

# Increasing Motivation through Showing Relevance to Studies

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# Sports and Materials Science

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Steady decrease in applicants for traditional accredited courses

Corresponding rise in popularity of Sports Science-based degrees

Hybrid degrees combining Sports and Exercise Sciences with Materials / Mechanical Engineering

## SES overflow

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Students have Biology or PE 'A'-levels

Other subjects are widely varying from Maths, Physics or D & T to Social Sciences, Geography, History

Play a range of sports with Hockey, Football, Cricket, Golf, Cycling, Tennis and Swimming being most popular

# Advanced material design



- Non-traditional shape
- Monocoque design needed to benefit from properties of fibre composites
- Changed design modifies cycling style
- Costly and poor damage tolerance

# Persistent difficulties

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- ‘Engineering’ concepts, e.g. mechanics and materials properties
- Relevance of above to Sports Science
- Dryness of traditional methods of teaching, e.g. tensile testing and bending moments

# Design and build

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- Group activity to tap into mixed abilities / skills
- Relate to sports that they play
- Competitive aspect
- Multiple components and assessments including embedded 'Engineering' to keep mixed groups active

## ■ The ‘Stimpmeter’ challenge

- Stimpmeters measure the speed of golf greens
- Expand this to ask question ‘Do balls roll further on artificial or real pitches’
- Choice of balls available covering sports that students play
- Need to design and build reliable launcher – portable and durable
- Materials and facilities provided

# Planning



Physics'

tiffness

ensity

urability

lanning – exercise took first  
three weeks of term with  
testing days booked and need  
to produce poster and draft

# Construction

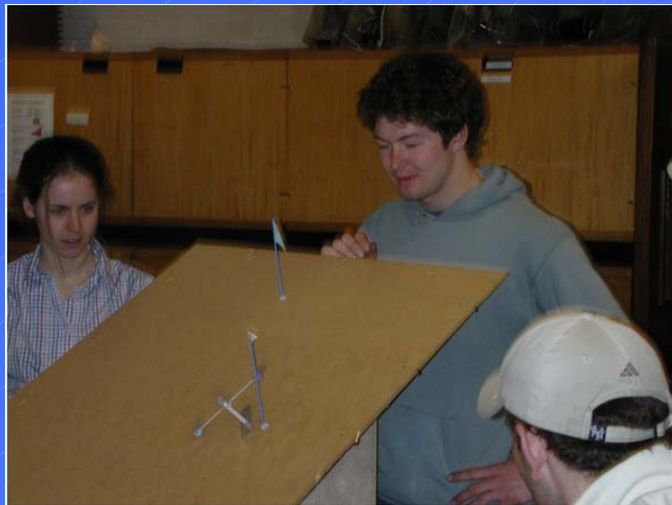


# Testing



# Model Snowboarders

- End of first year, build a model snowboarder
- Base selected from various sheet metals
- Characterise as-received sheet– embedded hardness and tensile testing and metallography
- Competitive



- Metal shaping, heat treatment and joining
- Gapped hand-out to replace lab. write-up so that can carry out testing in future
- Analyse performance and come up with improved design