“Empowering Underprivileged Youth through Contextualized Education”

Dhinesh Radhakrishnan
Zahra Atiq
Rohit Kandakatla
Prof. DeBoer
Mandela Washington Fellowship Institute
MW Fellow 2016

Peter Oladipupo, CTO, STEM-Ed Africa
MW Fellow, 2016.

Olayemi Moses, COO, STEM-Ed Africa

Outline

Educational Correlations
Relation to education and you

Contextualization
Understanding context for education

Designing a program/course
Content, Assessment and Pedagogy

Technology role in Education
DeBoer Lab experiences

Final Reflection
Outcomes of the session
Mentor A Girl Child

Rural innovation

Impart practical and entrepreneurship skills

Creating jobs for youth

Mentorship programs

Enabling youth to be self-reliant

Training of women and girls

Education and leadership training

Coaches innovators, entrepreneurs

Youth Leadership Development

Fun and easy-to-learn

Youth Empowerment

Women Empowerment

Capacity building followed by concrete action

Reduce unemployment

Mentor younger generation of women

Providing basic skills

Agricultural Vocational School

Demonstrating farming

Teaching underprivileged youth

Promote poultry to youth

Access to education for girl child

Community based transformation
Education – What is your objective?

- **Youth Empowerment**
  - Reduce unemployment
  - Teaching underprivileged youth
  - Rural innovation

- **Access to education for girl child**
  - Community problem solving
  - Enabling youth to be self-reliant
  - Mentorship programs

- **Enabling necessary skills**
  - Impart entrepreneurship skills
  - Fun and easy-to-learn
  - Education and leadership training

- **Disseminating knowledge**
  - Demonstrating farming
  - Promote poultry to youth

- **Societal Welfare**
  - Creating jobs for youth
  - Providing basic skills
  - Coaches entrepreneurs
  - Agricultural Vocational School

- **Youth Empowerment**
  - Access to education for girl child
  - Community problem solving
  - Enabling youth to be self-reliant
  - Mentorship programs

- **Enabling necessary skills**
  - Impart entrepreneurship skills
  - Fun and easy-to-learn
  - Education and leadership training

- **Disseminating knowledge**
  - Demonstrating farming
  - Promote poultry to youth
CONTEXTUALIZATION

Example: Engineering skills curriculum by solving locally defined community problems in Western Kenya.

- Course objective + Content + Teaching -> Contextualized
Understanding Contextualization

• What is the need for your educational component?
• Who will participate in the learning?
  • Age
  • Background
• When will the educational programme/course happen?
• Where will the programme/course be conducted?
Designing a programme/course

Backwards Design Model (Wiggins & McTighe, 2005)

1. Identify the Desired Results
2. Determine Acceptable Evidence
3. Plan Learning Experiences

Are the desired results, assessments, and learning activities ALIGNED?
3 Stages of Backward Design

Identify the Desired Results

Determine Acceptable Evidence

Plan Learning Experiences

Are the desired results, assessments, and learning activities ALIGNED?

What should students know, understand, and be able to do?
Program Goals

• Program Goals
  • Identifying learning parameters (e.g.,
  • Identifying content, and
  • Building relationships between content areas –
    • What students should learn, understand, or appreciate as a result of their studies by the time they finish a program or a major.
Learning Outcomes

• Student Learning Outcomes (SLO) describe in concrete terms what program goals mean.

• SLO statements identify what students will be able to demonstrate, produce or represent as a result of what and how they have learned in a program.

• Unlike Program Goals, SLO’s are not fixed.
3 Stages of Backward Design

Identify the Desired Results

Determine Acceptable Evidence

Plan Learning Experiences

Are the desired results, assessments, and learning activities ALIGNED?

How will we know if the students have achieved the desired results? What will be accepted as evidence of student understanding and proficiency?
Assessment

Assessment = Measuring success
Assessment = (feedback)Improving the design
Assessment = Knowing the status
Formative and Summative

FORMATIVE

*Formative Assessment* = *Feedback*

SUMMATIVE

*Summative Assessment* = *Measurement of Success*
Examples - an engineering design course

Formative
Milestones Documents

Summative
Design Practical Challenge
DESIGN WORKSHEET – Team #_______

A. Describe the changes your team made to Milestone 1. You must describe at least three changes in detail; however, the expectation is that you are addressing all the feedback and continually revise this Milestone 1 document as you progress through the project.

<table>
<thead>
<tr>
<th>M1 Section</th>
<th>Changes made or description of changes made</th>
<th>Rationale for changes made</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Concept Generation. Describe in detail and document at least two concept generation strategies (i.e., morphological analysis, prior art, rapid prototyping, brainstorming, etc.) your team used to generate at least 8 solution ideas.

Strategy One <FILL IN WITH STRATEGY USED>
Short Design Challenge

Scenario
Pop-up shelters are often used in emergency situations, which includes in disasters like tornadoes when individuals or families need immediate working temporary homes. The Federal Government, through FEMA, responds to over 70 disasters per year and has developed a plan to provide temporary housing for up to 500,000 eligible households in the event of a large-scale natural disaster (FEMA, 2012).

Task
Design a mass-producible product to house 2-4 roommates after a tornado has damaged their dormitory.

Constraints
- Feasible cost for emergency assistance providers (such as Red Cross or Homeland Security)
- Durable in various weather conditions
- Ease of transportation/assembly/fabrication
Task
3 Stages of Backward Design

1. Identify the Desired Results
2. Determine Acceptable Evidence
3. Plan Learning Experiences

Are the desired results, assessments, and learning activities ALIGNED?

What activities will equip students with the needed knowledge and skills? What materials and resources will be useful?
ABC (Active, Blended, Collaborative)

• Active learning – Engaging in Activities that promote analysis, synthesis, and evaluation of class content.

• Blended learning – Combines classroom learning with online learning

• Collaborative learning – groups of students working together to solve a problem, complete a task, or create a product.
Task

• Write a program goal to meet the education needs of your defined context
• Write one learning outcome that aligns with your program goals
• Develop one assessment technique to measure the learning outcome you have developed
• Develop one active learning instructional method to be incorporated into your program/course delivery to the appropriate audience
Final Reflection

• How would you articulate the link between education and your field?
• What have you learned?
• How will you apply what you’ve done?

• www.deboer-lab.engineer
• dradhak@purdue.edu
  rkandaka@purdue.edu
  satiq@purdue.edu
References


Acknowledgements

• The content of the presentation was adopted from “Student Centered Learning” workshop material developed by Dr. Jennifer DeBoer, Avneet Hira and Dhinesh Radhakrishnan for events organized by Footsteps and IIDEA.
THANK YOU