

**CODE/MOE/UOIT Makerspaces Project**

**Lesson Plan: Grade 8 Science and Language Arts:**

**From Byte to Billboard**

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| **BIG IDEAS:**  Systems are designed to accomplish tasks.  **Overall Curriculum Expectations**  **Science and Technology**   1. investigate a working system and the ways in which components of the system contribute to its desired function.   **Language (Writing)**  2. draft and revise their writing, using a variety of informational, literary, and graphic forms and stylistic elements appropriate for the purpose and audience;  3. use editing, proofreading, and publishing skills and strategies, and knowledge of language conventions, to correct errors, refine expression, and present their work effectively.  **Language (Media Literacy)**  3. create a variety of media texts for different purposes and audiences, using appropriate forms, conventions, and techniques;  4. reflect on and identify their strengths as media interpreters and creators, areas for improvement, and the strategies they found most helpful in understanding and creating media texts.  **CURRICULUM EXPECTATIONS:**  **Specific Expectations Science and Technology**  2.4 use technological problem-solving skills to investigate a system that performs a function or meets a need;  2.7 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes.  **Specific Expectations Language**  ***Using Knowledge of Form and Style in Writing***    **Form**  2.1 write complex texts of a variety of lengths using a wide range of forms.  **Voice**  2.2 establish a distinctive voice in their writing appropriate to the subject and audience.  ***Applying Knowledge of Language Conventions and Presenting Written Work Effectively***    **Vocabulary**  3.3 confirm spellings and word meanings or word choice using a wide variety of resources appropriate for the purpose.  **Punctuation**  3.4 use punctuation appropriately to communicate their intended meaning in more complex writing forms.  **Media Literacy**  **Audience Responses**  1.4 explain why different audiences might have different responses to a variety of media texts.  **Purpose and Audience**  3.1 explain why they have chosen the topic for a media text they plan to create, and identify challenges they may face in engaging and/or influencing their intended audience.  **Conventions and Techniques**  3.3 identify conventions and techniques appropriate to the form chosen for a media text they plan to create, and explain how they will use the conventions and techniques to help communicate their message.  **Producing Media Texts**  3.4 produce a variety of media texts of some technical complexity for specific purposes and audiences, using appropriate forms, conventions, and techniques. | |
| **Learning Goals:**  We are learning to plan, design, and code a video game using Scratch, Play Canvas, or Raspberry Pi. We will be constructing console systems that are effective and engaging. We will also learn how to develop an attractive and informative marketing/advertising scheme. | **Success Criteria:**  We will be successful when we have created and shared a marketing plan that effectively advertises a playable game. Our game will be designed and coded using Scratch, Play Canvas, or Raspberry Pi and made playable by designing a console system using MakeyMakey. |
| **Lesson Overview:**  The focus of this unit is to practice and develop computational/logical thinking, language skills, and media literacy, by exposing students to various coding platforms and creative technologies. By the end of the unit, students will have planned, designed, and marketed a playable video game. Computational thinking strategies are not limited to the development of computer applications, but support learning across all disciplines, including social sciences, math, and science. | |
| **Materials and Technology:**   * Student Chromebooks * Scratch (<https://scratch.mit.edu/>) * Play Canvas (<https://playcanvas.com/>) * Raspberry Pi (<https://www.raspberrypi.org/> - units required) * Makey Makey (<http://www.makeymakey.com/> - units required) * Projector * Playdough * Bongos * Internet Access * Byte to Billboard Brainstorming Sheet * Green Screen Tech * Padlet Page (<https://padlet.com/cgenier/5r11hbcdsebm>) * Google Presentation (Byte to Billboard) | |
| **Student Accommodations/Modifications:**  The open ended design of this unit allows for students to customize their learning experience.  **All** students will have the **choice** of working with Scratch or Play Canvas, while a small group will have the opportunity to use Raspberry Pi.  Time has been booked in both the school Learning Centre and Maker Space, both of which provide a smaller student-teacher ratio and a quieter space to work.  Extra work periods (Study Hall) have been created to support students throughout unit.  Small group and partner media package choices will be offered to students. | **Unit will be differentiated by:**   * **Content, specifically:** * **Process, specifically:**   All students have the options of using Scratch (block coding) or Play Canvas (JavaScript). A small group has the choice of using Raspberry Pi.   * **Product, specifically:**   Partners and small groups will be offered as a choice to a select number of students.   * **Environment, specifically:**   Throughout unit, some students will have the choice to work in the Makerspace and the Learning Centre. Both of these spaces offer small groupings and quieter space. |
| **MINDS ON: Getting Started** | |
| *At this point in the unit, students will have researched, designed, and coded a video game.*  The creation of the playing platform and marketing component of the unit will be introduced by having students play Super Mario Bros (<https://scratch.mit.edu/projects/125001248/>) using a bongo MakeyMakey playing platform that has been set up by instructor. After trying the game a few times, students will be shown a classic Super Mario Brothers commercial (<https://www.youtube.com/watch?v=bzln22voxVM>).  After playing the game, students will break into small groups (3-5) to answer the *Byte to Billboard Brainstorming Sheet.*   1. How can you ensure that your plan reflects the interests, abilities, and values of your target audience? 2. What does effective marketing look like? What are some ways to inform people of your product? 3. How important and what are some possible ways to monetize your video game?   Students will engage in a class discussion to share ideas about developing their console system and marketing plans. The instructor will create a Padlet where students can share ideas.  Instructor will remind students that they will be creating a console system for their video game using MakeyMakey and then creating a marketing campaign. A culminating activity is in the works to open a student run arcade, but logistics are still being organized and therefore will not be shared with the group yet. | |
| **ACTION: Working on it** | |
| During this phase of the unit students will be broken into **three groups**.  **Group One:**  This group will begin planning, organizing, and developing a marketing plan. The instructor will encourage students to explore and develop marketing strategies, clarify ideas, and question the development process.  **Group Two:**  This group will start designing, constructing, and testing console systems using the MakeyMakey design units. The instructor will support students as they troubleshoot problems and test different designs.  **Group Three:**  This group will continue working on their Rube Goldberg projects (science). Three groups are necessary because of the number of available MakeyMakey systems.  The instructor will cycle through groups, field any questions, and engage in meaningful conversations to record anecdotal note of student thinking, understanding, and questions as part of formative assessment. Final products may be assessed through a rubric or checklist. | |
| **CONSOLIDATION: Reflecting and Connecting** | |
| While it’s very unlikely students will have completed their console, marketing plan, or Rube Goldberg project, it is still very important for students to come together and share what they’ve learned throughout the lesson.  Instead of engaging in a full class discussion, students will get together in their respective groups to talk about their design plans, construction strategies, and highlight any potential problems.  **Group One: Strategizing Session** (Share preliminary plans)  **Group Two: Gallery Walk** (Test/Feedback)  **Group Three: Gallery Walk** (Share/Feedback) | |