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| **Learning**  **Outcomes** | * TLW be introduced to piezospeakers and the FREQOUT command. * TLW use knowledge of photoresistors to make the Boe-Bot output sounds using a piezospeaker and varying light intensities. * TLW will be introduced to capacitors. * TLW will begin programming 2 photoresistors to follow a line |

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| **Materials List** | | |
| * Boe-Bot * Laptop/computer * PBasic Stamp Program * USB cable & adapter | * Photoresistors * Piezospeakers * Jumper Wires * 2-22oΩ Resistor * 2-0.01µF Capacitors | * 2-Extended Photoresistors * White Poster Board * Black Electrical Tape * Navigation Course |

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| **Lesson**  **Summary** | * Students will set up piezospeakers on Boe-Bot breadboard. * Students will complete a simple FREQOUT command to check piezospeakers. * Students will set up piezospeaker and ohotoresistor circuit such that the light intensity level will control the level of frequency output by the piezospeaker. * Students will be introduced to capacitors. * Students will set up a circuit such that two photoresistors extend from the Boe-Bot breadboard in order to sense a line to follow (pairs or individually) * Provide handout of procedure to complete task. * Have students calibrate the two photoresistors. * Have students make Boe-Bot follow a line of electrical tape by programming in the Basic Stamp Editor. |

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| **Homework** | Students should work on the line following assignment for the competition in 4 class periods. |

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| **Resources** | Text Reference: |
| * Robotics with the Boe-Bot (pg. 106 & 193-229) |

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| **Relevant Standards** | |
| GLEs |  |
| Guiding  Questions |  |