

How to Plow

Information & Computer Science /Grade 11

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Description of Project:

The students create a Flash simulation for the operation of a tractor a plow. The object of the game is to start the tractor and successful plow one furrow down the field.

The students will must do some research on the operation of a tractor and plow. This may involve interviewing a farmer or another student or even visiting a farm to witness plowing first hand.

The students will start their Flash project by drawing a screen the closely duplicates the cockpit of a tractor. The screen must include the clutch, brakes, gear shift, steering wheel, and one hydraulic control. All of these must be programmed to simulate their operation.

To successfully plow the player must:

- 1) Steer straight ahead (to plow a straight furrow)
- 2) Depress the clutch
- 3) Put the tractor in first or second gear (the tractor will stall in third or fourth gear)
- 4) Push the hydraulic control forward to lower the plow
- 5) Release the clutch

The Flash object is programmed to detect all of these operations. The player is reward with a screen that says that they have successfully plowed.

Expectations:

- develop effective programs by following the steps in the software design process
- use defined programming practices
- implement a program design using sequence, selection, and repetition structures
- produce appropriate internal and external documentation
- explain how the pervasiveness of computer technology affects daily life
- perform peer evaluations of internal documentation and programming style.
- test completed programs with a full range of valid data to ensure that all components work as expected

Resources: Macromedia Flash MX – OSAPAC software

Assessment: Standard computer program rubric / Peer review of simulation

Lesson Steps:

Introduction of the project

Research

Draw tractor cockpit

Animate controls

Write instructions and internal documentation

Program controls

Test and Debug