Acknowledgements

Iowa State University

Agronomy
Kendall Lamkey, Bill Beavis, Thomas Lubberstedt, Asheesh Singh, Arti Singh, Jessica Barb, Assibi Mahama, Laura Merrick, Ken Moore, Gretchen Anderson, Todd Hartnell, Andy Rohrback

Agricultural Education Studies
Mike Retallick, Gaylan Scofield

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Ana-Paula Correia

Horticulture
Shui-zhang Fei

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Lizhi Wang

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Eric Mills

Food Insecurity Affects Many in Africa

Countries requiring external assistance for food

World 33 countries

FAO Crop Prospects and Food Situation (2015)

Improved MSc in Cultivar Development for Africa

(See P0391)

- Produce industry-ready plant breeding graduates to efficiently improve varieties to address food insecurity
- Piloted at MAK, KNUST and UKZN with support from AGRA (a total of 90 MSc graduates)
- E-learning to emphasize the integration and application of scientific knowledge to decision making in plant breeding
  - Relevant case studies (Applied Learning Activities) to enhance practical application, critical thinking, and creative problem-solving
  - Free content for not-for-profit educational uses
Adapting Courses From ISU Distance MS in PB

- Quantitative Methods
- Crop Genetics
- Quantitative Genetics
- Molecular Plant Breeding
- Crop Improvement
- Integrating Breeding Management System
- Introduction to Applied Learning Activities for Plant Breeding

80 Content Modules

Adapting Courses From ISU Distance MS in PB

Teaming up with Faculty and Students in Africa

Phase 1 Activities and Going Forward

1. Map course modules against project core competencies
2. Develop relevant case studies (Applied Learning Activities) to help learners develop competence
3. Integrate BMS in the e-curriculum
4. Sequence e-modules in ways that match instructor’s and learner’s needs
5. Develop feedback tools for faculty and students in Africa
6. Provide instructional support to African faculty to effectively use the materials for learning

Mapping Modules Against Core Competencies

<table>
<thead>
<tr>
<th>CORE COMPETENCIES</th>
<th>CI</th>
<th>CG</th>
<th>QG</th>
<th>QM</th>
<th>MPB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create knowledge of plant genetics and breeding</td>
<td>1-2</td>
<td>3</td>
<td>2</td>
<td>1-2</td>
<td>2</td>
</tr>
<tr>
<td>Create knowledge of reproductive biology</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>Recognize/identify major African crops and its breeding</td>
<td>3</td>
<td>2-3</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
</tr>
<tr>
<td>Examine/evaluate propagation systems for major African crops</td>
<td>2</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
</tr>
</tbody>
</table>

1 = introduction; 2 = reinforce; 3 = mastery; N/A = does not apply to this module
Developing Applied Learning Activities (ALAs)

ALAs can be exercises, situations, learning tasks or scenarios used to develop competence in applying course content.

ALAs are classified using Revised Bloom’s Taxonomy to inform educators to consider intersections of knowledge and cognitive processes for a particular activity.

The Knowledge Dimension

Developing Applied Learning Activities (ALAs)

Collaborating With IBP

ISU/IBP workshop, January, 2014 - Ames, Iowa

Graham McLaren and the IBP team

• Acquainted the ISU team with the features of the BMS
• Discussed how BMS tutorial videos could be integrated within PBEA e-modules
• Shared about some of the BMS tools that might be useful
• Developing ALAs for the purpose of teaching use of BMS
• Sequencing and adapting BMS tutorials to create a content module

Integrating Use of BMS (See P0393)

Integrating Use of BMS

ALAs to Teach Use of BMS

Integrating Breeding Management system (BMS) in plant breeding

Prerequisites
1. eModules 1, 2, 3 and Cowpea module from Crop Improvement
2. MS Excel proficiency

Description
For this exercise, students need to import germplasm list made in excel consisting of lines (Prima, TVu4552, UCD7977, CB5, CB3) involved in the development of CB27.

Purpose
To make use of existing germplasm list in excel by exporting it in BMS platform involved in the development of cowpea cultivar “California Blackeye 27” (CB27).

Tasks
1. To familiarize with excel datasheet format required in import of germplasm list to BMS platform.
2. To understand how to use “Manage Lists” function under “BREEDING ACTIVITIES” tab to import existing “germplasm list” into the BMS.
3. To save the imported “germplasm list” for further use in a breeding program.
PBEA e-Module on Integrating BMS

**Significance:**
More of the responsibility for learning is on the shoulders of students.

Use of PBEA e-Modules in Africa

**Significance:**
Class time is devoted to application of concepts to give instructors a better opportunity to detect errors in thinking.

Feedback – Does the Product Address Needs?
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1. Help in designing more personalized courses
2. Help create effective teaching strategies and goals

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Effective Use of PBEA e-Modules

Professional Learning Communities (PLC) of PBEA (2015-2018)

• As part of the PLC, faculty will be able to develop and share among one another best practices for integration

• Professional development needs will be identified and professional development activities will be provided as a means to enhance pedagogy and student learning

Dr. Michael Retallick
ISU, Agricultural Education Studies
PBEA Instructional Support Group

Opportunities for m-Learning

Summary

1. Build effective multi-disciplinary team
2. Keep communication channels open
3. Develop mechanism for gathering feedback, context is critical, adjust accordingly
4. Mapping and sequencing should be expected to ensure product matches instructor’s and learner’s needs
5. Provide instructional support to faculty to effectively use the product
6. Go back to step 1!
Thank You! Questions?

https://pbea.agron.iastate.edu/