



ActivPhysics and ActivPad **— an Innovative "Webway" of Packaging and Delivering** **Physics**

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General Introduction

Information technology has expanded at such a rate that the amount of material available to the would-be user is overwhelming. Scientific publishers have joined the enthusiastic providers of information in this form and are producing some excellent material. At the same time there is much which is being trialled which is proving to be not effective and is being abandoned for more successful modes of presentation. Two key factors in the success or lack of success in this endeavour are:

- ease of navigation for the user; and
- value of content.

Suzanne as the active lecturer/presenter has been interested in making use of the wealth of materials provided by various publishers and as such has trialled a large number of packages. She also uses some of her own software development in her regular classes and incorporates many scientific packages not only in lectures but also in hands-on laboratory sessions for the students.

This interest in publisher materials brought her into contact with Rosemary who was introducing the new package of *ActivPhysics* in association with her marketing of the University Physics book by Young & Freedman, though the product accesses material from a range of textbooks. This, then, is the third key feature of *ActivPhysics* to be discussed in this paper encouraging exploration beyond the product.

Using *ActivPhysics* and *ActivPad*

The paper is a real illustration of the use of the product(s) themselves in:

- planning a lecture/presentation;
- searching for material appropriate to the lecture;
- overviewing the balance of the material;
- making the presentation; and
- leaving notes for the students to review the material presented.

ActivPhysics

Philosophy behind the package

ActivPhysics is a physics reference package with all of the standard materials available in a textbook:

- theory;
- formulae;
- applications;
- examples; and
- exercises with answers.

Added to this are the features able to be included because of computer technology:

- real-life video clips;

- friendly “talking heads”; and
- simulations with variable parameters.

Added also are the special features of THIS package:

- references to a variety of textbooks;
- simultaneous access to web materials; and
- notetaking /link collecting features of *ActivPad*.

Examples of this might be the included “Balloonist Drops Lemonade” problem from Young & Freedman which has variations in many other texts. The initial simulation picturing the rising balloon and dropping object is able to be further enhanced if more explanation is needed by a more detailed simulation showing velocity and acceleration vectors at each point in the motion.

Practice and Preparation Time Needed

But not all examples included are so valuable. Some take a long time to fire up — and then spend far too long doing nothing interesting so that both lecturer and students become irritated. For this reason it is essential that the lecturer spends time going through the provided material before referring the students to it. This again highlights the value of *ActivPad* for recording worthwhile material when found.

ActivPad

Philosophy behind the package

ActivPad sits open on the desktop while *ActivPhysics* is in use. It is of value to the student in private notetaking but it is seen as having its greatest benefit for the lecturer in:

- preparing a lecture plan;
- ordering the material;
- searching the *ActivPhysics* for relevant material for inclusion in the lecture — links to *ActivPhysics* are “grabbed” and included in *ActivPad*;
- adding in active links to other material relevant to the lecture;
- live links are “grabbed” for inclusion; and
- running the lecture presentation with a minimum of anxiety of accessing so many links.

Alternative Paths

Because of the ease of links inclusion it is possible to prepare alternative paths depending on the audience reaction to the material.

Student Summary

At the conclusion of the lecture the lecturer may provide the *ActivPad* material as an excellent summary of the material presented, leaving it to the student to access which ever parts of the web material they would like to explore more.

Local Files in case of problems

The brave and daring will be thrilled at the ease of preparing quite exciting and stimulating presentations in this fashion. The more cautious — more experienced — presenters will make sure that, even if the net goes down at the critical time, that a second *ActivPad* file is prepared with alternative, local files downloaded for the entire presentation.



Sample Lecture Material on Waves - in *ActivPad* Format

General Introduction

 UniServe Science - Web Workshop
<http://science.uniserve.edu.au/su/SCH/other/webwshop.html>

..... Sue's reference on the web

 UTS Department of Applied Physics - People
<http://www.phys.uts.edu.au/physics/physpeop.htm>

- publishers producing great material
- how to get the students/lecturers to use them
- Key feature - NAVIGATION familiarity
- encouraging exploration BEYOND the product
- this paper - WHERE ELSE - ON THE WEB

 SWH.html
<http://www.phys.uts.edu.au/~sue/SWH.html>

ActivPhysics

- Philosophy
- Books
- Demo

 Describing Motion: 1.7 Balloonist Drops Lemonade
<file:///ActivPhysics%201/Media/DescribingMotion/BalloonistDropsLemonade/Main.html>

- Not all good experiences - need to prepare first

 Describing Motion: 1.8 Seat Belts Save Lives
<file:///ActivPhysics%201/Media/DescribingMotion/SeatBeltsSaveLives/Main.html>

ActivPad

- Philosophy
- Lecturer use
 - outline format for preparation
 - test order
 - reference click-on list
 - foundation + extras balance
 - alternative paths
- Student use - lecture summaries with references i.e. THIS document

Demo Preparation

- Wave Theory

 Waves: 10.1 Properties of Mechanical Waves
<file:///ActivPhysics%201/Media/Waves/PropertiesMechWaves/Main.html>

- Waves not restricted to Regular Waves

 Waves: 10.10 Complex Waves: Fourier Analysis
<file:///ActivPhysics%201/Media/Waves/CompWavesFourierAnal/Main.html>

Prepared Presentation

Pitch Perception

- Alternative Routes
 - What is pitch anyway?

 Shepard Scales
<http://www.music.mcgill.ca/auditory/shepscal.html>

- If on the other hand the audience might be interested in whale sounds
- Instead of simulation, what about some real sounds - e.g. whales
- whales

 Sounds of Oceania
<http://www.oceania.org/sounds/>

- Local Files in case of problems