**6000 Words**

**First Page:** Title, Name, Candidate No., Picture of Project, Supervisors

**Contents:**

**Acknowledgements:**

**Abstract**:

(~400 words**) High demand**: Fish becoming increasingly used in biomedical research as models of human development and disease. Fish provide simpler system for the study of complex processes. (Cost, Animal Welfare act.?) Zebrafish embryos are transparent, develop outside of the mother and grow rapidly. Hence studying vertebrate development and physiology. Common fields: Gene editing, neuroscience and cancer research to name a few.

Commercial incubators are **expensive**, an alternative is to build one of your own. Using the internet and **open source projects** that are available online will allow a larger audience to acquire a fish incubator. The **adaptability of the project** makes it possible to the interested audience to make changes to the hardware and software; allowing them to fit their own project needs.

**Introduction:** (~1300 words)

What is an incubator? And why is it important. (400 words)

Zebra Fish and other easy to hatch fishes (Platyfish and swordstails): (400 words) further details about why fish is a great test subject: quickly and easily bread in captivity

What is Arduino? Components (how components generally work in Arduino): 500 words

**Methods (HOW)** (~850 words)

Temperature sensor: what is it how does it work: what it being done by the Arduino when it reads temperature: heating/cooling initiated. Its displayed on the LCD. Fan is turned on: Peltier fan is on at all times. Inner fan works with PWM technique. ----> The Peltier effect (TEC)

Flow chart:

Circuit diagram:

Component list:

Project implementation?

**Results** 850

**Discussion:**

**References**

**Appendix:** Code

Useful links:

<https://aavs.org/animals-science/animals-used/fish/> why fish as test subject?

<https://www.instructables.com/id/Digital-Incubator-using-Arduino/> similar project