Te Kura Māori O Porirua 2019

Internal Assessment Resource

Achievement Standard Physics 91522 v2: Demonstrate understanding of the application of physics to a selected context
Resource reference: Physics 3.2
Resource title: **Waka Ama - Traditional outrigger canoe**
Credits: **3**

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of the application of physics to a selected context.	Demonstrate in-depth understanding of the application of physics to a selected context.	Demonstrate comprehensive understanding of the application of physics to a selected context.

Student Instructions

Introduction

Unlike many sports, Waka Ama is steeped in the powerful history and traditions of waka sailing and voyaging. Waka Ama is, therefore, not just a sport but a vehicle for identity, pride and community. These are reflected in the values and tikanga that underpin it.

Photo courtesy of Hauteruruku ki Puketeraki Ngā Waka Club (2018)

The sport of Waka Ama is practiced and thrives as a sport of Pacific origin throughout the world. Although it's known by several different names, the different terms all refer to the same activity and derive from traditional Polynesian outrigger canoe.

Task

Working independently, gather information on the physics that applies in paddling of Waka Ama:

Photo courtesy of Kim Thomas (2020)

- The physics that applies in different races - straight sprint race, and long-distance race.
- Forces that keep the waka moving and how the paddlers coordinate themselves to affect the speed/direction of the waka.
- How does the difference in weight of paddlers and the distances among them affect the stability of the waka and the chance of winning the race?
- Using what you've learned, explain using physical concepts how to optimise a Waka Ama and its team for a good race.

Use the information you have gathered and your knowledge of the physics that applies in Waka Ama to produce a report that describes and explains the physics of each aspect, in a Waka Ama Regatta.

You will be given three weeks to carry out your research and produce your research materials (notes, photocopies, printouts, etc). You will then be given two class periods of in-class supervised time to write your report.
All research materials should be brought to the report writing lesson and left with your teacher at the end of each session.
All sources of information, images, diagrams, and data must be acknowledged and referenced in a format that enables them to be easily traced.

Report

The format of the report will be a **written report**. It must be written in your own words and could include the following information.

The physics that underpin the traditional outrigger canoe (Waka Ama) race; make sure the physics ideas meet the relevant curriculum level.
The report should be approximately three to four pages in length and may also include illustrations, diagrams and graphs, if appropriate.
All sources of information, images, diagrams, and data must be acknowledged and referenced in a format that enables them to be easily traced.

Your report will be assessed on how well you explain, integrate or link the relevant physics to the Waka Ama race.
The report will be written in two allocated class periods, using your research information and notes. At the end of this time you should hand in your report and all research materials to your teacher.

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