

Computer Technology

Best Practices for Safety Administration in the TEJ/ICS/ROBOTICS Classroom

What can be dangerous about that!? It's just fun, isn't it?

TEACHER PRE-PLANNING FOR PROJECTS:

- **Assessment of Physical Risk has to be addressed for each of your projects:**
 - Planning and reviewing your students plans for constructing / handling electronics is essential
 - Teacher responsibility is to have the opportunity to confirm their summative plans to avoid them creating unsafe electrical circuitry
 - When work for the course can involve 'mixed media' as project materials – you need to specify on guidelines for using recycled materials, sharps, etc.
 - Using 'common sense' reminders are essential daily, visual posters as reminders of safety are useful in the classroom near the equipment signout
 - Social and equity issues need to be considered in project content and group dynamics – most students have sensitivity however you often need to discuss appropriate content inclusion for the 'isms'.
 - First aid kits and ready fire extinguisher essential in the classroom
 - Directives for students on use of media devices and phones during class time has to be specified – student should not be utilizing an .mp3 player disengaging from group work and putting their safety at risk when they are responsible to be monitoring a safety risk situation
 - Student should not be utilizing overpowered headphones in class causing hearing damage.
 - Handling soldering irons, hand and power tools for assembly needs specific review depending on your equipment set and classroom environment.
 - Use a buddy system in the classroom as a 'mental check' process for project work, involving the question of safety on a regular basis.
- **Classroom Environment Regular Review:**
 - Has to reflect Ministry of Labour standards, and observe aspects of the Board Health and Safety requirements
 - Questioning your room organization and physical layout where it's a mixed-use environment

- Classrooms often include studio such as curtains, lights and light stands, helping hands clip devices, ventilated soldering stations, small and large AV equipment devices, electrical tripping hazards in a multi-functional space
- Teachers need to do a physical walk around regularly to ensure that the classroom is not setup for issues, that regular cleanliness and maintenance is being done; ie., safe outlets and not overloading circuits with multiple lights or unsafe power splitting on power bars
- Classroom and equipment management needs to have systems – standard tidying and storage of equipment procedures – supports classroom management
- Pathways in the room must be clear, and accommodate special needs students – visually impaired, wheelchair access - sometimes adjustable height tables need to be used, and rolling tables need to be locked
- Discuss with students the possibility of a fire drill or lockdown drill while they are working outside the classroom during class time
- Establish a first aid procedure for emergencies for the specific classroom, and what to do if someone has an injury at school while in our class period and conducting class work
- Sensitize students to integration of physically-challenged students in project work

TEACHER PLANNING FOR DURING PROJECTS:

- **Personal Protective Equipment (PPE):**
 - May be required depending on complexity of projects. For example, if students are going to make a safety video for their the robotics team during assembly of the robot, or they're going to shoot their electronic experiment, it's essential that the students are aware that there may be a need for steel-toed boots, safety glasses, a dust mask and a specific kind of additional teacher supervision to have that type of cross-curricular project.
 - Teacher has to have the communication and documentation in place to ensure clear guidelines for dealing with more risky content / equipment environment approvals prior to making summatives, ie. mini flame thrower control systems now possible with Arduino cards.
- **Safe Use of Chemicals:**
 - Some projects include chemical work it's important to communicate issues that can occur – allergic reactions, planning for makeup and cleanup time.
 - Teacher needs to be aware of a process of clarifying MSDS materials that may show up in their classroom. Ie., a project with materials brought in by the student may seem innocent but may include unsafe materials depending on the supplier. The teacher has to question and examine materials.

- Any MSDS reference materials must be in the classroom.

- **Supervision Plan:**

- Plan has to be in place for student groups or individuals who leave your home base classroom to work around the school
- Limits for project work outside the classroom need to be specified, ie. having students document who their safety partner is going to be on the weekend if they are making a device together, having additional parent permission forms for weekend work may be advisable depending on the nature of the activity planned, advising additional parent supervision in a memo to parents detailing the nature of projects and safety expectations of students
- Having students sign out equipment
- Having guidelines for student behaviour when travelling to and from locations in the school needs to be specified, ie. not disturbing classes in progress, noise levels, physical action levels, common sense movement for stairways, staff areas, cafeteria, stage, 'lockable' rooms
- Informing the main office of student hallway, elevator activity is essential, communicating with hall monitors supports class management as well.
- Risk of student escalation of conflict between students from play to more serious can happen when 'gaming' or 'roughhousing' in the classroom.

Storage and Equipment Issues:

- Often materials, parts and tools have to be stored in tight storage areas so safe lifting of bins, reaching high storage areas has to be considered.
- Students must understand that they need a spotter and are not to overextend their strength, not take risks with step stools, chairs, low ladders
- Proper lifting techniques should be reviewed with students

Securing School Equipment

- With the increased number of portable devices / AV camera equipment in schools, there is an increased risk of theft
- To protect these valuable assets it is important to take proactive steps to minimize the risk and severity of losses
- Staff should ensure that all equipment, Board and personal, is secured when not in use
- For TEJ/ICS classrooms, it's advisable that bags and coats not be permitted to protect from clutter and equipment theft

The following are a few strategies which can help reduce theft, vandalism and accidental damage:

- Use of cables to secure equipment
- When not in use all portable equipment should be properly stored in locked cupboards within locked classrooms or a designated locked storage area
- Maintain a current inventory list of all electronic equipment, including serial numbers, keep manuals and warranties and P.O.'s on file
- Check all exterior doors to ensure that they are secure when locked
- Ensure security systems are activated
- Keep valuable equipment away from windows after hours
- Specify to students about not leaving school equipment in a car, protecting it from moisture and rough damage with cases and plastic bags
- Ensuring student access to storage areas is supervised properly with locked doors

TEACHER PLANNING FOR PROJECT FOLLOWUP:

Production Environment - Worker Safety Awareness:

- Having a guest speaker come in from an IT workplace is a good method to have students understand the seriousness of safety in a professional environment, as well guests from the robotics, manufacturing, and networking professions also may have insight on relevant safety issues when they are speakers

Documentation that Safety Training Has Been Completed:

- Formal Classroom Safety Guidelines Review has to be completed – keep track of the date(s) that you present your safety content to students, document safety initiatives and lessons conducted
- Course Outline should include overview of risks and students and parents should sign off acknowledging that safety training is occurring (handout example provided, available digitally via erin.carey@tdsb.on.ca)
- Consider specific equipment safety, ie. carts for moving heavy equipment, drills, clamps, metal shears, etc.
- Emphasize in curriculum that all computer technology industries have safety factors involved in the workplace
- Clearly establish classroom rules and consequences for students regarding work
- Refer to the Experiential Learning AW site for updated Safety Documentation and general guidelines for safety training checklists
- Carefully evaluate your specific site for any unique safety requirements