

School of Biological and Chemical Sciences,
Birkbeck College, University of London, WC1E 7HX, UK



Integrating TRIADS CBA into a Biology curriculum

*Some lessons learned so far and a
look to the future*

Richard C. Rayne and Glenn K. Baggott

r.rayne@bbk.ac.uk

<http://www.bbk.ac.uk/olaaf/>

The situation



- **adults (aged >20 y), full-time employed**
- **variety of educational backgrounds**
- **reflect the cultural diversity typical of London**
- **classes: evening, once per week**

Goal: Improve Learning Support

- **CBA can play a key role...**
 - forces author to carefully consider key learning objectives
 - formative and summative modes
 - web-delivered
 - sophisticated question styles permit tests of higher-order learning
- **CBAF is even better**
 - F = feedback

TRIADS CBA

- **TRIADS = TRipartite Assessment and Delivery System**
 - “...a toolkit for users of Authorware Professional designed to facilitate rapid and easy production of computer aided assessments. The sign-on, question sequencing, results calculation and filing are handled automatically.”
 - <http://www.derby.ac.uk/assess/webdemo/>

TRIADS Authoring & Delivery (1)

- **Code templates for around thirty generic question styles**
 - Multiple-choice/response types
 - Move object types (label diagram, classification, sequence)
 - Text/Numeric entry
 - Graph plotting
 - Draw Object
 - Combinations

TRIADS Authoring & Delivery (2)

- **Authorware packages assessments for either:**
 - **Web/Intranet delivery**
 - Requires Authorware Web Player Plug-in
 - **LAN/Local delivery (as an .exe)**
- **Results are filed either locally or back to FTP server**

OLAAF: Rationale

- **OLAAF = OnLine Assessment and Feedback**
 - HEFCE FDTL4
- **The gaps:**
 - few tools available to guide the author in composing appropriate questions and feedback
 - few resources to guide the author in combining questions in assessments in a way that enhances student learning

Objectives of the OLAAF Project

- **Develop and disseminate generic guidelines for the construction of CBAF**
 - through collaborative efforts of the project consortium and other OLAAF participants
- **Major output of this collaboration:**
 - a “CBAF Author’s Toolkit”
 - resources available via the web, on CD, and in print
 - will support authors in the design, delivery and evaluation of CBAF
 - guidance will, where possible, be evidence-based

OLAAF will focus on...

- **Test “higher order learning”**
 - i.e. cognitive levels *above* recall
- **ReCAP***
 - Recall (= Bloom’s “knowledge”)
 - Comprehension
 - Application
 - Problem solving (= analysis + synthesis + evaluation)

* Imrie (1995) *Assessment & Evaluation in Higher Education* 20 (2): 175-189.

OLAAF will focus on...

- **Assessment Construction**
 - not “question banks”, rather...
 - how to most effectively combine question styles to promote and test higher learning
- **High Quality Feedback**
 - in formative and summative assessment

OLAAF Consortium

- **Birkbeck College, University of London (Lead Site)**
 - Biological & Chemical Sciences, Earth Sciences
- **University of Plymouth**
 - Biological Sciences, Environmental Sciences
- **London Metropolitan University**
 - Biological & Applied Sciences
- **University of Brighton**
 - Institute of Nursing & Midwifery

- **University of Wales College of Medicine**
 - Dental School
- **University of Birmingham**
 - Civil Engineering

Preparing students for TRIADS

- **Test the subject matter, not “TRIADS skills”**
 1. **Provide opportunities for supervised practice**
 2. **Provide support materials**
 3. **Author questions carefully and consistently**

1. Practice opportunities

- **Year 1, Autumn Term**
 - a “practice” test and a “low stakes” test
 - paper-based “tutorial” given
- **Year 1, Spring Term**
 - frequent TRIADS testing a key feature of *Molecular Cell Biology* unit

2. Support: print & web

- **logging in to TRIADS tests**
- **examples of question styles**
- **test-taking strategies**
- **explanation of results output**
- **obtaining Authorware plug-in**

Logging in...

- **Demo shows this**

Examples of question styles...

- **word document handout**

Test-taking strategies...

- **Clearing incorrect responses**
 - emphasise click “done”, click “no”
- **How to use swap areas**
- **Cues: colour-coded answer slots and labels**
- **Paging behaviour**
 - one-by-one; skip and go back
- **Revisiting questions**
 - *Why are they blank!?*

Results output...

1	DETAILS
2	Question name QDept. Q% secs QWt Acc%
3	Q1 birkbeck biology 40 87 1 4
4	Question
5	In the illustration of an amino acids shown below, the key atoms/groups are depicted in different colours. Identify each highlighted group by moving the correct label to the appropriate answer slot.
6	Correct answer(s)
7	'side chain'
8	'amino group'
9	'carboxyl group'
10	'alpha carbon'
11	
12	Answer(s) given
13	You labelled:
14	'side chain' as 'carboxyl group'
15	'amino group' as 'amino group'
16	'carboxyl group' as 'carbohydrate'
17	'alpha carbon' as 'alpha carbon'

3. Consistent authoring

- **Careful commands with consistent usage between questions**
 - refer to labels and answer slots
 - *Sequence: “...place labels in order to describe the sequence of events in...”*
 - *Label diagram: “...use the labels to identify...”*
- **Logical coding**
 - e.g. layout, colour/texture coding

Place in curriculum? (present)

- **Year 1:**
 - **2 of 3 course units**
 - *Foundations of Biology*
 - *Molecular Cell Biology*
- **Year 2:**
 - **Summer vacation unit**
 - *Field Biology*
 - **1 of 4 units**
 - *Cellular Metabolism*

Place in curriculum? (future)

- **Year 3/4:**
 - *Statistics for Biologists*
 - *Animal Physiology & the Environment*
 - *Other?*
- **MSc Physiology**
 - *Physiology of Respiratory and Circulatory Systems*

Acknowledgements



- **Birkbeck College Development Fund**
- **The TRIADS team**
- **Dijana Maric**
 - **(Authorware Programming, TRIADS admin)**