



### Learning Outcomes

- Design a mind-map showing the factors that affect friction.
- Design and plan an investigation into one of the factors affecting friction.
- Carry out an investigation, record data and analyse the results.
- Draw conclusions.
- Report and discuss the findings.

#### **Curriculum Content**

Forces, friction, application of friction, lubrication, use of data logging sensors, IT and the analysis of quantitative data.

#### References

Anderson, R. D. (2002) Reforming science teaching: what research says about inquiry. *Journal of Science Teacher Education*, 13(1):1-12.

Kennedy, D. (2012). Practical work in Ireland: A time of reform and debate. *Eurasia Journal of Mathematics, Science & Technology Education,* 2012, 8(1), 21-34

Wenning, C. J. (2010) Why the resistance to inquiry oriented science teaching? *Journal of Physics Teacher Education Online*, 5(3), December 2010

# PROFILES

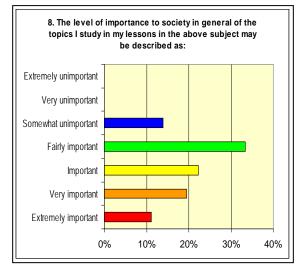
# **GRIP IT OR SLIP IT**

#### Objective

To allow students gain an understanding of the factors that affect friction by conducting a series of investigation.

#### Activities

- As a group students had to try to identify with the aid of a mind map all the factors that contribute to a bus tyre gripping or slipping the road.
- Each group then had to chose a single factor to investigate. They designed an experiment to see if their chosen factor did affect the tyre's ability to grip the road.
- 3. Each group then carried out their investigation.
- They then discussed their findings and gave a short presentation to their fellow class mates.







#### Results

- Analysis of student accounts of the investigations shows that they engaged in a significant amount of IBSE during lessons.
- Feedback from students showed that the module had a positive impact on student motivation.
- Students found that the lessons were relevant for society.

# Evaluation

- The module placed a strong emphasis on group work.
- Students worked independently of the teacher.
- The module was successful in presenting students with a scientific problem they had to solve.
- The scenario was not as effective as had been hoped in initially motivating students.

# Conclusions

- The module was effective in promoting IBSE.
- The scenario and title were only partly effective in motivating students.