DESIGN STRATEGIES FOR EFFECTIVE RESEARCH POSTERS

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EDUCATION RESOURCES
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Previous session: Library Resources – literature review wizardry, citation and copyright guidelines

Today includes:

- Selection of key material
- Evidence-based principles of good design
- Decisions about text and images based on the above

Final session: Information Resources - technical and graphical tips, tricks, resources, formatting, and printing
INSTRUCTIONAL DESIGN & POSTER PRESENTATIONS?

10,000 foot view of your research

• You have seconds to grab readers’ attention, and
• Minutes to educate them on possibly months or years of your work.

Evidence-based design principles for posters

• Coherence Principle
• Segmenting Principle
• Multimedia Principle
• Contiguity Principle
Fitting the camel through the eye of a needle

Select the key material that conveys, at first glance:

WHAT DID YOU DO?
and
WHAT DID YOU FIND?
THE SEGMENTING PRINCIPLE

Long blocks of text should be split into smaller sections

• “Learners who received segmented presentation performed better on transfer test than the learners who received a continuous presentation with identical material.”

Takeaway: present material in “bite size” chunks.

How to achieve it:

• Short sentences or phrases
• Section headings
A mobile phone application to help track and reduce energy consumption at home

Summary

Unplug is a downloadable mobile phone application that tracks the energy consumption of individual plug-in devices, as well as the whole household.

This is enabled through simple installation of individual monitoring adapters and a clip-on monitoring device next to the electricity meter.

Energy minister Malcolm Wicks explained "cutting carbon emissions is one of the greatest challenges we face. Smart meters provide the chance for each one of us to play our part, providing better information and more accurate billing."

Key Features

- Smart application shows real-time data
- Tracks energy consumption for individual devices
- Shows device status and provides reminders
- Compares household energy use to the national target
- Provides personalised energy saving tips
- Application is supported by a website

Target Users

Unplug is aimed at users aged 25 years and above, who are concerned about the environment and their own energy usage.

They own a mobile phone and have Internet at home.

Research by the Energy Saving Trust found that more than half of those surveyed would like to have a ‘smart meter’ fitted to their home. (Metro, 17.03.08)

User Research

- Through initial surveys and interviews we were able to define our target population
- Further semi-structured interviews enabled the definition of the user needs
- In-depth interviews allowed better understanding of the users information needs
- Lastly, user testing for interface design requirements

User Profile

Alex (31) is in a rush for an important meeting. He forgets to turn off his electrical heater. In the evening, when he returns home, he discovers he has left the heater on all day. Alex has a habit of forgetting to switch-off appliances. He wants a simple way to help him reduce his energy consumption and remind him to switch-off devices.

Luciana (56) is concerned about her household’s energy usage. With 4 people in the house she is losing track of the energy consumption. She has noticed that her electricity bills have increased in the last few months. Being environmentally conscious, she would like to reduce the energy usage in her home, but she doesn’t know where to start.

Future developments

- Online community
- Track gas consumption
- A remote control feature to switch off devices

Design Process

Planning
- Literature
- Soft Systems Methodology

Analysis and Requirements
- Competitor analysis
- Cost Benefit analysis
- Questionnaires and interviews
- Scenarios and personas
- Task analysis

Design
- Mobile phone design guidelines
- Ergonomic guidelines
- Low and high fidelity Prototyping

Evaluation
- User testing
- Semi-structured interviews
- Heuristic evaluation
- Evaluation against Scenarios
- Evaluation of conceptual fit
Innovations within investigating the motivations of Chinese
international students in the UK

Ian Poon, Ph.D. student, Social Statistic and Demography

Background
Chinese make up the most international student market that is also very recent. The
UK is the second most popular destination worldwide for international student. The growth was
much faster for Chinese students than for students from other countries.
Chinese international students have the highest acceptance rates from universities.
Chinese international students perform better in the undergraduate courses in the UK.

Methodology
The project involved 50 Chinese international students in the UK, who participated in a
series of semi-structured interviews. The interviews were conducted in a one-on-one setting,
and the data was transcribed and analyzed using thematic analysis.

Innovation 1: Tying Chinese concepts to increase understanding of
the motivations of Chinese international students

Innovation 2: Developing a typology that closely resembles Li
and Cao's two-way push-pull theory, while enhancing it using Bourdieu's theory of capital

Next steps
The project will continue to focus on understanding the motivations of Chinese international
students in the UK. The research will be extended to include additional interviews and
surveys to gather more data.

Key references
the Fifth International Conference on Education and Management. Singapore: World
Scientific Publishing.
Poon, I. (2018). Understanding the motivations of Chinese international students in

End Note
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THE COHERENCE PRINCIPLE

Extraneous words and images hurt learning, regardless of good intentions

- “Students who received [new information] without [extra, interesting details] performed better on transfer test than students who received [new information] with [extra, interesting details], generating about 34% more solutions on the transfer test, which translated to an effect size of .66.”
- “Students… spent less time reading the relevant text, recalled less of the relevant text, and showed shallower processing on an essay task as compared to students who read the … passage without seductive details.”

What happens if you don’t do it right?

- Readers focus on the wrong things
- Readers misinterpret the importance of the key pieces

Even if it IS related, avoid

- Expansion on key ideas
- Too much technical depth
- Interesting or seductive detail
THE COHERENCE PRINCIPLE

Takeaway: Just the facts; roadmap to your research

How achieve it

• Stop detail at key ideas
• Ensure graphics are directly related to key ideas, but NOT redundant
• Refer to graphics using the same terminology as used in the graphic
Motivation
- Build a learning tool for people who want to learn to program.
- Build a tool that supports different learning styles.
- Enable unsupervised learning through automated feedback.
- Build a system that guides students through course materials and problems smoothly.

Course Website Deployed and Accessible
Course Materials
- Exams
- Code repository
- Lecture videos
- Videos
- Tutorials
- Lab exercises
- Course materials available from database

Assessment
- Code interpretation
- Pseudo code
- Animations
- Hints
- Coding questions
- Common assessment questions
- Tailored hints

Course Materials
- Lecture video specific to current chapter
- Videos tailored to exercises problems
- Entire chapter is available at any given time

Design
- Navigation Bar (Homework's, Exercise videos, Tutorial walkthroughs)
- Student View fetches data from database and displays it on view
- Admin panel builds student page views with existing modules

Modules
- Tutorials
  - Pseudo code walk through with real-time MATLAB code feedback
  - Conceptual animation with practical examples tailored to course lecture
  - Code walkthrough with step by step validation

Glossary
- API: Application Program Interface
- REST: Representational State Transfer
- Student View: User view
- Admin Panel: Toolbox to Build Lectures and Assessment
- MongoDB: Database
- Express: Web Framework
- Angular: Web Framework
- Node JS: JavaScript Runtime Environment
- CS: Computer Science

Acknowledgements
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 Tim Hanshaw

For their help and guidance during this project.
Thank you everyone who helped us get to this point. We owe it to you.
PUTTING PRINCIPLES INTO PRACTICE

Use headings wisely to employ segmenting

• Introduction
• Goals, outcomes, objectives
• Methods, procedures, materials
• Results, findings
• Discussion, conclusion, takeaways
• Acknowledgements, references
INTRODUCTION

NOT an abstract; sets the context

Coherence

• 1–2 short paragraphs; total of 5–8 sentences
• Provide context—why does it matter, and to whom?
• Provide evidence for the problem
• State the need for a solution
Introduction Examples

Problem
Emergency treatment for anaphylaxis with the use of epinephrine injector systems was identified as a new curricular need at the University of North Dakota School of Medicine and Health Sciences. Incorporating new instructional objectives to a medical curriculum is a frequent activity but is often challenging because of scheduling and time constraints. Typical solutions “make room” in the curriculum for new lectures, yet not all learning outcomes are rarely analyzed to determine whether synchronous instruction is required (as with attitudes and motor skills do, for example) or not (as with intellectual skills, which usually do not), resulting in inefficient use of student and faculty time.

Solution
Rather than creating a new lecture, the instructional design team advocated for asynchronous e-learning. Because motor skills can only be approximated in eLearning simulations, the module is supplemented with final motor skills assessment during objective structured clinical examinations (OSCE). If students successfully demonstrate the motor skills involved in administering an epinephrine auto-injector, future iterations may not require testing during OSCE, thus saving additional time. Most students can complete the module in 30 minutes; the OSCE is anticipated to take less than one minute.
GOALS AND OUTCOMES

One of the first places readers will look!

Coherence:

• State the goals, objectives, intended outcomes, or hypotheses
• Use phrases, not sentences
• Use bullets, not phrases
  • Key ideas, not substitutes for paragraphs
  • Third level indent is off limits!
    • Why? It is too hard to read AND is likely extraneous
GOALS AND OUTCOMES EXAMPLES

OBJECTIVES

This module addresses four terminal objectives and fifteen enabling objectives, each aligned with appropriate strategies and the events of instruction through the use of cases, examples, interactive practice, and assessment. The first objective was: Given simulated patients with and without anaphylactic shock, the learner will be able to classify cases of anaphylactic shock or not anaphylactic shock by labeling or selecting cases with 100% accuracy. Seven enabling objectives support identification and classification of the signs and symptoms of anaphylaxis versus similar conditions. These include cutaneous, respiratory, gastrointestinal, neurological, and cardiovascular distress. The second objective was: Given a real or simulated patient, the learner will be able to demonstrate asking pertinent questions to determine whether a person may be in anaphylactic shock by selecting or asking questions and doing so in the correct order with 100% accuracy. Two enabling objectives support discrimination between the ability of the patient to speak and which questions are necessary to ask. The next one we developed was: Given a real or simulated patient, the learner will be able to demonstrate asking pertinent questions to determine whether a person may be in anaphylactic shock by selecting or asking questions and doing so in the correct order with 100% accuracy. Two enabling objectives support discrimination between the ability of the patient to speak and which questions are necessary to ask. Objective #4 addressed treatment: Given a real or simulated patient, the learner will be able to apply knowledge of anaphylaxis symptoms and progression in order to begin appropriate, immediate treatment of the patient with 100% accuracy. Two enabling objectives support the identification and description of the progression of anaphylactic shock, including the timeframe from start to finish. And lastly, number 5: Given a real or simulated EpiPen, the learner will be able to demonstrate appropriate handling, pin removal, positioning, and execution for the treatment of anaphylaxis with 100% accuracy. Six enabling objectives support the demonstration of epinephrine injector system use, including appropriate grip, identification and manipulation of key components, and administration to the patient.

OBJECTIVES:

1. Classify cases of anaphylactic shock or not anaphylactic shock.
2. Demonstrate asking pertinent questions to determine whether a person may be in anaphylactic shock.
3. Apply knowledge of anaphylaxis symptoms and progression in order to begin appropriate, immediate treatment of the patient.
4. Demonstrate appropriate handling, pin removal, positioning, and execution for the treatment of anaphylaxis.
METHODS OR PROCEDURES

5,000 foot view of your study
- Journals: reader should be able to replicate your study
- Posters: reader should grasp the outline of what you did

Segmenting
- Second-level subheadings
  - Participants
  - Materials/instruments
  - Procedures
  - Analysis
  - You don’t need every detail (interested parties will ask!)

A relevant graphic
- Chart of participants; image or table of instrument
Impact of Race on Attrition of Women Faculty at a Research-Oriented Medical School

Study Aims

Background: In senior academic ranks and leadership positions, the representation of women falls short of their male counterparts. This attention has been paid to the fact that under-represented minority (URM) women experience additional bias or “double jeopardy” associated with both race and gender. It is important to understand factors associated with the career trajectories of women assistant professors.

Purpose: To identify factors associated with attrition among women faculty at an elite school of medicine over a three-year period.

Methods

- Departments/divisions with at least three women assistant professors (N = 37) were randomly assigned to intervention versus control groups.
- Baseline (2010) and follow up (2013) data were obtained by questionnaire from 133 women assistant professors.
- Baseline (2010) measures included: Age, marital, and parental status, race, core self-evaluations, work hours.
- Follow-up (2013) measures included departure from institution.

Analyses

A generalized linear multivariable model was employed to estimate the risk of attrition:
- Generalized estimating equations accounted for clustering by departments/divisions.
- Analyses controlled for years in rank, a confounding variable.
- Risk factors include race, marital status and core self-evaluation (CSE).

Summary Results

Over a period of 3 years:
- 21 women (16% of the cohort) left the institution.
- URM women were 3x more likely to leave than White women.
- Unmarried women were 3x more likely to leave than married women.
- Women with higher core self-evaluations were less likely to leave.
- There was no difference in attrition between the intervention and control groups.

Table 2. Risk Factors Associated with Attrition

<table>
<thead>
<tr>
<th>Race (White = Comparison)</th>
<th>Risk Ratio (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>URM</td>
<td>3.36 (1.98 - 5.71)</td>
<td>0.007</td>
</tr>
<tr>
<td>Asian</td>
<td>1.67 (0.75 - 3.84)</td>
<td>0.210</td>
</tr>
<tr>
<td>Marital Status (Married = Comparison)</td>
<td>0.51 (0.27 - 0.95)</td>
<td>0.035</td>
</tr>
<tr>
<td>Unmarried</td>
<td>5.03 (1.24 - 2.07)</td>
<td>0.015</td>
</tr>
<tr>
<td>Core Self-Evaluations</td>
<td>0.43 (0.22 - 0.86)</td>
<td>0.017</td>
</tr>
</tbody>
</table>

Time as Asst. Prof. (<3 Years = Comparison)

- 3-5 Years: 0.97 (0.51 - 1.83) 0.883
- >5 Years: 0.15 (0.02 - 0.98) 0.081

Conclusions

During a 3-year longitudinal study, 14% of women assistant professors left the university. URM women were greater than three times more likely than White women to leave their faculty positions at a research-oriented medical institution. While unmarried women and those with less positive core self-evaluation were also more likely to leave, these results were independent of the race effects. Understanding the intersection been gender and race on the retention and advancement of women faculty is critical to developing, implementing, and evaluating strategies to increase diversity.
### Background
China sends most international students worldwide than any other country. The US is the second most popular destination worldwide for international students, the fourth most popular for Chinese students.

When in June 2016, China ranked second among the four most popular destinations for international students, the number of Chinese students in the US are from mainland China.

Chinese students who study in the US are the most underestimated of overseas students in China. This is mainly because the lack of cross-cultural understanding and the need for cultural adjustment among these students.

### Main aims
Main aims: 
- Chinese students in the US have fewer cultural barriers due to the similarity of American and Chinese education systems.
- Understanding Chinese culture and education systems can help better adapt their cultural and social capital back into China.

### Innovation 1: Using Chinese concepts to increase understanding of the motivations of Chinese international students

#### Chinese concepts in education

- **Curriculum**
  - Chinese students are familiar with the curriculum system in China, which is based on a comprehensive and standardized system.
  - The curriculum is divided into different levels, from basic to advanced, and students are expected to achieve certain standards at each level.

- **Classroom Culture**
  - Chinese students are accustomed to learning in a structured and organized environment.
  - The classroom culture in China typically involves strict rules, clear expectations, and a focus on discipline and hard work.

- **Exams**
  - Chinese students are used to taking exams, which are an integral part of their education system.
  - The exam results are often used as a measure of performance and can have a significant impact on future opportunities.

- **Teacher-Student Relationship**
  - Chinese students are accustomed to a more authoritative and hierarchical relationship with teachers.
  - Teachers are expected to be knowledgeable, respected, and authoritative figures.

#### Cultural Differences

- **Language**
  - Chinese students need to adapt to a new language and learning environment.
  - Understanding basic Chinese language concepts can help them better understand the cultural context of their studies.

- **Social Interactions**
  - Chinese students may need to adjust to a more open and interactive learning style.
  - Understanding the importance of social interactions and group work can help them better integrate into their new environment.

- **Learning Methods**
  - Chinese students are accustomed to a more structured and teacher-directed learning style.
  - Understanding the role of individual study and self-reliance can help them better adapt to an independent learning environment.

- **Cultural Values**
  - Understanding the cultural values of Chinese students can help them better understand the motivations behind their educational choices.

#### Professional Background

- **Career Goals**
  - Chinese students often have clear career goals and expectations.
  - Understanding the role of career goals in Chinese culture can help them better align their educational choices with their future aspirations.

- **Family Influence**
  - Chinese students are strongly influenced by family expectations.
  - Understanding the role of family in Chinese culture can help them better understand the motivations behind their educational choices.

### Innovation 2: Developing a typology that visually summarizes Li and Bray's two-way push-pull theory, while enhancing it using Bourdieu's theory of capital

- **Push Theory**
  - The push theory focuses on the migration of Chinese students due to internal factors in China.
  - These factors include lack of opportunities, political unrest, and economic pressures.

- **Pull Theory**
  - The pull theory focuses on the attraction of the US education system for Chinese students.
  - These factors include high-quality education, cultural opportunities, and professional advancement.

#### Bourdieu's Theory of Capital

- **Cultural Capital**
  - The acquisition of cultural capital is essential for Chinese students to succeed internationally.
  - This includes knowledge, skills, and attitudes that are valued in the international context.

- **Social Capital**
  - Social capital is important for Chinese students to make valuable connections and build networks.
  - These connections can provide access to information, resources, and opportunities.

- **Economic Capital**
  - Economic capital is crucial for Chinese students to finance their education and live independently.
  - This includes financial resources, scholarships, and other forms of financial support.

#### Next steps

- **Research**
  - Conducting further research on the motivations of Chinese students can help identify new insights and factors that influence their decisions.

- **Policy Recommendations**
  - Developing policies to support Chinese students and reduce the barriers they face can help enhance their educational experiences.

### Key references
RESULTS

Also one of the first places readers will look!

Segmenting
  • Subheadings
    • Hypotheses
    • Bulleted findings per hypothesis (interested readers will ask for more)

Include the **most important** charts, tables, or graphs
  • 1–4 total
  • *Choose wisely!*
    • Should illustrate and extend bulleted findings
    • Should each illustrate a different point, finding, etc.
Background:
Procedural sedation has long been an integral part of ED pain management especially for orthopaedic manipulations. In 2012 the UK Royal College of Emergency Medicine issued guidelines on safe sedation in the ED. This was a joint work with the Royal College of Anaesthetists and reflects not only the consolidation of the specialty of Emergency Medicine in the UK, but also the fact that all trainees now have a minimum of 6 months anaesthetics training.

Safety:
Brighton Royal Sussex County University Hospital has a long tradition of sedation and teaching and has over the past 10 years developed a training program to ensure safe sedation for both doctors and nursing staff. All sedations are done in the Resus area as per the college guidelines but in addition we have introduced a checklist which is used 100% of the time by nurses and doctors. As a result our safety record is excellent and it has been exported to other hospitals in the UK.

Recognized training:
The Royal College of Emergency Medicine recommends a level 1 sedation sign off for all those performing ED but as yet there is no national course or way of recording this. We have introduced a training log book with the objective of being able to offer this recognized sign off to all national and international trainees who pass through our department.

Change in practise:
1) Over the past 8 years there has been an increase to over 65% of sedations now being performed by Registrars (senior non-consultant doctors) as opposed to only 41.9% in 2006 (despite this being a time when 24h consultant cover was not available).
2) Drug choice has changed from 97.7% being midazolam based in 2006, to 85% now being propofol based. The combination used principally in 2006 was 58.14% midazolam-morphine with no propofol use at all. In 2014-15 only 2.5% of sedations were done using morphine-midazolam with a more varied use of ketamine, fentanyl and propofol. Emtiondilate is not used at all, as is the case generally in England.
3) We have also increased our numbers of sedations threefold.

Conclusion.
Safe sedation needs systematic training of all those involved.
Checklists used simultaneously by nurses and doctors during the sedation leads to excellent safety records.
For further information about our sedation training please contact duncan.bootland@bsuh.nhs.uk
Introduction
Glycerol is extensively used in nearly every industry. Thanks to its emollient and demulcent properties, glycerol is an important ingredient in a variety of pharmaceutical preparations. Because of its physiological activity there is an undeniable need for a rapid and specific method for quantitative assay of this analyte. Many analytical methods reported for determination of glycerol are based on enzymatic reactions. These methods are complicated, costly and time consuming. Gas chromatography can also be used for glycerol determination but it is not suitable for aqueous matrices. For these reasons a study was undertaken to develop a simple, rapid and inexpensive method for the determination of glycerol in insulin pharmaceutical preparations.

Reaction
The method developed is based on oxidation of glycerol to formaldehyde with periodate, reaction of formaldehyde with acetylacetone in the presence of ammonium acetate to form 3,5-diacetyl-1,4-dihydroxynaphthalein (DACH).

\[
\begin{align*}
\text{OH} & \quad \text{OH} & \quad \text{OH} \\
\text{CH}_2-\text{CH}_2-\text{CH}_2 & \quad + \quad \text{NaIO}_4 \quad \rightarrow \quad 3 \text{CHO} + \quad \text{NaO}_4 + \quad \text{H}_2\text{O} \\
\text{CHO} & \quad + \quad \text{NH}_2 \quad + \quad 2 \text{O} \quad \rightarrow \quad \text{CH}_3-\text{CO}-\text{CH} \quad \underset{\text{CH}}{\text{CH}} \quad \rightarrow \quad \text{H}_2\text{O} \quad \underset{\text{CH}}{\text{C}} \quad \text{O} \quad \underset{\text{CH}}{\text{CH}}
\end{align*}
\]

Materials and methods
Human insulin preparations from different producers were diluted with Milli-Q water. The periodate solution: 3 mM sodium periodate solution in an acetate buffer containing 1 M ammonium acetate and 0.6 M acetic acid, the acetylacetone solution: 1% acetylacetone solution (w/w) in 2-propanol, were prepared daily. Glycerol stock solution and calibration solutions were prepared using Milli-Q water. Samples were prepared as follows: 1 ml of a diluted insulin preparation or calibration solution or water was mixed with 2 ml of periodate solution. Then 5 ml of acetylacetone solution were added and put in a water bath at 50°C for 20 min.

The samples were analyzed by RP-HPLC on a Waters Alliance system equipped with a photodiode array detector. Throughout this work 250 x 4.6 mm reversed phase C18 column (ACE) with particle diameter of 5 μm and pore size of 10Å was used. Column temperature was kept at 45°C. All separations were monitored at 410 nm. Elutions were done with the linear gradient of 66-60% solvent A for 20 minutes. Solvent A was 0.1% TFA, solvent B was acetonitrile-water (80:10, v/v) with 0.1% TFA. The flow rate was 1.0 ml/min.

Results

![Fig. 1 Chromatograms of glycerol calibration solutions. 0.918, 0.409, 0.081, 0.170, 0.163 mg/ml](image1)

![Fig. 2 Calibration curve for determination of glycerol](image2)

![Fig. 3 Chromatograms of glycerol calibration solution (blue line 0.016 mg/ml), placebo (red line), blank (green line)](image3)

![Fig. 4 Calibration curve for determination of glycerol. 1 h (blue line), 24 h (red line) after preparation. Detection UV-VIS spectrophotometer](image4)

Tab. 1 Glycerol determination in insulin preparations

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Glycerol concentration mg/ml</th>
<th>1 h</th>
<th>24 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>soluble human insulin injection (protease A)</td>
<td>16</td>
<td>15.87</td>
<td>2.3</td>
</tr>
<tr>
<td>soluble human insulin injection (protease A)</td>
<td>16</td>
<td>16.03</td>
<td>2.3</td>
</tr>
<tr>
<td>insuline human insulin injection (protease A)</td>
<td>16</td>
<td>15.36</td>
<td>2.8</td>
</tr>
<tr>
<td>iyophasic insulin (protease A)</td>
<td>16</td>
<td>16.07</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Conclusion
The applicability of the acetylacetone method for quantification of glycerol in insulin preparations was successfully demonstrated. The method described needs to be validated regarding selectivity, accuracy, precision and linearity.

References
2. V. Kurakowski, O. Oktarsi Acak, Chem., 1996, 5A, 2080
3. www.chemipat.org/imggallery/10002.htm
DISCUSSION, CONCLUSIONS, TAKEAWAYS

Coherence
• 1–2 short paragraphs; 5–8 sentences
• Be self-referential to other sections of the poster

More typically prose than bullets

Clear *interpretation* of findings (do NOT repeat)

What findings mean to the field

Next steps for you/reader to extend the work
GRATITUDE, FUNDING, AND REFERENCES

Usually placed toward the bottom

• This section does not need to grab attention

Thank sponsors and others involved

• Organizations, businesses, schools, participants, and other entities for their assistance (preserve privacy as required)

Cite any images or literature used

Segmenting and coherence are less of a concern here
LAYOUT AND READABILITY

Talked about:
- How much content to include
  - Coherence Principle
- How to concisely present content
  - Segmenting Principle
- Which content to include

Now, what is the best way to lay it out?
- Multimedia Principle
- Contiguity Principle
- Flow and white space
THE MULTIMEDIA PRINCIPLE
(& REVISITING THE COHERENCE PRINCIPLE)

People learn better from words and pictures than from words alone

• Across 11 different studies, all students who received words and pictures performance better on a subsequent transfer test than students who received the same information in words alone (55 to 121 MORE correct solutions to a problem).

HOWEVER, pictures and words must be directly related (coherence principle)

• Avoid decorative, but irrelevant graphics and crazy colors (seductive details)
• Also omit overly-detailed charts
• Ensure words on chart refer clearly to chart elements
• Ensure text uses same terminology as graphic
THE MULTIMEDIA PRINCIPLE
(& REVISITING THE COHERENCE PRINCIPLE)

Takeaway: Include graphics, but *choose wisely*!

How to achieve it:

- Photograph of research taking place, key equipment, etc.
- Diagrams, formulas, equations, or proof
- Tables and charts that clearly represent the study results
ZIGBEE (802.15.4) WIRELESS SENSOR NETWORK FOR SMART AGRICULTURE

INTRODUCTION

This project was completed by developing a Wireless Sensor Network (WSN) system for monitoring and controlling the environment conditions such as temperature, relative humidity, and soil moisture. The network consists of several sensor nodes that collect data from the field and transmit it to a central monitoring station. The data collected is used to make decisions on when to water, when to fertilize, and when to harvest.

OBJECTIVES

- To design and implement a Wireless Sensor Network (WSN) system for Smart Agriculture.
- To develop a real-time data monitoring and control system.
- To evaluate the performance and efficiency of the WSN system.

METHODOLOGY

1. Sensor Placement: The sensor nodes are placed in the field at strategic locations to ensure they cover the entire area of interest.
2. Data Collection: The sensor nodes collect data on temperature, relative humidity, and soil moisture.
3. Data Transmission: The collected data is transmitted from the sensor nodes to the monitoring station via a 802.15.4 wireless network.
4. Data Analysis: The data collected by the sensor nodes is analyzed to determine the optimal time for irrigation and other agricultural activities.

RESULTS

The WSN system has been successfully deployed in the field, and preliminary results show that it can accurately monitor the environmental conditions. The system has also been shown to be cost-effective and easy to maintain.

CONCLUSIONS

The wireless sensor network for Smart Agriculture is a feasible solution for improving crop productivity and reducing water waste. The system can provide real-time data on environmental conditions, which can be used to optimize irrigation and fertilization schedules, leading to increased crop yields and reduced water usage.

REFERENCES

Evaluation of an Initiative to Develop Community-Based Capacity in Appalachia for Implementing Evidence-Based Practice for Diabetes Prevention and Control

Background
- The Center for Disease Control and Prevention (CDC) has supported the Appalachian Diabetes Control Project through an inter-agency Agreement (IAA) with the Appalachian Regional Commission (ARC) since 2000. The IAA is a federal-state partnership established in 1965 by the Appalachian Regional Development Act to promote economic and social development of the Appalachian Area. The Act was amended in 2002 to define the Region as 420 counties comprising all of West Virginia, and parts of Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia.
- In FY 2013, the Commission designated 82 counties as distressed. These counties are among the poorest 10% nationally, based on rates of poverty, unemployment, and per capita market income. In addition, 152 counties have been designated as "at risk" of severe economic decline. The undisputed prevalence of diabetes by county classification is approximately 11% for distressed counties, 9% (1.7%-11%) compared with the national median prevalence of 9%.
- The Center for Rural Health at the Jean C. Edwards School of Medicine, Marshall University, in Huntington West Virginia is the subcontractor for the IAA and the working arm of the project in Appalachia. Since 2000, the staff of the Center has established 67 Coalitions in nine Appalachian states, in distressed and at-risk counties.
- With the funds provided by both CDC and the ARC, this project was established in 2009 to provide training and technical assistance and to help states set up and implement programs for diabetes, on a national scale.

Methodology
- Appalachian Diabetes Coalition Evaluation (ADCE)
- Structure and Resources
- Communications and Interaction
- Interventions
- The Sustainability Scores
- Conclusion

Structure and Resources
- Coalitions range in size from 3 to 13 members representing several sectors/organizations.
- Recruitment was through direct contact, flyers, and local newspaper articles.
- Given the geographic barriers in this region, coalitions meetings were held. The majority met monthly (41), others quarterly (3). When meet on a need basis, whenever there was an activity planned is an interesting matter to be discussed.
- The coalition members were sub-contracted into a bigger group such as a larger urban coalition. This structure allowed for less meetings and the sharing of support and resources among all members.
- Several coalitions continue to engage in diabetes-related activities beyond the life of the original grant through in-kind contributions. Seventy-five percent of the coalitions formed are currently active today.
- Of the 33 coalitions who reported, 13 coalitions reported no in-kind. The total time-reported in 2013 was $103,102.

Communications and Interaction
- All coalitions communicate with Marshall University regularly.
- Almost half of the coalitions reported strong marketing to their communities. This was based on the estimated number of persons exposed to billboards, flyers, radio and TV public service announcements.
- Many coalition leaders have robust partnerships with media outlets such as the county newspaper and the radio.
- Of the 33 coalitions that responded to this survey, 20 felt there was strong awareness and satisfaction with the State IAAOP.

Interventions
- Coalitions engaged in interventions related to diabetes, some evidenced based such as diabetes self-management, chronic disease self-management (CDSM), walk with me! Walk with me, with robust participation, and/or in activities that promoted general health and wellness in local communities and at the state level.
- 16 coalitions reported sponsoring nutrition programs with robust participation, such as the Dining with Diabetics program implemented in collaboration with the County Extension Educator and the dietetic education program.
- Six coalitions focused their efforts on obesity policies to support healthy living. Examples include: renaming deep fryer from fried chicken (Meals for Me) to "Walk the Walk" (Firecracker Festival); implementing the "Clean Air Action Plan" and "Lighten Up" (February) to reduce obesity and improve health and "Healthy Hometown" to promote physical activity.
- Coalitions engaged in environmental changes such as building walking trails, and safe playgrounds in local schools.

The Sustainability Scores
- The tool assesses coalition sustainability based on the indicators. The average overall program sustainability score of the 33 coalitions was 5.2 based on a scale of 1-7. The mede score was 5.4, the mean score was 5.2, the standard deviation was 0.6 and the range of scores was 5.17 (lowest average) to 6.01 (very sustainable).

Conclusion
- The Appalachian coalitions provide valuable services to their communities.
- Coalition members have been able to change social and environmental conditions to provide opportunities to members to continuously practice healthy behaviors such as walking and good nutrition.
- These coalitions can effectively facilitate social and environmental changes that enhance the successful implementation of evidence-based practices.
- Coalition leaders are effective at enhancing community connections in Appalachia.
- The coalitions could benefit from the following: improved communication with state programs and other coalitions in Appalachia, enhanced reporting of activities, outcomes, guidance on how to connect and maintain partnerships, and opportunities for strategic planning to enhance sustainability.

The Appalachian counties

National Center for Chronic Disease Prevention and Health Promotion
Division of Diabetes Translation

Contact Information

Walking on the North Street Park Trail

For直销电话: 800-CDC-INFO (365-4696)
For hearing impaired: 888-CDC-VSNH (232-8764)
www.cdc.gov/ncchp
Words and relevant graphics (photos, tables, charts) need to go together

- Extraneous processing: using cognitive processing for things unrelated to learning the content
- Learners were given illustrated texts divided into two types. One group received materials with text integrated into each part of the illustration it described. The other group was given materials with text separated from the illustrations, placed below them in captions. Across five of these studies, “the integrated group produced between 43 and 89 percent more solutions than the separated group. The median gain … was 68 percent for an effect size of 1.12.”
THE CONTIGUITY PRINCIPLE

Takeaway: Put pictures and their corresponding words together

How to achieve it:

• Place graphics contiguous with text that refers to them
• Avoid an “images” section of the poster
• Label the key information in graphics
  (use arrows, circles, text…)

The addition of a red box draws the viewer to the important element of the image.
Engendering Climate Smart Agricultural Innovations in East Africa

Introduction
The recent impacts of climate change on agricultural productivity and food security vary by gender and affect the vulnerable groups, especially women. Climate change exacerbates the suffering of women through increased stress on food and water resources, increased risk of household food insecurity, and decreased political power and economic opportunities. Understanding how gender influences adaptation strategies is critical for designing gender-responsive climate change adaptation policies. This study conducted in Tanzania, Kenya, and Uganda to understand the role of climate-smart agricultural strategies in increasing food and nutrition security for women and men across seven agro-ecological zones.

Results

Change in livestock: With increased drought, women are increasingly taking on roles in livestock management and increasing their role in livestock management and increasing the role of livestock in their livelihoods. Women have been shown to be more efficient in livestock management and increasing the role of livestock in their livelihoods.

Access and use of information: Women report accessing information through community radio, television, and mobile phones. Women also report accessing information through community radio, television, and mobile phones.

Assets ownership and access for climate change adaptation: Women report owning assets such as land, livestock, and seeds. Women also report owning assets such as land, livestock, and seeds.

Changes in agricultural livelihood strategies: Women report engaging in new agricultural livelihood strategies, such as engaging in new agricultural livelihood strategies.

Adaptation coping strategies: Women report engaging in new agricultural livelihood strategies, such as engaging in new agricultural livelihood strategies.

Conclusion
Women report engaging in new agricultural livelihood strategies, such as engaging in new agricultural livelihood strategies. Women also report engaging in new agricultural livelihood strategies, such as engaging in new agricultural livelihood strategies. Women also report engaging in new agricultural livelihood strategies, such as engaging in new agricultural livelihood strategies.

References
The Digital Portfolio in the Conservation Field

Introduction

The conservation field regularly embraces new technologies, continuously adapting and improving how we approach the preservation of cultural heritage. This is especially prevalent in the documentation and presentation of our work. Portfolios, however, have taken a back seat in the rush to digital revolution.

Portfolios are important tools for all conservation professionals. Traditionally, portfolios have been presented in large format binders full of printed images and documents. This format continues to be the first choice of many professionals in the field, a number of conservationists have successfully transitioned to digital portfolios. Many institutions and organizations use digital portfolios to showcase their work and projects. However, there is still a need to balance traditional portfolio systems, given the increasing use of technology, new tools, and changing technologies.

Platforms Used to Create Digital Portfolios

- Importing data
- Photographs
- Video
- Audio
- Text

Purpose of Digital Portfolios

- Preservation of work
- Professional development
- Student evaluation
- Grant proposals

Traditional vs. Digital Portfolios

Format

- Digital Portfolios allow for easier sharing and collaboration.
- Digital Portfolios require more technical expertise.

Associated Costs

- Digital Portfolios require more technical expertise.
- Digital Portfolios require more time to create.

Advantages

- Digital Portfolios allow for easier sharing and collaboration.
- Digital Portfolios are more accessible.

Disadvantages

- Digital Portfolios require more technical expertise.
- Digital Portfolios require more time to create.

Intellectual property and Copyright issues

Many teams online are using the term "digital signature," which is not a legal term in copyright law. It is important to understand that a digital signature does not have the same legal standing as a physical signature. Digital signatures are often used to verify the authenticity of a document or to ensure that the document has not been altered.

Does your digital portfolio need special permissions?

Whether or not your institution has a policy regarding the use of digital signatures, you should consider the implications for your work, audience, and institution. Digital signatures are becoming increasingly common, and they have the potential to add a layer of security to your work.

Conclusion

Many in the conservation field appreciate the advantages offered by digital portfolios, such as ease of creation and sharing, opportunities for professional promotion, and the ability to showcase the work and projects. However, traditional portfolios remain a source of concern. Despite the disadvantages, the increasing use of digital portfolios is changing the field, and we should be open to exploring new methods of preserving and presenting our work.

Acknowledgements

Rachel Perkins, M. Benigni, Karen Black, Sarah Black, Emily S. Black, Emily S. Black, Emily S. Black, Emily S. Black, Emily S. Black.
FLOW: HOW PEOPLE READ

Consider your audience:

• Western reading pattern – normally left to right, top to bottom
• Presenting internationally? Norms may be different

Poster orientation matters, too

• Vertical: Usually top down, two columns
• Horizontal: Could create three or four columns; usually left to right top, then left to right bottom

Research shows…

• People read in an F pattern (skimming)
• Orient key materials to be noticed first!
FLOW: HOW PEOPLE READ

Where should you put your most important information?
LAYOUT EXAMPLES

Vertical, two columns

Horizontal, 3 columns

Make it fit your work (but be mindful of design principles)
WHITE SPACE

Use consistent white* space

• Between sections
• Between headings and text
• Between images and text

Print an 8 ½ x 11” version of your poster, then step back

• Does it look good from a distance?
• This is how it will look when readers are approaching

*White space does not have to be white!
EDIT, EDIT, EDIT!

Edit profusely

- Section headings as well as body text
- Formatting of references (cite your work!)
- Accuracy of dates, addresses, honorifics, and spelling of names
- Incorrect or inconsistent punctuation, especially in bulleted lists and chart legends

Have someone else edit

- Someone who is NOT one of the authors or a PI
- Colleague with some distance from the subject, friend or family member

Print out a draft at a readable size (might need to span two pages) and edit again
ACTIVITY

You’re at a conference, strolling the poster session

• What’s good?
• What’s not so good?

Use the rating sheet to grade the DESIGN of the posters.

• You should not need to be an expert in the content of the posters!

About 3 minutes per poster, then discuss
Background:
Procedural sedation has long been an integral part of ED pain management especially for orthopaedic manipulations. In 2012 the UK Royal College of Emergency Medicine issued guidelines on safe sedation in the ED. This was a joint work with the Royal College of Anaesthetists and reflects not only the consolidation of the specialty of Emergency Medicine in the UK, but also the fact that all trainees now have a minimum of 6 months anaesthetics training.

Safety:
Brighton Royal Sussex County University Hospital has a long tradition of sedation and teaching and has over the past 10 years developed a training program to ensure safe sedation for both doctors and nursing staff. All sedations are done in the Resus area as per the college guidelines but in addition we have introduced a checklist which is used 100% of the time by nurses and doctors. As a result our safety record is excellent and it has been exported to other hospitals in the UK.

Recognized training:
The Royal College of Emergency Medicine recommends a level 1 sedation sign off for all those performing ED but as yet there is no national course or way of recording this. We have introduced a training log book with the objective of being able to offer this recognized sign off to all national and international trainees who pass through our department.

Change in practise:
1) Over the past 8 years there has been an increase to over 65% of sedations now being performed by Registrars (senior non-consultant doctors) as opposed to only 41.9% in 2006 (despite this being a time when 24h consultant cover was not available).
2) Drug choice has changed from 97.7% being midazolam based in 2006, to 85% now being propofol based. The combination used principally in 2006 was 58.14% midazolam-morphine with no propofol use at all. In 2014-15 only 2.5% of sedations were done using morphine-midazolam with a more varied use of ketamine, fentanyl and propofol. Etomiodate is not used at all, as is the case generally in England.
3) We have also increased our numbers of sedations threefold.

Conclusion.
Safe sedation needs systematic training of all those involved.
Checklists used simultaneously by nurses and doctors during the sedation leads to excellent safety records.
For further information about our sedation training please contact duncan.bootland@bsuh.nhs.uk
Lessons learnt over three years of providing pre-hospital medical support for a marathon. How to take the hospital out of the hospital.

Background

Over the last three years the Brighton Marathon has increased in size to become the 12th largest in Europe and the 27th largest in the world. This year there were a record 9,272 finishers with over 100,000 spectators.

Brighton has only one hospital, which would be overwhelmed if it was to see every runner or spectator who needed medical attention during the marathon. In order to overcome this problem Brighton Marathon has made the unique step of taking over the medical provision for the entire course including the surrounding population and all spectators.

Methods

Following an interview with the Medical Director of the Brighton Marathon, Dr Rob Galloway, we were able to pool data from a number of sources. The marathon medical team holds data concerning the number of presentations, the presenting illness and number of healthcare providers who were working over the marathon weekend.

Results

The number of healthcare professionals has been increased from 73 in 2013, to 87 in 2014, and 143 in 2015. This means that across the footprint there is not only a wide range of skills, but also senior support provided by consultants in anaesthetics, intensive care and emergency medicine. In 2015 there were 52 doctors (including 10 consultants), 42 nurses, 4 operating department practitioners, 16 paramedics, 14 podiatrists, 9 physiotherapists and 6 pharmacists. Fifteen sites around the course were staffed, including two major treatment tents with resuscitation areas.

There were eight ambulances covering the footprint, with three cycle units and two mobile medical units with advanced airway skills and resuscitation drugs.

The two major treatment tents at the finishing line and at the eighteen mile point had separate triage, podiatry and physiotherapy areas, with major treatment cubicles and a total of five fully equipped resuscitation areas. The finishing line tent saw all runners who had passed the finishing line, whilst the other tent saw patients conveyed by ambulance from the rest of the marathon footprint, and those who walked in.

Recent sponsorship from Philips has provided monitoring, ventilators and point-of-care blood testing which has helped the diagnosis of hyponatraemia and its subsequent management. They have also helped to finance the publication of a comprehensive medical guide which provides standard operating procedures for managing a wide range of conditions, and details of how the medical structure for the Marathon works.

Following feedback from a critical incident 3 years ago all staff now have tabards which identify them as part of the medical team, as well as showing their name and specialty - facilitating closed loop communication.

Discussion

Increasing staff numbers, training, and the adoption of treatment algorithms and protocols have provided the backbone of changes made over the last 3 years. Improving the treatment areas in terms of both the physical space provided and the equipment available has enhanced the overall medical experience. Although there will remain problems which are not predictable, a thorough debrief ensures that, year on year, the service provided continues to get better.

Conclusion

These ongoing improvements have helped to minimise the impact of the Marathon on local resources, and have the additional effect of providing specific marathon related care for runners in an expedited timeframe.
Standardising Medicines Data in NSW Public Hospitals

OBJECTIVE:
To introduce standardised medicines reference information in a statewide pharmacy dispensing system to improve operational efficiency and as a foundation for integration with electronic prescribing systems.

BACKGROUND:
There were 21 different medicines lists in 32 separate databases utilising different pharmacy systems and versions. The technology was standardised and databases consolidated during the implementation of the standardised medicines information. The Hospital Pharmacy Product List (HPPL) was the title given to the single medicines list which would be used in Pharmacy across NSW public hospitals.

METHOD:
Terminology guidelines were developed for all medicines including non-registered and locally manufactured products, in consultation with hospital pharmacists across the state. An existing medicines list was selected and manually aligned to the guidelines. The list was reviewed by hospital pharmacists and the guidelines refined accordingly. The new medicines list was then mapped to each local list and any missing products were added as the project progressed at each hospital. A pharmacist reference group was established to resolve any contentious terminology issues.

RESULTS:
Consistent high-quality medicines reference information is now available in the pharmacy system at all participating hospitals across NSW. A central operational support service manages the medicines reference information according to agreed terminology guidelines and reference sources.

CONCLUSION:
The standardised medicines reference information has been used in production pharmacy systems for over 18 months. Although there was initial resistance from pharmacy staff to losing control of the information, our customers are now pleased with the quality of the information and the timeliness of the product request service. Work is now proceeding to develop standardised medicines reference information for clinical systems other than pharmacy.
Academic integrity standards: Aligning policy and practice in Australian universities

Aim
Develop a shared understanding across the Australian higher education sector of academic integrity standards, with the aim of improving the alignment of academic integrity policies and their implementation.

An aligned approach to academic integrity (see East 2009)

Deliverables
- resources that enable the teaching and learning of academic integrity.
- opportunities for critical reflection, comparison and discussion of policy and practice.
- exemplars of interpretations of policy and procedure.

Project stages

Five core elements
No element privileged over another
Elements interconnected
Strength of the knot
Oversarching commitment to academic integrity lies at the heart of an exemplary academic integrity policy

Access: easy to locate, read, concise, comprehensible.
Approach: statement of purpose with educative focus up front and all through policy. Institutional commitment to academic integrity.
Responsibility: details responsibilities for all stakeholders.
Detail: extensive but not excessive description of breaches, outcomes and processes.
Support: proactive systems to enable implementation of the policy.

Preliminary research findings
- 51% of the policies had ‘misconduct’ and ‘plagiarism’ as the key terms. 41% had academic integrity as the key term.
- 28% had a mixed approach of both educative and punitive elements.
- Only 30% of universities identified the institution as being responsible for academic integrity.
- Only one Australian university said that academic integrity is everyone’s responsibility.

Research questions
1. What are Australian universities’ policies and procedures for academic integrity breaches?
2. What responses to breaches of academic integrity are actually implemented in practice?
3. What is good practice in aligning academic integrity policy with teaching and learning strategies?
4. How could a culture of academic integrity be more effectively fostered?

Project progress
- Student survey completed (June-August 2011), 15,304 responses from students enrolled at the six project partner institutions received. Results being analysed.
- Majority of focus groups and interviews completed.
- National colloquium in February 2012.
TECHNICAL CONSIDERATIONS

Session 3: April 2, 2019

Know before you begin:

- Conference requirements for poster size, orientation (vertical or horizontal?)
- Does the conference require and provide a specific template, logos, or color scheme?
- SMHS has templates:
  https://med.und.edu/information-resources/branding-and-templates.html

Basics:

- Important text readable from 10 feet away
- Total word count under 1000 words
- Common, professional fonts and coloring

**MINIMUM FONT SIZES:**
- Heading text: 36 pt
- Body text: 24 pt
- Table and chart labels
- references, and other minor text: 14 pt
## CONCLUSION

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<tr>
<th><strong>GOOD POSTER DESIGN</strong></th>
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<td>Irrelevant images and ”seductive details”</td>
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<td>Components are not consistently spaced; white space is bigger, smaller, or nonexistent in some areas</td>
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REFERENCES


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