or alternatively…..

can you teach Physics in .mp3 format?

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The short answer

Well…no

Sort of

Up to a point

Probably not

Maybe

But (why) would you want to….?

What we did

- This is not just podcasting lectures

Electricity & Magnetism, Spring 2002

Prof. Walter Lewin

Last Modified: Jun 14, 2007
Tracks in Video: 37

GET TRACKS

Links

- Visit the course web site on MIT
- Do the problem sets for this cour
- View all MIT OCW courses
- Donate now

DESCRIPTION

In addition to the basic concepts of Electromagnetism, a vast variety of interesting topics are covered in this course: Lightning, Pacemakers, Electric Shock Treatment, Electrocardiograms, Metal Detectors, Musical Instruments, Magnetic Levitation, Bullet Trains, Electric Motors, Radios, TV, Car Coils, Superconductivity, Aurora Borealis, Rainbows, Radio Telescopes, Interferometers, Particle Accelerators (a.k.a. Atom Smashers or Colliders), Mass Spectrometers, Red Sunsets, Blue Skies, Haloes around Sun and Moon, Color Perception, Doppler Effect, Big-Bang Cosmology.

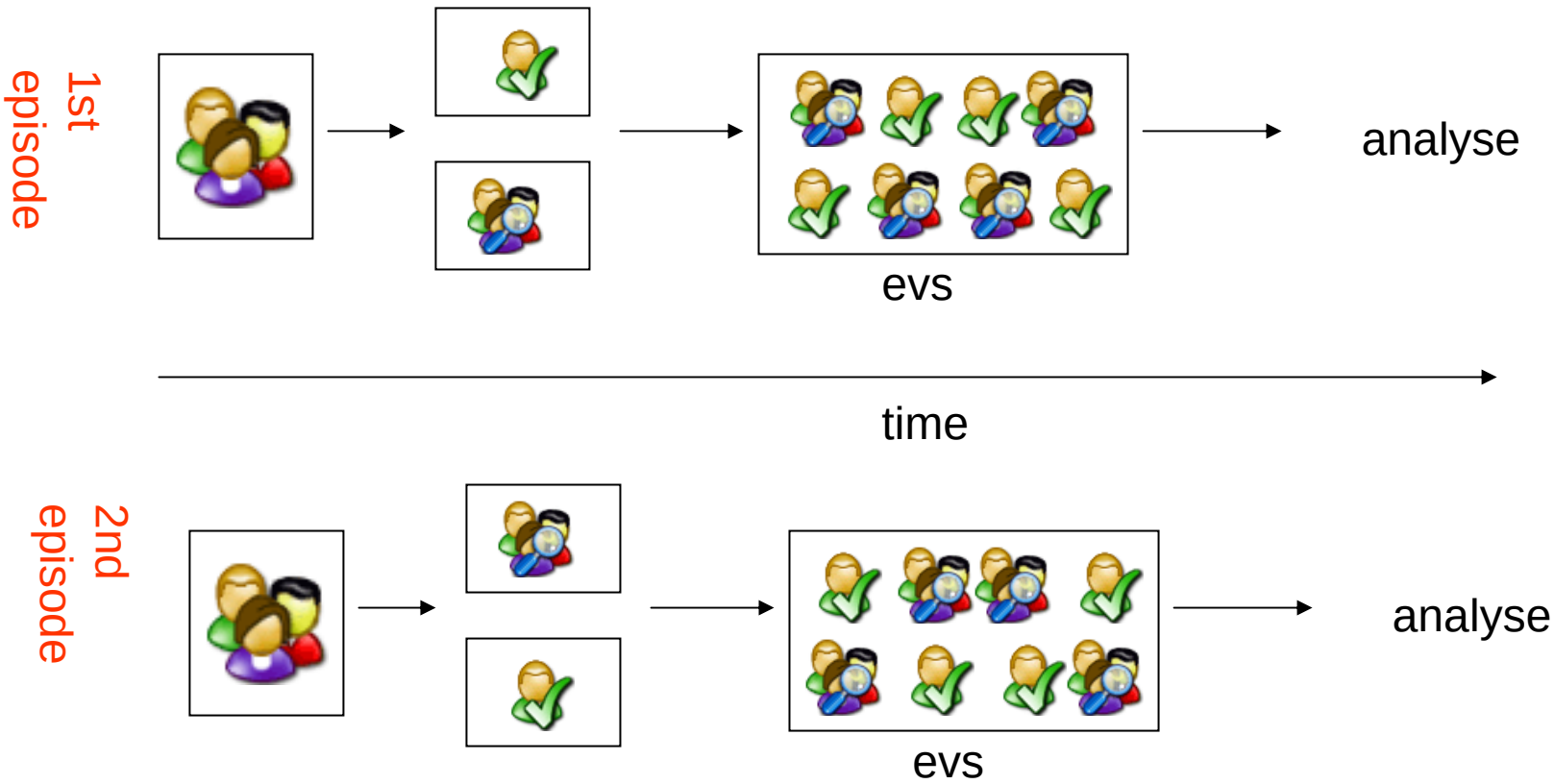
Video

	Name	Time	Artist	Album	Price
1	Course Introduction	5:47	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
2	Lecture 01: What holds our...	47:48	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
3	Lecture 02: Electric Field; F...	49:24	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
4	Lecture 03: Electric Flux; G...	51:04	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
5	Lecture 04: Electrostatic Po...	49:02	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
6	Lecture 05: E = -grad V; M...	49:58	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
7	Lecture 06: High-Voltage B...	52:36	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
8	Lecture 07: Capacitance; Fi...	49:26	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
9	Lecture 08:Polarization; Di...	51:02	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE
10	Lecture 09: Currents; Resis...	49:17	Walter Lewin	MIT OCW: 8.02 Elec...	GET MOVIE

What we did

- This is not just podcasting lectures
- We aimed to target known misconceptions held by students
- Use podcasts for pre-lecture engagement with material

Methodology



Topic: angular momentum

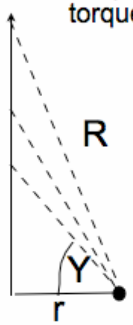
- Targetted the concept of angular momentum:

Particles moving in a straight line,

Choice of origin,

Variable speed etc.

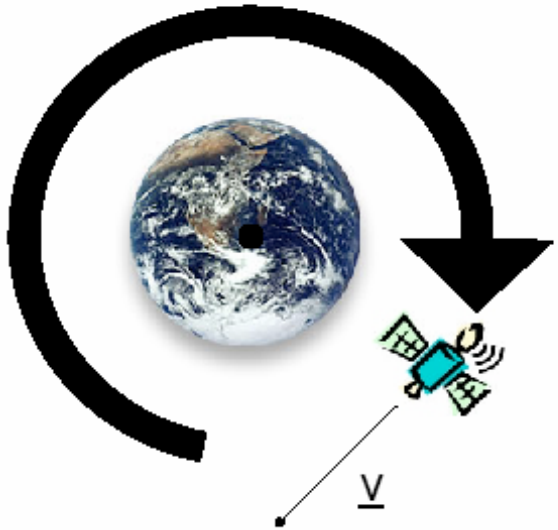
The ball that is cut loose is misleading. There is no force other than the centripetal force when the ball is rotating, so there is no external torque before, during, or after the string being cut, hence the angular momentum is constant.



L = |R| |mv| sinY and Y is constantly increasing.
However, R = r/sinY, so L = |mvr|

For the penguin, there is a force acting downwards, which is parallel to the motion and hence there is a torque on the penguin. This means the angular momentum is not

Some results

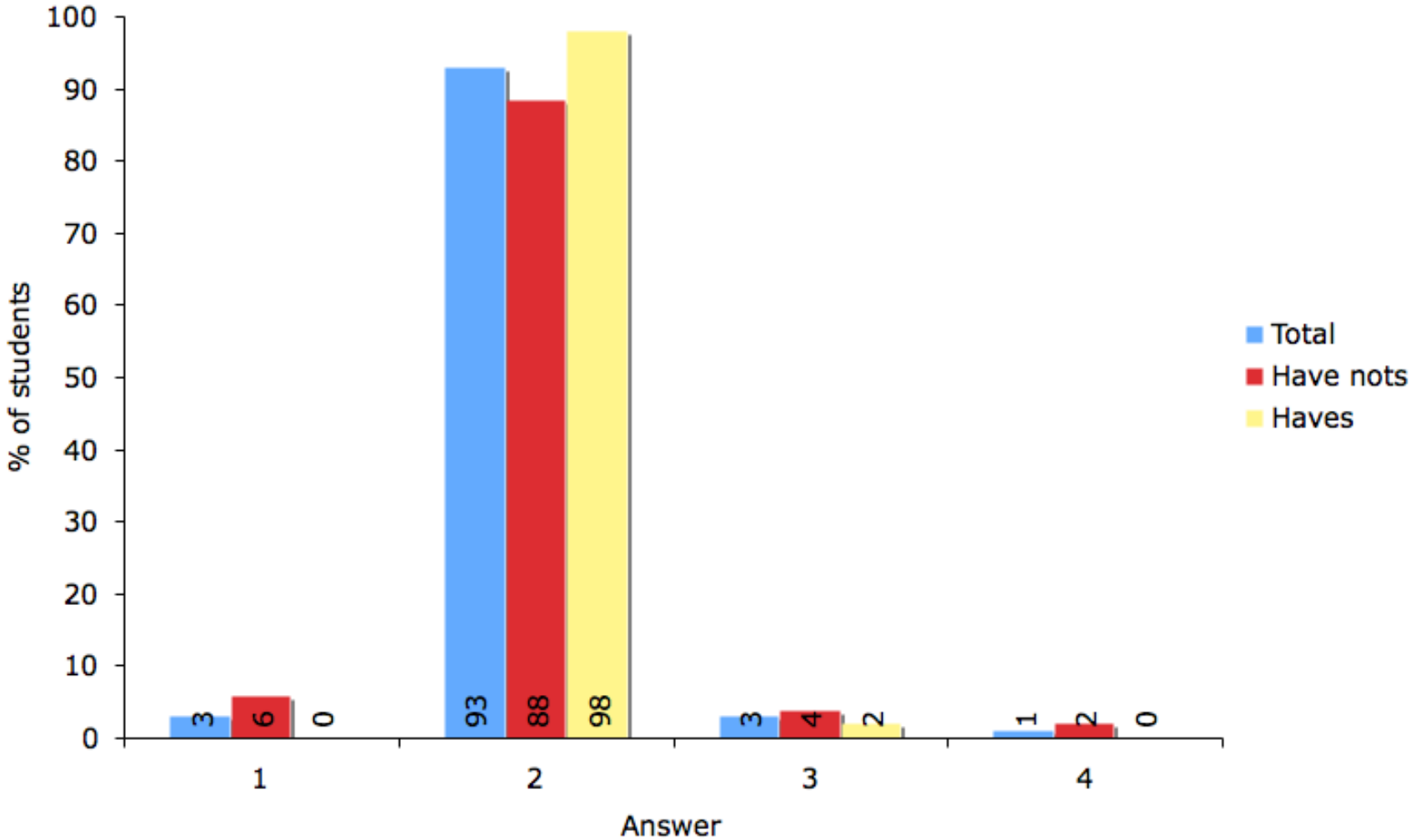


A satellite orbits the earth with constant speed, |v|.

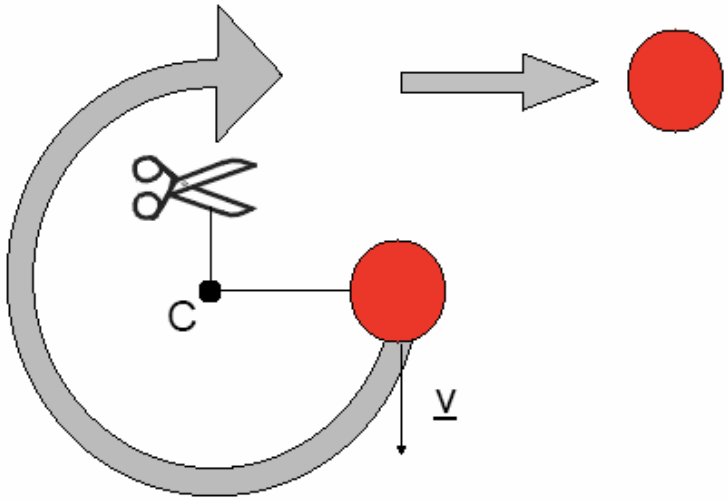
If we take our origin as the centre of the earth, which of these is true?

A - The satellite has no angular momentum.
B - The satellite's angular momentum is constant.
C - The satellite's angular momentum increases as it orbits.
D - The satellite's angular momentum decreases as it orbits.

Some results



Results



A ball, held on a string whose other end is fixed to a point, C, moves in a circle on a horizontal frictionless surface at a constant speed, |V|

At some point, the string is cut. With respect to the point, C, which of these is true?

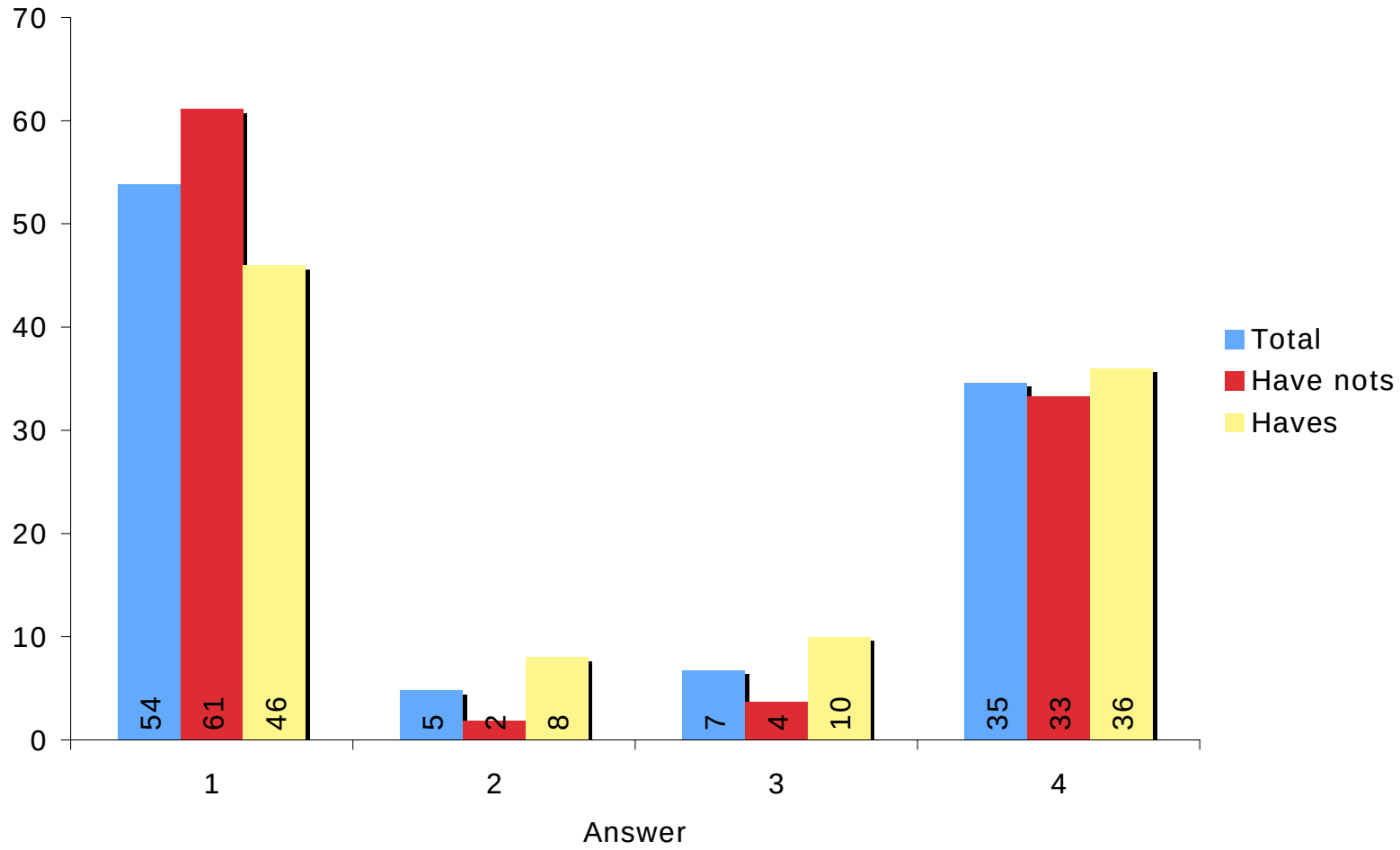
A - The ball has no angular momentum.

B - The ball's angular momentum stays constant.

C - The ball's angular momentum increases.

D - The ball's angular momentum decreases to zero.

Results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Answer
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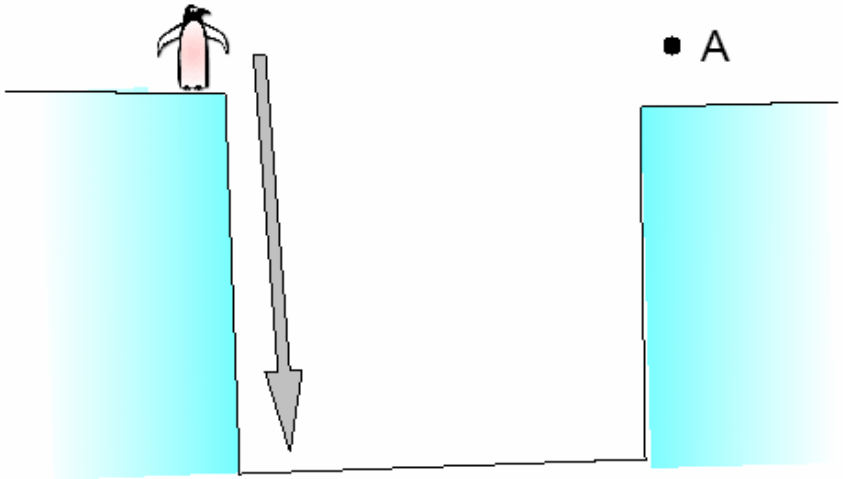
Results

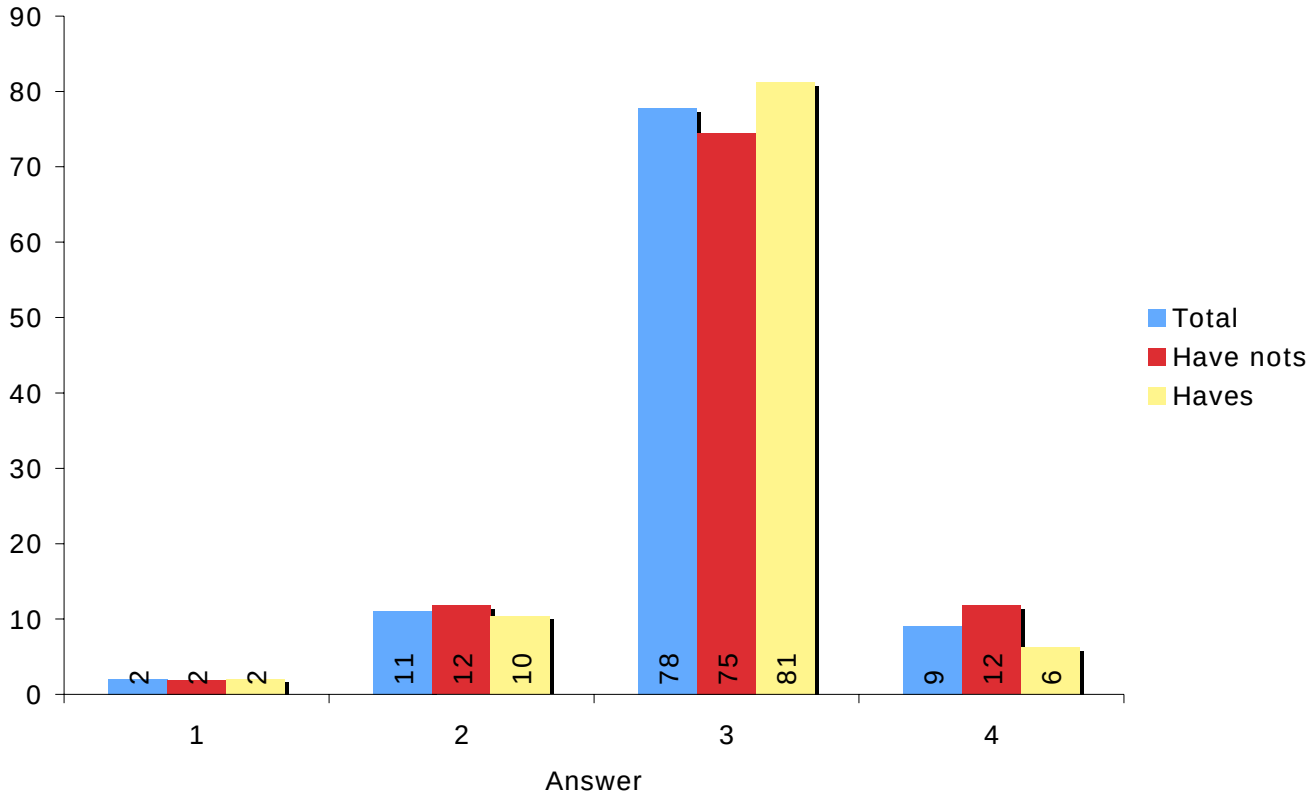


A sad little penguin decides to end it all by leaping from an icy cliff.

Alison watches from the top of a cliff opposite. With respect to her reference point, which of these is true?

A - The penguin has no angular momentum.
B - The penguin's angular momentum stays constant.
C - The penguin's angular momentum increases as it falls.
D - The penguin's angular momentum decreases as it falls.

Results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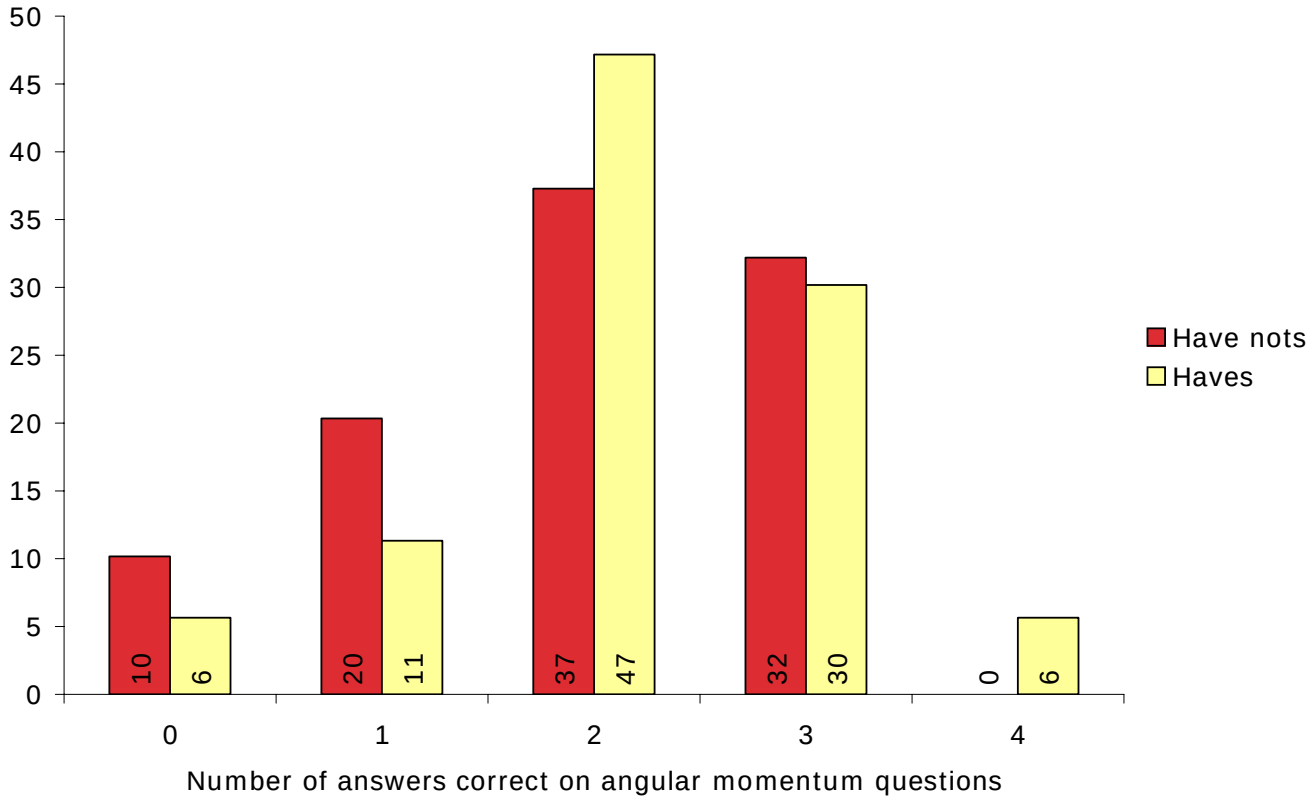
Answer
Total
Have nots
Haves

Results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Number of answers correct on angular momentum questions
Have nots
Haves

Summing up

- Small but consistent positive effect
- Had set a high target:
  - Known conceptual problems
  - Physics is a visual subject
- Learning in the wild, not in captivity
- Future developments:
  - Video?
  - How important is mobile: screencasts?

Podcasting

Overview

This project is a collaborative project with the School of Divinity to use podcasts to help orientate and support 1st year students. The podcasts do not contain lecture material, but instead focus on providing additional supplemental material with 'a student voice' - contributions from past students talking about strategies for effective learning.

This project wishes to explore the uptake/effectiveness of this kind of material with the possibility of extending the idea in future semesters.

A screen capture of the physics podcast feed page.
(Click to expand)

Key Outcomes

- To introduce podcasts to 1st year students, providing supplemental material that will help with their learning and orientation in Semester 1.
- To gain experience with authoring and publishing podcasts through the use of University of Edinburgh centrally-managed services - media hosting and podcast feed page delivery.
- To evaluating uptake/effectiveness of podcasting by 1st year students.

Project Status

This project has been running from June 2006, with the first podcasts being delivered to Physics 1A students at the beginning of Semester 1 in October 2006.

Project Contacts

Dr Simon Bates, School of Physics (Project Manager)
Mr Keith Brunton, School of Physics (Technical Lead)

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