Embedding discovery in assessment tasks: outcomes and impact

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Discovery

- ‘d’ [personal discovery]
- ‘D’ [Scientific discovery]

Birds Use Butts in Nest to Deter Parasites

Urban birds are incorporating cigarette butts into their nests for bug-killing action and for insulation. Read More

WATCH VIDEO: Birds Keep The Beat Animals that can mimic sound can also keep a beat, like this awesome cockatoo.

Source:
http://rsbl.royalsocietypublishing.org/
Discovery associates ...

- Curiosity ~ unexplained incidents
- Old... NEW
- Adventuring into unknown...
- Expedition
Are students ready to discover?

- Head
- Hand
- Heart
The course
Microbiology (BCH3013)
The assignment

- Discovery-embedded assessment

“Constructing an e-book on distribution of fungus-infected trees in Hong Kong”
The course objectives

- To enable students to learn how to identify trees that are potentially dangerous due to attack by wood-rotting fungi.
- To prepare a preliminary catalogue of trees at risk in Hong Kong.
- To cultivate the discovery attitude in students and apply their classroom knowledge to their daily lives.
Intended learning outcomes

- **Identify** trees that are infected by wood-rotting fungi.
- **Document and describe** the fungi and the condition of the infected tree.
- **Predict** the probable risk of the infected tree being hazardous to its neighborhood.
Protocol

- Students will be divided into six groups.
- Each group will be assigned a district within HK, namely HK Island north, HK Island south, Kowloon peninsula, New Territories east, New Territories west.
- Each group will locate 20 infected trees with fruiting bodies of wood-rotting fungus in their assigned district. Document (by taking a photo) and describe the fungus and the condition of each of the infected trees. There must be a minimum of two contributions from each student within a period of four weeks.
Protocol

- A wiki site will be set up for all uploads.
- On the fifth week, each group will provide a summary of the findings collected and prepare a critical evaluation of the probable risks caused by the infected trees in their assigned district via the wiki site. Recommendations to avoid accidents with falling trees must be included.
- On the sixth week, each group will have to critique the collaborative deliverable from the five other groups.
Assessment

- Quality and quantity of group submission (photo and description) on the infected trees with their associated wood-rotting fungi – group mark.

- Quality of the summarized findings and critical evaluation of the risks imposed by the infected trees in the district involved – group mark.

- Individual contribution to the group deliverables via wiki and blogs – individual mark.
OUTCOMES
Where to discover (1)
What was discovered (1)
What was discovered (2)
Collective outcomes
Community Surveillance

Background

The Task Force on Tree Management led by the Chief Secretary for Administration published a report entitled “People, Trees, Harmony” in June 2009. Pursuant to the recommendations of the report, the Tree Management Office (TMO) introduced a new tree risk assessment arrangement with the promulgation of detailed guidelines, Annex A, Annex B, Annex C, Annex D for compliance by tree management departments to better protect public safety.

Tree Risk Assessment

In essence, the objective of tree risk assessment is to reduce the risk posed to personal safety and property by trees that may have problems at locations with high pedestrian and vehicular flow by taking timely action through a systematic methodology and procedures. Tree risk assessment is conducted step-by-step in two stages:

- In the first stage which involves an “area basis” assessment, departments first identify those areas with high pedestrian or vehicular flow under their management.
- In the second stage involving a “tree basis” assessment, departments carry out tree group inspections in a systematic manner at locations with high pedestrian or vehicular flow to identify trees which may need particular care (such as Old and Valuable Trees and stonewall trees) as well as dead trees and trees with notable health or structural problems which may pose hazards to the public.

According to the tree risk assessment methodology adopted by the TMO, departments conducting tree group inspections will pay particular attention to the following six categories of trees, for which detailed tree risk assessment will be carried out:
Tree Register

With the support of tree management departments in updating the Tree Register, the distribution and conditions of important trees (Old and Valuable Trees and stonewall trees) and problematic trees that required continuous monitoring are uploaded on this website for the reference of the members of the public.

Hong Kong Island
- Central and Western District
- Eastern District
- Southern District
- Wan Chai District

Kowloon
- Kowloon City District
- Kwun Tong District
- Sham Shui Po District
- Wong Tai Sin District
- Yau Tsim Mong District

New Territories
- Islands District
- Kwai Tsing District
- North District
- Sai Kung District
- Sha Tin District
- Tai Po District
- Tsuen Wan District
- Tuen Mun District
- Yuen Long District

Situation as at 3 December 2012 (website updated as at 3 December 2012):
Total number of trees on website: 1027
<table>
<thead>
<tr>
<th>Location</th>
<th>Species</th>
<th>Condition</th>
<th>Mitigation Measures</th>
<th>Others</th>
<th>Photo</th>
<th>Location Map</th>
</tr>
</thead>
<tbody>
<tr>
<td>惠林道與域多利道交界 Pok Fu Lam Road, Junction with Victoria Road. 惠林道的所在地是一所小學工地 Construction site of Pokfulam Primary School.</td>
<td>鳳凰木 (金風) Delonix regia</td>
<td>有枯枝 Dead branches</td>
<td>適當修剪樹木枝條 Appropriate pruning</td>
<td>已完成改善措施 Mitigation measures completed</td>
<td>照片</td>
<td></td>
</tr>
<tr>
<td>虎廟道工地 Kettlewell Road (Works site) 與康德道交界 Junction with Cooks Road</td>
<td>青果榕 Ficus variegata var. chlorocarpa</td>
<td>少量樹枝枯 Small amount of dishback twigs</td>
<td>適當修剪樹木枝條 Appropriate pruning</td>
<td>已完成改善措施 Mitigation measures completed</td>
<td>石牆樹 Stone wall tree</td>
<td></td>
</tr>
<tr>
<td>虎廟道工地 Kettlewell Road (Works site) 與康德道交界 Junction with Cooks Road</td>
<td>青果榕 Ficus variegata var. chlorocarpa</td>
<td>呈現腐枝死 With dishback twigs</td>
<td>適當修剪樹木枝條 Appropriate pruning</td>
<td>已完成改善措施 Mitigation measures completed</td>
<td>石牆樹 Stone wall tree</td>
<td></td>
</tr>
<tr>
<td>亞畢諾道 Arbutus Road 地點類別:系統性監察維修責任的斜坡編號 Location: Type: SIMAR slopes 系統性監察維修責任的斜坡編號 - Simar No.: 11sw-b-m74</td>
<td>檔樹 (樟木) Broussonetia papyrifera</td>
<td>櫟枝枯死 (少許) Dishback twigs (small amount)</td>
<td>適當修剪樹木枝條 Appropriate pruning</td>
<td>已完成改善措施 Mitigation measures completed</td>
<td>石牆樹 Stone wall tree</td>
<td></td>
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<td>椒葉榕 Ficus microcarpa</td>
<td>檀枝枯死 (少許) Dishback twigs (small amount)</td>
<td>適當修剪樹木枝條 Appropriate pruning</td>
<td>已完成改善措施 Mitigation measures completed</td>
<td>石牆樹 Stone wall tree</td>
<td></td>
</tr>
<tr>
<td>Name of Recorder</td>
<td>Date of Recording</td>
<td>Location</td>
<td>Name of Tree</td>
<td>Condition of Tree (add photo)</td>
<td>Location of Fruiting Bodies (add photo)</td>
<td>Description and Name of Fungus</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
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</tr>
<tr>
<td>Ip Pan Kit</td>
<td>22-09-2012</td>
<td>Tai Po Kau Nature Reserve, Tai Po (大埔滘)</td>
<td><em>Cassia Fistula L.</em></td>
<td></td>
<td></td>
<td>There is one type of the fruiting body. The suspected species of the fruiting body is <em>Trametes Versicolor</em>. The fruiting body located on the root of the trees. It's about 1cm wide and reddish brown.</td>
</tr>
</tbody>
</table>
Outcomes: students’ stories (1)
[rep. from six groups]

- **Attitude towards discovery:**
  - **Change mindset:**
    - discover first-hand data rather than second-hand data
    - ready to take more risks; prepare to explore beyond the assignment brief
  - **Curious** about **risk levels of trees**
    [assessment related]
Outcomes: students’ stories (2)

- **Developed discovery skills [discipline-specific]:**
  - **Where:**
    - Identify appropriate locations and conditions when collecting samples
  - **How:**
    - Skills in collecting samples: developing professional skills
    - Skills in photo taking [close-up; long shot]
Outcomes: students’ stories (3)

- **Accomplishments:**
  - Possibility of being the first one to discover
  - Working in groups can allow them to collect more cases
  - Perceived importance of correct examination of samples through collective knowledge
Impact: individuals

- Heightened motivation
- Nurturing an intuitive habit of discovery: adopting instinctive professional practice
- Linking knowledge with practice: experiencing and going through analysis and making deductions, i.e. no longer as head knowledge
Impact: community

- Becoming a responsible citizen
- Informing local communities, such as Tree Management Section
- Contributing to Tree Failure Database in Development of the Tree Management Information System
- Informing international communities
Conclusion: designing discovery-embedded assessment

- Significance to the discipline/community
- Recognizing student contributions
- Authentic discovery versus information search
  - Head knowledge [cognitive dissonance; professional judgement (HOT)]
  - Hand [generic and professional skills]
  - Heart [emotional engagement; excitement]

‘d’ & ‘D’
THANK you

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