

TOPIC:	Use of Technological Equipment in General Education Areas
EFFECTIVE:	September 2019
REVISION DATE:	September 2019
REVIEW DATE:	June 2022
CROSS-REFERENCES:	Administrative Procedures – Disposal of Board Inventory; Donations and Charitable Receipts; Procurement.
RESPONSIBILITY:	Superintendent of Education (Program)

INTENDED PURPOSE

The use of technology and technological equipment can enhance curriculum and program initiatives, as valuable educational spaces for students to develop and enhance their knowledge and problem solving skills. The technology available to students and staff is constantly evolving and the Halton District School Board selects and restricts equipment to ensure a “safety first” learning culture.

Teaching with technology occurs across the curriculum. In cases where the technology comes with associated safety risks, due diligence is required regarding purchasing, training and safe use, and will require consultation with numerous Halton District School Board (HDSB) departments.

Curriculum documents and the Council of Directors of Education (CODE) safety documents are among the key resources ensuring a culture of safety-mindedness in Technological Education classes. When purchasing or using technological equipment within a non-Tech Ed department or classroom for curriculum enhancement purposes (e.g., in maker spaces, design hubs, etc.), special attention must be paid to elements of safety. The Halton District School Board requires any technological equipment available to and/or used by staff and/or students is compliant with any legislative requirements and is used safely for the purpose of curriculum delivery and/or enhancement.

Technology and technological equipment is constantly evolving. Current examples of technological equipment desired for use in non-Tech Ed applications include, but are not limited to, 3D printers, laser cutters, vinyl cutters/printers, heat seal machines, embroidery machines, drones, etc.

Definitions:

3D printer: additive manufacturing process that creates three dimensional models by laying down successive layers of material until the object is created.

Laser: The term "laser" stands for "light amplification by stimulated emission of radiation". Laser light is a form of non-ionizing radiation.

Laser Machine: any machine that uses laser technology for the purpose of precision cutting, engraving, burning, etching, etc.; most commonly known as a “laser engraver”. The classification of laser machines is based on the power of the laser and the level of hazard it presents to the user and other persons in the vicinity.

Safety Mindedness: a state of mind in which safety considerations are embedded into patterns of thinking and decision making; it can be identified in the actions and behaviour of individuals that demonstrate consistent attention to, and focus on, safe practice.

Technological Education: those Grade 9-12 courses, coded with a “T” for which a teacher must possess Ontario College of Teacher (OCT) credentials in Technological Education

Technological Machines: equipment with curriculum connections outside of Technological Education courses that may be safely used by staff (or secondary students) upon completion of training

PROCEDURES:**Selection:**

When introducing new technology/technological equipment to schools, staff, and/or students, a multi-department inquiry into the equipment purpose, specific need, educational value/benefit and safe use must be undertaken. The equipment must meet CSA or ULC rating or be certified for use in Canada (where applicable) and must be approved by the Health & Safety, Facilities, and School Programs departments prior to the Purchasing Department seeking approved vendors. Approved vendors will be based on a detailed selection criteria including but not limited to machine specifications as well as staff training by the manufacturer.

Schools/departments wishing to purchase technological equipment for the purpose of curriculum enhancement not associated with Technological Education should go through their Principal/Manager and contact the Purchasing Department to ascertain if the technological equipment in question has already been approved for use outside of Technological Education shops. If already approved and a list of approved vendors exists, then the Principal/Manager should consult with the Facilities Department prior to submitting a purchase order to verify that the proposed location for the technological equipment adheres with Building, Electrical and Fire Codes and that any costs associated with compliance do not nullify the decision to purchase the equipment (the purchaser is responsible for any associated costs).

Considerations that may incur additional costs or otherwise impact the purchase decision include, but are not limited to:

- Building / Infrastructure Requirements,
 - Once installed will the equipment meet building and fire code requirements?
 - Will the equipment require exterior ventilation and/or additional structural reinforcing - if so, engineering and installation drawings will be required, to be reviewed and signed off by Facility Services, prior to the work commencing.
- Room Location and Access,
 - Is the room the equipment will be installed in suitable in size and location for the proper use of equipment (e.g., large/heavy equipment should be located on the main floor)?
 - Is the room easily accessible for the delivery and installation of the equipment?
 - Is the room secure; does it require locks to be purchased and installed?
- Electrical Requirements
 - Does the room where the equipment will be installed have the electrical capacity to support the equipment?
 - Does the equipment require a dedicated circuit to operate?
 - Is the equipment CSA or ESA approved for use, complete with an inspection sticker?
- Additional safety supports
 - Does use of the equipment in an HDSB location require additional safety supports above those listed by the Manufacturer (e.g., guarding, additional ventilation, fire extinguisher, annual training, etc.)?

HDSB has a public competitive review process for purchasing purposes that must be adhered to at all times. Schools/departments must purchase any new equipment/technology through HDSB Purchasing Services, using a purchase order and a Board-approved vendor.

There may be instances where a requested piece of technological equipment is not available for purchasing. These decisions are made by Administrative Council and are final.

Ventilation:

Any technological equipment requiring ventilation shall be installed away from staff and student desks/work areas. Local exhaust ventilation that vents outside of the building shall be used where possible. Where local exhaust ventilation is not possible, machines shall have, at minimum, an exhaust system that meets the manufacturer's specifications and has been pre-approved by the Facilities Department. In most schools machines requiring ventilation would only be able to be located in rooms with ventilation designed for specialized activities (e.g., most Tech Ed rooms, Science rooms, certain Art rooms).

Venting must be interlocked electrically with machines where appropriate (e.g., laser cutting machines). Any exhaust system filters shall be replaced by the teacher according to manufacturer's recommendations. The cost of proper ventilation and/or replacement filters for ventilation units are the responsibility of the school/department purchasing the machine (as is the cost of annual inspection and any required maintenance).

In addition to proper ventilation, any technological equipment must be located in a room that complies with Fire Code requirements (fixed-temperature-rate-of-rise heat detector or smoke detector). A fire extinguisher shall be installed in proximity to the machine if fire is a possibility. Note that in the case of a laser machine, a carbon dioxide or Halotron fire extinguisher is required (a standard fire extinguisher is not sufficient or appropriate).

Training: (Certification)

Before using the equipment, any staff intending to use the machine must be trained by the vendor on safe use, limitations, and any potential hazards associated with the technological equipment. Training dates and names of staff in attendance shall be documented using a sign-in sheet and records kept with the Health and Safety Department. The Health and Safety Department must be invited to the training, and receive a copy of all training records.

Other HDSB general safety training, such as the annual Grade 7 & 8 Application Room Safety In-service for teachers who are not specialists, or the Secondary Science safety training, is not a replacement for technological machine-specific training.

General Use:

Any technological equipment not located in a room designed for the express purpose of using that equipment (ie. elementary Design and Tech Room, secondary Technological Education Shop) is restricted to persons who have been specifically trained in its safe use (*machine specific safe use documents on both the School Programs Department and Health & Safety Department webpage on myhdsb.ca*).

Where student use of the technological machine is permitted, any students using technological machines in non-Tech Ed applications must receive formalized instruction on the safe use and potential hazards of the equipment prior to use (inclusive of an understanding of acceptable/unacceptable materials for use with (in) the equipment). This training shall be documented on Student Safety Passports and may only be led by staff who have completed the training.

Technological equipment must be used in the following safe manner:

Any safety features (e.g., interlocks) on the machine shall not be removed, overridden or modified.

- Instructions as to safe and unsafe use shall be posted on or beside the machine
- Projects that require an extended run time beyond the school day (e.g., 3D printing, laser cutting, etc) must be run in a room that complies with Fire Code requirements (fixed-temperature-rate-of-rise heat detector or smoke detector).
- All supporting materials (e.g., vinyl, woods, filament, etc.) must come from approved purchasing lists.

Specific UseDrones:

Unmanned Aerial Vehicles (UAV) are not available for purchase and are not permitted to be used on Board property by staff or students. An outside organization may be contracted to operate a drone on our behalf but that organization must have their own insurance; provide proof, and add the Halton District School Board to the policy when operating the UAVS/drone on the Board's behalf. Please consult your Superintendent before contracting an outside provider. User groups/permit holders may not use UAVS/drones on Board property.

3D Printers:

Additive manufacturing (3D) printers are available on the Purchase list and reflect attention to safety concerns regarding moving parts, pinch points, heating plates, and emission hazards.

Where a unique or new 3D printer model is on the market but not yet on the Board approved list, or where a school receives a donated 3D printer, the model must be reviewed in consultation with School Programs and Information Technology prior to its use. Models in a school or Board location that are not fully enclosed, should be reported to the Principal/Manager who will contact the Health & Safety Department for a safety assessment.

Laser Cutters

Laser machines are available on the purchase list and meet standards for safety regarding moving parts, pinch points, laser technology, and emission hazards.

Where a unique or new laser cutter is on the market but not yet on the Board approved list, or where a school receives a donated Laser cutter, it must meet with the approval of the Health & Safety, Facilities, School Programs, and Purchasing departments and must conform to the following selection criteria:

- Units must have a cover that has interlock safety switches built in to provide an auditory signal and shuts down the laser when opened.
- Unit covers must also be of a colour and material that will reduce the laser class in the unit to a Class 1 or 2 laser when closed.
- Units must have an ESA approved certification mark (ie. ESA, CSA, ULc, ETLc).
- Units must have a CSA compliant e-stop.
- Units must have a temperature sensor with a warning signal that will warn the user when temperatures reach a critical point.

Laser cutters used in schools are to be of a Class 1 or 2 as Class 3 and 4 lasers require additional Laser Safety Training and the appointment of a certified Laser Safety Officer.

Safety and Support Documentation

Safety support documentation, including specific requirements and suggestions as to the safe use of this technology can be found on the School Programs department website and the Health and Safety department website on myhdsb.ca

As additional technological equipment is introduced within Halton District School Board schools and/or departments, supporting safety support documents will be developed and shared.