Ministry Standards ADST
In grades 6-9 ADST standards are mandatory. If you are using STEAM resources you may very well cover ADST as well if applying to science or social studies standards. Modules cover computational thinking, computers, digital literacy, drafting, entrepreneurship, food studies, media arts, metalwork, power technology, robotics, textiles and woodwork. Finding ways to meet some of these standards within the STEAM framework would help your students blend their studies.

What is STEAM?

Our Definition of S.T.E.A.M. Education

An Integrated Approach to Teaching:
S: Physical and Social SCIENCES

T: Incorporation of TECHNOLOGY

E: Principles of ENGINEERING and Design

A: All aspects of the ARTS (LA, Fine Arts etc)

M: Application of MATHEMATICS

To further understand the pedagogy of STEAM review this Education Closet website on arts integration into STEM.

STREAM includes the addition of Religion or the relationship aspects of working with your students in hands on projects, making mistakes, taking risks, correcting mistakes and producing or making something work. Hooking your students in by reading stories, which include design thinking skills , and aspects of inventing will help your students grasp the concepts of making. Whether teaching at home or in the classroom the teacher and parent is the facilitator of the learning and the student is empowered to learn through the design thinking process from a Biblical worldview.

What is the STEAM Process? If you are just starting out discovering this pedagogy check out the How to STEAM page

To understand more with regards to Design Thinking skills check out this website Teach Engineering which covers the engineering process and mindset and give examples of meeting curricular goals.

Activities

STEAM activities include sharing the Big Ideas or Curricular Standards you would like to focus on from each grade in the science curriculum. Once you have discovered the focus you can open up the concepts by reading from some of our inquiry based picture books on Overdrive under STEAM in the Collections tab. Share the main big ideas, and start the dialogue.

Technology implies using some form of technology to learn either with a digital tool or device. This could be used in the student sharing application when it comes time to present, or during the research stage such as reading an e book on Overdrive or researching on Pebble Go NEXT, WorldBook or Explora database. Teaching your students digital literacy skills, computer devices, software and programming skills is recommended under the ADST tab. But it could also be met with studying metal work or wood work, textiles etc.

Engineering could include building online using Minecraft, Lego Mindstorms, designing apps in Tynker and creating robotic applications using JD Robot, Cubelets, Arduino and Dash or Sphero robots. Or using a drafting tool with 3D printing to make different objects.

The art process could be completed in drawing out the design thinking process or making an artistic design like sculpture. Check out Teachers Pay Teachers for design thinking worksheets. Also find art lessons here.

Mathematics is intrinsically linked via measuring out design structures and completing calculations as you complete a project or compare data. If students are building objects make sure to get them measuring and thinking about structure, size and geometry.

Here are some great places to discover STEAM lesson plans:

- Mystery Science Subscription

- Teach Engineering
- Design Squad Global
- Tynker STEM lesson plans
- Let's Talk Science
- We are Teachers : 10 Innovative Projects that Take Learning from STEM to STEAM
- Engineer Girl : Engineer Girl shares positive role models and what they do.

Lesson Plans

Space School Canada. Middle grade lesson plans.

Government of Canada lesson Plans

eGFI STEM resources grade 6-8.

Explore STEM Exploratorium Lesson Plans and educational information on learning and teaching engineering, tinkering, food and cooking, light, mathematics, motion, optical illusions, sound, sport science, geology. The list is endless!

NASA Middle grades STEM lesson plans and free webinars for students!

Let's Talk Science Middle grades is a team-based competitive enrichment event offered for Grades 6-8 students by Let's Talk Science Outreach volunteers across Canada. This free, fun-filled program gives students the opportunity to build their team skills, interact with relevant role models and test their abilities against peers.

Teach Engineering fully aligned to engineering and STEM standards. "The classroom-tested curricula are aligned with state and/or national science, mathematics and technology educational standards, and *use engineering as the vehicle to integrate science and mathematics* concepts for K-12 students. The collection also provides a portal to "living labs," which provides real-time, online data on earthquakes and renewable energy."

Microsoft Education: Hacking STEM Lessons and Hands-On Activities. Free lesson plans

Teachers Pay Teachers: Get Caught Engineering; STEM for Kids

Crayola STEAM Lesson plans.Put the art into your STEM and make it STEAM with these creative ideas.

Websites

Makerspaces: Hands-on Learning for Students of All Abilities

Pinterest Boards for Project Ideas

Art and Mathematics

Art and Science

Hour of Code

MakerEd/STEAM Elementary

MakerEd/STEAM Middle School

Other Websites including curriculum ideas with Maker materials:

- Mindset Kit (for teachers and families) Video tutorials, formative assessment and read-alouds
- Creating Authentic Maker Education rubric. Edutopia
- Babble Dabble Do STEAM projects, science, art and engineering ideas
- ArchKidEchture . Lesson plans on architecture
- Design Thinking Resources for Educators
- Engineering Everywhere is a FREE engineering curriculum for middle school-aged youth in afterschool and camp programs. EE empowers youth to tackle real-world engineering problems using the engineering design process, creativity, and collaboration
- Genius Hour – Where Passions Come Alive
- Lesson Plans | TryEngineering
- Worlds of Learning – The World is Your Platform
- Make: DIY Projects and Ideas for Makers | Your one stop shop for all things Maker Ed
- Makerspace Resources Laura Fleming Teacher librarian blog

- Star Wars Characters Will Now Teach Your Kids To Code | WIRED
- Cardboard Box Tools | Edutopia – teach your students about how to use boxes as in Caines Arcade
- How Turning Math Into a Maker Workshop Can Bring Calculations to Life | MindShift | KQED News
- 3D Printing – Kathy Schrock's Guide to Everything
- Maker Education Lessons and Projects | Create, Collaborate, Innovate. Colleen Graves Maker Librarian
- STEM Resources for the Whole Family | My Little Poppies
- Coding Apps for Kids – Teach Beside Me
- Build with Chrome Lego building using Chrome
- Making for the littles – Invent To Learn Sylvia Martinez official website for the same book available in the learning commons
- Makerspace Playbook – School EditionThis is a long document filled with helpful information. Originally intended for teachers, however, it is useful for anyone who wants some in-depth help on setting up and using a maker space.
- 100+ ENGINEERING PROJECTS FOR KIDS
- 25 Makerspace Projects For Kids
- What do maker projects look like in each subject area?
- Ultimate Makerspace Resource Guide Lists of resources by topic and/or question.
- 70 Cool Math Games
- Cooking With Recipes – Lesson and Worksheets: Recipe calculations, Basic Consumer Math, Multiplication, Division, and Fractions
- Siemens Stem Day – STEM Activities for K-Gr.12. Sort by Grade, S.T.E.M. categories or career paths. PDF Lessons included.
- Challenger STEM Resources & Lessons – STEM Activities for K-Gr.12.

Videos to watch!

- The LAUNCH Cycle: A Design Thinking Framework for K-12 Students – YouTube -video explaining the design thinking process
- Design Thinking — Maximizing Your Students' Creative Talent: Co Barry at TEDxDenverTeachers – YouTube
- Crash Course Kids – Engineers – YouTube: What is an Engineer, what do they do, and why?
- Five Rules of Design Thinking to Reach All Students | Michael Roush | TEDxWorthingtonED – YouTube
- Vihart – YouTube: Explore fun ways that Science, Math, Art, etc. show up in the world around us.