BRITISH COLUMBIA | Ministry of Education

Applied Design, Skills, and Technologies Framework

Context

As part of the current work of transforming the BC provincial curriculum, there is an intention to bring applied learning to all curricula. This is being done in two ways. Firstly, individual subject curricula are being revised to place greater emphasis on curricular competencies, the *doing* part of the curricula. Secondly, the Applied Skills subject area is being re-envisioned as a K–12 program.

The Ministry of Education has brought together a group of K–12 educators to create an updated vision for Applied Skills. The team is composed largely of BCTF representatives, but also includes representatives from the BC independent school system, the First Nations School Association and post-secondary institutions. All of the educators bring a wealth of experience and varied backgrounds, and are passionate about the importance of design and creation.

Vision

The working group envisions an experiential, hands-on program of learning through design and creation that includes skills and concepts from traditional and Aboriginal practice, from the existing disciplines of Business Education, Home Economics, Information Technology, and Technology Education, and from new and emerging fields. It envisions a K–12 continuum fostering the development of the skills and knowledge that will allow students to create practical and innovative responses to everyday needs and problems.

The working group proposes the name “Applied Design, Skills, and Technologies” to replace “Applied Skills.” The new name is intended to better capture the scope and nature of the domain. Design involves the ability to combine an empathetic understanding of the context of a problem, creativity in the generation of insights and solutions, and critical thinking to analyze and fit solutions to the context. To move from design to final product or service requires skills and technology. Skills are the abilities gained through competence to do something and to do it increasingly well, and technologies are tools that enable human capabilities. In Applied Design, Skills, and Technologies, students will grow in their ability to use design thinking to gain an understanding of how to apply their skills to problem finding and solving using appropriate technologies.

A K–12 Framework

The working group’s vision for the new Applied Design, Skills, and Technologies K–12 framework embraces and builds on the exemplary practices already used in BC schools. The framework articulates and extends the learning opportunities that are currently available to BC students in Applied Skills, and shows how those opportunities could progress through the educational program from foundations to explorations to specializations.

K-5 Foundations

Students in Kindergarten to Grade 5 will have opportunities to develop foundations in Applied Design, Skills, and Technologies within the context of existing curricula.

A template that provides Big Ideas and Curricular Competencies for Kindergarten to Grade 5 will be developed. It will not include any Content learning standards, so will not be a full curriculum. The intent and requirement is that teachers use the learning standards for Curricular Competencies from Applied Design, Skills, and Technologies K–5 with grade-level content from other subject areas to provide students with cross-curricular opportunities to develop foundational mindsets and skills in design thinking and making.

There will be two sets of Big Ideas and Curricular Competencies — one for Kindergarten to Grade 3, and one for Grades 4 and 5 — in order to provide as much continuity as possible while acknowledging a developmental progression.

The template is intended to provide focus and a common language for current practice and to support collegial discussion of future practice. It will be available by September 2016 to support integration with new curricula.

There will be no requirement to communicate student learning for Applied Design, Skills, and Technologies K–5 as a separate subject area. Teachers will provide opportunities for students to develop the curricular competencies of Applied Design, Skills, and Technologies K–5 and will communicate student learning in the context of existing curricular areas.

In the early years, students will be given opportunities to develop foundational skills in Applied Design, Skills, and Technologies through exploratory and purposeful play. As they get older and develop an interest in knowing how things work and making things that work, they will have opportunities to develop foundational skills in activities that have a practical and real-life focus. Students in K–5 will develop the skills for design thinking and a maker mindset in cross-curricular contexts that they will bring to future explorations in Applied Design, Skills, and Technologies.

Grades 6–9 Explorations

Students in Grades 6 to 9 will have opportunities to explore specific areas of Applied Design, Skills, and Technologies while continuing to build their design thinking and foundational skills.

An Applied Design, Skills, and Technologies 6–9 curriculum will be developed and will be available for September 2016. The curriculum will encompass content from the four existing Applied Design, Skills, and Technologies disciplines (Business Education, Home Economics, Information Technology, and Technology Education) and new and emerging fields, and provide opportunities for choice, modularization, and a variety of delivery options. This approach provides provincial recognition of the variety and scope of existing locally developed middle years programs and a template for the development of additional local programs.

The Grades 6 and 7 portion of this curriculum will be a new provincial curriculum. It will be written as a single curriculum for the two grades, with one set of Curricular Competencies and a number of content options that students can explore over the course of two years.

At Grades 8 and 9, there will be separate curricula for each grade, as there is now.

As a result of their explorations in Grades 6 to 9, students may begin to show particular interest in and aptitude for specific Applied Design, Skills, and Technologies areas and set more specialized learning goals.

Grades 10–12 Specializations

Students in Grades 10 to 12 will have opportunities to specialize in a specific area or to continue to explore their interests in more than one area. The specialization might be within the disciplines Business Education, Home Economics, Information Technology, and Technology Education, across these and other areas, or in emerging disciplines. The specialization might be driven by students' desire for practical skills in a particular area, their interests and passions, or their plans for post-secondary education or careers. The Applied Design, Skills, and Technologies program for Grades 10 to 12 will be supported by a combination of provincial and local curricula, industry certifications, and possibly community resources. This will allow students in Grades 10 to 12, who are becoming increasingly independent, to personalize their learning by choosing their learning environment and pursuing interests that are relevant to them.

Rationale

The Applied Design, Skills, and Technologies curriculum builds on students' natural curiosity, inventiveness, and desire to create and work in practical ways. It harnesses the power of learning by doing, and provides the challenging fun that inspires students to dig deeper, work with big ideas, and adapt to a changing world. It provides learning opportunities through which students can discover their interests in practical and purposeful ways.

Applied Design, Skills, and Technologies includes skills and concepts from the disciplines of Business Education, Home Economics, Information Technology, and Technology Education, as well as rich opportunities for cross-curricular work and space for new and emerging areas, such as Media Arts.

> **Business Education** builds an understanding of business skills and concepts in the context of current technology, ethical standards, and an increasingly global economy, empowering students with economic, financial, consumer, and communication skills for lifelong participation in local and global contexts.
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> **Home Economics** focuses on fundamental needs and practical concerns of individuals and families in a changing and challenging world. It integrates knowledge, processes, and practical skills from multiple areas, including foods, textiles, and family studies, and provides opportunities for creative applications and critical examination from global citizenship perspectives.
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> **Information Technology** encompasses evolving processes, systems, and tools for creating, storing, retrieving, and modifying information. As students design, share, and adapt knowledge in critical, ethical, purposeful, and innovative ways, they gain perspective on the long-term implications of life in a digital, connected world and develop literacies to responsibly take ownership of such technologies to augment learning and benefit society.
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> **Technology Education** involves students in the design and fabrication of objects using a variety of materials, methods, technologies, and tools in order to develop their ability to shape and change the physical world to meet human needs. It may include woodwork, metalwork, electronics, drafting, automotive technology, power mechanics, and robotics.

Using creative and critical thinking, students can work collaboratively to problem find and solve by exploring materials, using tools and equipment, designing and building, developing processes, and communicating the merits of their work. They can learn to critically evaluate the appropriateness of the products they develop and those developed by others. As they explore

the role of culture, including local Aboriginal cultures, in the development of practical and innovative solutions to human needs, they can develop a sense of personal and social responsibility for the products they use and develop, and their effects on individuals, communities, and the environment, now and in the future.

Learning in Applied Design, Skills, and Technologies provides firm foundations for lifelong learning and, for some, specialized study and a diverse range of careers. It develops well-rounded citizens who are informed creators and consumers. It fosters the development of future problem solvers, innovators, and skilled tradespeople who can contribute to solving problems not yet anticipated with processes and technologies not yet imagined in order to improve their lives, the lives of others, and the environment.

Goals

The BC Applied Design, Skills, and Technologies curriculum contributes to students' development as educated citizens through the achievement of the following goals. Students are expected to

- acquire practical skills and knowledge that they can use to bring their ideas from conception to fruition
- develop a sense of efficacy and personal agency about their ability to participate as inventors, innovators, and agents of change to solve practical problems in a rapidly changing world
- explore how the values and beliefs of cultures, including local Aboriginal cultures, affect the development of products, services, and processes
- understand the environmental implications of the products they are designing and constructing
- investigate and actively explore a variety of areas, including aspects of Business Education, Home Economics, Information Technology, and Technology Education, and new and emerging fields, in order to develop practical hands-on skills and make informed decisions about pursuing specialized interests for personal enjoyment or careers
- develop a lifelong interest in designing, making, and evaluating products, services, and processes, and contributing through informed citizenship, volunteer work, or their careers, to finding and solving practical problems.