | **Prerequisite: Module 22**

Outcome	Indicators
Demonstrate an understanding of common interior finishing materials and their application.	a. Demonstrate the techniques for installing drywall (i.e., boarding, and taping) and/or other selected wall finishes. b. Investigate wall and ceiling finishes (e.g., paint, suspended ceilings, and spray finishes). c. Demonstrate how to hang various interior doors. d. Investigate purposes and functions of various types of interior cabinets. e. Research types of flooring (e.g., hardwood, laminate, vinyl, carpet, tile) and their advantages. f. Demonstrate the installation of millwork such as baseboard and casing.

Module 24: Stair Framing (Optional)

Suggested Time: 3-8 hours | **Level: Advanced** | **Prerequisite: None**

Outcome	Indicators
Demonstrate an understanding of layout and assembly of a straight stairway.	a. Identify various styles of residential stairways including straight, u-shaped, curved, circular, and closed and open stairwells. b. Utilize basic staircase terminology such as stringer, tread, baluster, riser, and newel post. c. Demonstrate how to layout and assemble a straight stairway.

Module 25: Introductory Cabinet Making (Optional)

Suggested Time: 10-20 hours | **Level: Introductory** | **Prerequisite: Module 8**

Outcome	Indicators
Demonstrate the skills and knowledge required to construct a basic box project using a face frame or frameless process which may include doors and drawers.	a. Demonstrate an understanding of working drawings (i.e., material list, cutting list, assembly diagram) and accurately measure and layout stock. b. Demonstrate the safe set-up and operation of the required handheld and stationary power tools to cut, surface, and shape material. c. Cut and fit effective joints (e.g., dado, rabbet, mitre) using systems such as splines, biscuits, and dowels. d. Use the appropriate processes to assemble the project such as dry fit, glue, clamp, and use fasteners. e. Demonstrate appropriate techniques to prepare and apply finish.

Module 26: Intermediate Cabinet Making (Optional)

Suggested Time: 10-20 hours | **Level: Intermediate** | **Prerequisite: Module 25**

Outcome	Indicators
Demonstrate the skills and knowledge required to construct a cabinetry project using a frame and panel process.	a. Utilize working drawings (i.e., material list, cutting list, assembly diagram) to accurately measure and layout stock. b. Demonstrate safe set-up and operation of the required handheld and stationary power tools to cut, surface, and shape. c. Cut and fit effective joints (e.g., blind dado, rabbet, mortise and tenon) using systems such as splines, biscuits, and dowels. d. Use the appropriate processes to assemble the project such as dry fit, glue, clamp, and use fasteners.

Module 26 continued

e. Demonstrate appropriate techniques to prepare and apply finish.

f. Demonstrate knowledge and skills required for layout and cutting of material, joinery (rabbet, dado, dovetail, finger joint), edge banding, making raised panel doors, and installing hinges, drawer slides, and pulls.

Module 27A and B: Work Study Preparation (Optional)

Suggested Time: 3-5 hours **Level: Intermediate/Advanced** **Prerequisite: Module 9**

Outcome	Indicators
Recognize how school-based skills development is used to meet workplace expectations.	a. Obtain a list of roles and responsibilities of the workplace. b. Brainstorm a list of factors which may affect workplace performance. c. Discuss effective and positive verbal and non-verbal communication in the workplace. d. Develop a resumé that can be forwarded to potential employers. e. Practise effective interview techniques based on established guidelines (e.g., the greeting, the exchange, and the parting).

Note: Work Study is used to prepare students for employment through specific skill development within a workplace. The number of work study opportunities is equal to the number of courses available in the curriculum area at the 20 and 30 level.

Module 28A and B: Work Study Placement (Optional)

Suggested Time: 25-50 hours **Level: Intermediate/Advanced** **Prerequisite: Module 27A or B**

Outcome	Indicators
Gain experience in the world of work in the construction and carpentry industry to make informed career choices by expanding career research and exploration beyond the classroom.	a. Develop an awareness of career opportunities in Saskatchewan and beyond. b. Gain an opportunity to develop entry-level workplace skills that may lead to sustainable employment in the construction and carpentry industry. c. Establish standards of work performance acceptable to the student and employer. d. Identify and report on essential skills and employability skills as they relate to a work environment.

Module 29A and B: Work Study Follow-up (Optional)

Suggested Time: 2-4 hours | **Level: Intermediate/Advanced** | **Prerequisite: Module 28A or B**

Outcome

Reflect and report on the work experience including, but not limited to, hours of work, personal relationships, employer expectations, evaluation criteria, and overall personal performance.

Indicators

a. Design and participate in an exit interview with the workplace.

b. Prepare and present a report on the work study experience including aspects such as:

- expected hours of work
- dress code
- job description
- employer expectations
- employer evaluation process
- absent and late policies
- personal relationships
- problem solving.

Module 88: Apprenticeship in Saskatchewan (Optional)

Suggested Time: 3-5 hours | **Level: Introductory** | **Prerequisite: Module 13**

Outcome

Investigate the apprenticeship and trade certification process and the role of the Saskatchewan Apprenticeship and Trade Certification Commission (SATCC), opportunities that apprenticeship offers, and the relationship between secondary level courses and apprenticeship training.

Indicators

a. Research and define what apprenticeship means, and describe some of the benefits such as lifestyle, satisfaction, opportunities, wages, and respect.

b. Use and understand the appropriate terminology related to apprenticeship including but not limited to:

- journeyperson
- indenture
- pre-employment training
- designated trade and sub-trade
- advanced standing.

c. Determine the steps involved in becoming an apprentice from the perspective of the specific trade, including length of apprenticeship, annual training requirements, and Red Seal certification.

d. Develop an understanding of available programs to help transition from secondary school to apprenticeship.

e. Conduct research such as interviewing employers to identify the qualities of a successful apprentice.

Module 99A, B and C: Extended Study (Optional)

Suggested Time: 10-25 hours	Level: Intermediate, Advanced	Prerequisite: None
Outcome	**Indicators**	

Note: The Extended Study module may be used only once in each 100 hour course. In the Student Data System, record 99A for the first Extended Study module offered in the course series, and, if needed, 99B for the second and 99C for the third.

Module Overview:

Evolving societal and personal needs, advances in technology, and demands to solve current problems require a flexible curriculum that can accommodate new ways and means to support learning in the future. The Extended Study module is designed to provide schools and teachers with an opportunity to meet current and future demands not provided for in current modules in the Construction and Carpentry curriculum.

This flexibility allows a school or teacher to design one new module per credit to complement or extend the study of the core and optional modules to meet the specific needs of students or the community. The Extended Study module is designed to extend the content of the pure courses and to offer survey course modules beyond the scope of the available selection of the Construction and Carpentry modules.

The list of possibilities for topics of study or projects for an extended study is as varied as the imagination of those using the module. The optional Extended Study Module guidelines should be used to strengthen the knowledge, skills, and processes advocated in the Construction and Carpentry curriculum.

For more information on the guidelines for the Extended Study module, see the Practical and Applied Arts Handbook.

Assessment

Assessment and evaluation require thoughtful planning and implementation to support the learning process and to inform teaching. All assessment and evaluation of student achievement is based on the outcomes in the construction and carpentry curriculum.

Assessment involves the systematic collection of information about student learning with respect to:

- achievement of provincial curriculum outcomes
- effectiveness of teaching strategies employed
- student self-reflection on learning.

Evaluation compares assessment information against criteria based on curriculum outcomes for the purpose of communicating to students, teachers, parents/caregivers, and others about student progress and to make informed decisions about the teaching and learning process.

Reporting of student achievement must be in relation to curriculum outcomes. Assessment information unrelated to outcomes (e.g., attendance, behaviour, general attitude, completion of homework, effort) can be gathered and reported to complement the reported achievement related to the outcomes of Construction and Carpentry.

We assess students for three interrelated purposes of assessment. Each type of assessment, systematically implemented, contributes to an overall picture of an individual student's achievement.

Assessment for learning involves the use of information about student progress to support and improve student learning and inform instructional practices, and:

- is teacher-driven for student, teacher, and parent use
- occurs throughout the teaching and learning process, using a variety of tools
- engages teachers in providing differentiated instruction, feedback to students to enhance learning, and information to parents in support of learning.

What are examples of assessments as learning that could be used in Construction and Carpentry and what would be the purpose of those assessments?

Assessment as learning involves student reflection on and monitoring of her/his own progress related to curricular outcomes and:

- is student-driven with teacher guidance for personal use
- occurs throughout the learning process
- engages students in reflecting on learning, future learning, and thought processes (metacognition).

Assessment of learning involves teachers' use of evidence of student learning to make judgements about student achievement and:

- provides the opportunity to report evidence of achievement related to curricular outcomes
- occurs at the end of a learning cycle using a variety of tools
- provides the foundation for discussion on placement or promotion.

In Construction and Carpentry, students need to be engaged regularly in assessment as learning. The various types of assessments should flow from the learning tasks and provide direct feedback to the students regarding their progress in attaining the desired learnings as well as opportunities to set and assess personal learning goals related to the content of Construction and Carpentry.

Glossary

Aggregate: Materials such as sand, rock, or gravel used to make concrete.

Baluster: Upright piece that extends between the handrail and the tread.

Beams: A horizontal bearing member such as a girder, joist, or lintel.

Benchmark: A fixed reference point for determining the elevations during the construction of a building.

Bird's mouth: A notch cut in the underside of a rafter to fit the top of the wall plate.

Blind dado: A groove part way through and across the grain.

Blocking: Wood piece fastened between structural members to tie together and strengthen members.

Board feet: Refers to the volume of a piece of lumber. One board foot measures 1" X 12" X 12" or its equivalent.

Bow: A type of warp in which the side of lumber is curved from end to end.

Building line: Line set-up on batterboards to represent the outside face of the exterior wall of a building.

Check: Lengthwise split in the end or surface of lumber, usually resulting from more rapid drying of the end than the rest of the piece.

Cladding: Exterior covering over a window.

Combination square: A squaring tool with a sliding blade set at 45 and 90 degrees.

Cornice: The entire finished roof assembly where the walls of a structure meet the roof; sometimes called the eaves.

Course: A continuous row of building material such as brick, siding, roofing, or flooring.

Cripples or cripple studs: Short studs placed between the headers and top plates or between the rough sills and bottom plates.

Cup: A type of warp in which the side of a board is curved from edge to edge.

Dividers: A type of compass with two pointed arms, used for measuring or dividing lines.

Easement: A right held by one property owner to make use of the land of another for a limited purpose.

Employability Skills: The critical skills needed in the workplace - whether self-employed or working for others. The Employability Skills 2000+ are developed by the Conference Board of Canada.

Elevation: The height of a specific point in relation to another; a drawing in which the height of the structure or object is shown.

Essential Skills: Skills needed for work, learning, and life which provide the foundation for learning all other skills, enabling people to evolve with their jobs and adapt to workplace change. The Essential Skills are developed by Human Resources and Skills Development Canada.

Fascia: A horizontal finish piece nailed to the tail end of roof rafters.

Footing: A foundation for a column, wall, or chimney made wider than the object it supports to distribute the weight over a greater area.

Gable roof: A roof sloping downward in two at an angle from a central ridge board.

Gambrel roof: A roof that has two slopes of different pitches on each side of centre.

Glazing: The act of installing glass in a frame.

Glue-laminated lumber (glulam): Large beams or columns made by gluing smaller dimension lumber together side by side.

Grade: The level of ground; the quality of lumber.

Hardwood: Wood that comes from trees whose seeds are covered when they fall to the ground and are classified scientifically as angiosperms. Deciduous trees fall into this category.

Header: A load-bearing member over an opening; also called a lintel.

Hip roof: A roof that slopes upward toward the ridge from four different directions.

Jack studs: Short studs that support the headers.

Joist hanger: Metal stirrups that support the ends of joists.

Joist: A horizontal framing member used in a spaced pattern to provide floor or ceiling support.

Laminate flooring: Composite flooring material which consists of a transparent top layer, decorative layer, carrier layer, and bottom layer.

Lap: The amount that materials extend over or past each other.

Lintel: A load-bearing member over an opening; also called a header.

Lumber: Wood in any of its stages, from felling through readiness, for use as structural material in construction, or wood pulp in paper production.

Mansard roof: A roof that has two different pitches on all sides of the building, with lower slopes steeper than the upper.

Mastics: Thick adhesives.

Mitre: The cutting of any end of a piece at any angle.

Mortise and tenon joint: A joint between two members where a tenon cut into the end of one piece fits into a cavity mortised in the other piece.

Newel post: One of the main upright members that supports the handrails of a stairway.

On centre (OC): The distance from the centre of one structural member to the centre of the next one.

Personal Protective Equipment (PPE): Protective clothing, hard hats, safety glasses, hearing protection, or other garments or equipment designed to protect the wearer's body from injury by blunt impacts, electrical hazards, heat, chemicals, and infection, for job-related occupational health and safety purposes.

Pilings: Concrete, metal, or wood pillars forced into the earth or cast in place as foundation supports.

Plate: The top or bottom horizontal member of a wall.

Plumb bob: A pointed weight attached to a line for testing vertical.

Plumb: Vertical; at right angles to level.

Property line: A legal boundary of a parcel of land.

R-value: A number given to a material to indicate its resistance to the passage of heat. Higher R values indicate greater insulating capabilities.

Rabbet: A groove cut along the edge of a piece of lumber.

Rim joist: Floor member that is nailed perpendicular to the ends of the joists; also called band joist or box-end joist.

Riser: The finish member of a stairway covering the space between the treads.

Shed roof: A type of roof that slopes in one direction.

Shim: A thin, wedge-shaped piece of material used behind pieces to plumb, straighten, or bring them flush with a joint.

Sliding T-bevel: A sliding adjustable gauge used for transferring angles.

Soffit: The underside trim member of a cornice or any such overhang.

Softwood: Wood that comes from trees whose seeds fall to the ground as is, with no covering, and are classified scientifically as gymnosperms. Coniferous trees, which grow seeds in hard cones, fall into this category.

Stringer: Sloping members that provide the main support for the treads, risers, and other parts of the staircase.

Trammel points: Tools with sharp points that are clamped to a piece of wood to lay out arcs.

Tread: The horizontal walking surface of the step of a stairway.

Trimmers: Members of a frame placed at the sides of an opening running parallel to the main frame members.

Truss: An engineered assembly of wood or wood and metal members used to support roofs or floors.

Vapour barrier: Thin, moisture-resistant material placed over the ground or in walls to retard the passage of moisture.

Warp: Any deviation from straightness in a piece of wood.

References

Koel, L. (2009). *Carpentry, 5th ed*. Homewood, IL: American Technical Publishers Inc.

Kuhlthau, C.C. & Todd, R. J. (2008). *Guided inquiry: A framework for learning through school libraries in 21st century schools*. Newark, NJ: Rutgers University.

Mills, H. & Donnelly, A. (2001). *From the ground up: Creating a culture of inquiry.* Portsmouth, NH: Heinemann Educational Books, Ltd.

Ministry of Education (2009). *Core curriculum: Principles, time allocations, and credit policy.* Regina, SK: Ministry of Education.

Ministry of Education. (2010). *Renewed curricula: Understanding Outcomes*. Regina, SK: Ministry of Education.

Schuster, L. & Canavan Anderson, N. (2005). *Good questions for math teaching: Why ask them and what to ask, Grades 5 – 8*. Sausalito, CA: Math Solutions Publications.

Umstattd, W. D. & Davis, C. W. (2005). *Modern cabinetmaking*. Tinely Park, IL: Goodheart-Willcox Company Inc.

Vogt, F. & Nauth, M. (2009). *Carpentry, 1st ed*. Toronto, ON: Nelson Education.

Wagner, W. W. & Smith, H. B. (2008). *Modern carpentry: Essential skills for the building trades*. Tinley Park, IL: Goodheart-Willcox Company Inc.

Wiggins, G. & McTighe, J. (2005). *Understanding by design.* Alexandria, VA: Association for Supervision and Curriculum Development.

Feedback Form

The Ministry of Education welcomes your response to this curriculum and invites you to complete and return this feedback form.

Construction and Carpentry 10, 20, 30 Curriculum

1. Please indicate your role in the learning community:

   ☐ parent ☐ teacher ☐ resource teacher

   ☐ guidance counsellor ☐ school administrator ☐ school board trustee

   ☐ teacher librarian ☐ school community council member

   ☐ other _____

   What was your purpose for looking at or using this curriculum?

2. a) Please indicate which format(s) of the curriculum you used:

   ☐ print

   ☐ online

   b) Please indicate which format(s) of the curriculum you prefer:

   ☐ print

   ☐ online

3. Please respond to each of the following statements by circling the applicable number.

The curriculum content is:	Strongly Agree	Agree	Disagree	Strongly Disagree
appropriate for its intended purpose	1	2	3	4
suitable for your use	1	2	3	4
clear and well organized	1	2	3	4
visually appealing	1	2	3	4
informative	1	2	3	4

4. Explain which aspects you found to be:

   most useful:

   least useful:

5. Additional comments:

6. Optional:

   Name: _____

   School: _____

   Phone: _____ Fax: _____

Thank you for taking the time to provide this valuable feedback.

Please return the completed feedback form to:

Executive Director
Student Achievement and Supports Branch
Ministry of Education
2220 College Avenue
Regina SK S4P 4V9
Fax: 306-787-2223