



NEEDS ANALYSIS S REPORT



The ID TEAM

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Introduction...

The Kids in College STEM camp was developed by Lenoir-Rhyne University in North Carolina in order to promote the interest of gifted 5-8th grade children of Hickory, NC's public schools in STEM and to expose them to the university environment. The camp also aims to promote critical thinking and problem solving in their participants through their participation in creative and collaborative activities. The director of the camp, Mrs. Deborah Bandy has requested the services of an unnamed Instructional Designer for the end means of creating an instructional module for the middle grade segment of the STEM camp, 2015. The Lenoir-Rhyne's 2015 STEM camp Modules 1 and 2 specifically attempt to accomplish the above goal by teaching participants to apply electrochemical theory in order to create, test, and present the results obtained from the experience of building one of three different types of homemade battery.

Purpose and Scope...

Purpose

- To measure the effectiveness of Modules 1 and 2 in teaching the 5-8th grade participants of Hickory, NC's Lenoir-Rhyne 2015 STEM camp in fostering interest in science, technology and college through collaborative group work.

Scope

- PEST and SWOT analysis methods were implemented by The Post-Boomers Training Initiative for the end means of collecting and analyzing data.
- Based on the data analysis we will give feedback to Lenoir-Rhyne in the strengths and weaknesses of implementing Modules 1 and 2 in the 2015 STEM camp.

Methodology...

Initiation

Stakeholder kickoff—via video-conference
Document and resources compilation
Protocol Creation and approval—Client Contract

Data Collection

PEST Analysis
Document Review
Client Interviews

Analysis

External SWOT Analysis
Internal SWOT Analysis

Final Production

Final Report & Presentation

Economic

- According to the Commerce Department, people in STEM fields can expect to earn 26 percent more money on average and be less likely to experience job loss (5).
- The STEM degree holders also tend to enjoy higher earnings overall, regardless of whether they work in STEM or non-STEM Occupations (5).

Technological

- The United States Department of Labor state that the main growth catalyst for the Information Technology industry is expected to be the persistent evolution of technology and business' constant effort to absorb and integrate these resources to enhance their productivity and expand their market opportunities (3).
- According to the US May 2007 report, in 2006 the federal government sponsored 105 STEM education programs at a dozen different Federal Agencies. These programs devoted approximately \$3.12 billion to STEM education activities spanning pre-kindergarten through postgraduate education and outreach (6).

Political

- Only about a third of bachelor's degrees earned in the United States are in a STEM field, compared with approximately 53 percent of first university degrees earned in China, and 63 percent of those earned in Japan (6).
- More than half of the science and engineering graduate students in U.S. universities are from outside the United States (6).

Socio-Cultural

- STEM job creation over the next 10 years will grow %17, as compared to %9.8 for non-stem positions (5).
- Jobs in computer systems design and related services are projected to grow 45 percent between 2008 and 2018 (5).
- The occupations with the fastest growth in the coming years (biomedical engineers, network systems and data communications analysts, and medical scientists) all call for degrees in STEM fields (5).



Analysis...

What is...

Vs.

What Should Be...

Parameters Analyzed:

- North Carolina Standards for 8th graders
 - Lenoir-Rhyne Website
 - Camp time frame
 - Target audience level
 - Lesson Time frame
 - Resources needed
 - Resources available
- Content appropriateness (M1 & 2 Lesson Plan)
 - Camp goals
 - Lesson learning objectives
- Effectiveness of evaluation techniques
- Ease of Instructor appropriation of lesson

Internal/External Factors: SWOT Analysis: Internal Analysis Conducted by Analysis

Team Strengths		Weaknesses	
Internal Factors	<ul style="list-style-type: none">• Camp goals• Lesson learning objectives• Effectiveness of evaluation techniques		<ul style="list-style-type: none">• Time frame• Content appropriateness• Lesson learning objectives• Effectiveness of evaluation techniques
Opportunities		Threats	
External Factors	<ul style="list-style-type: none">• Time frame• Resources• Content appropriateness• Lesson Topic/format• Instructor lesson adoption		<ul style="list-style-type: none">• Target audience level• Client• Target audience• Instructor lesson adoption

Frame Factors...

The limitations facing this analysis were:

- A two month time frame to conduct the analysis.
- Correspondence must be done at a distance.
- Interaction with client and target audience will be minimal.
- Little to no ability to conduct pilot testing or other Formative Evaluation techniques.

Findings...

• **Strengths**

- **Alignment with camp goals:**

- Content Topic is hands-on and group-oriented.
- Promotes interest in Science and Technology.
- Promotes problem solving and creativity.

- **Content Topic:**

- Aligns with North Carolina's State Standards for 8th grade achievement within the subject of science.
- Is fun and engaging.

- **Lesson Plan:**

- Detailed
- Time specific
- Allows for deviations in time and teacher appropriation of content

- **Evaluation:**

- Student aids align with lesson goal and objectives.
- Instructors guide is detailed and provides clear answers to student progress.

Findings...

- **Weaknesses**

- **Content Topic:**

- May be too challenging for participants.

- **Participant Level:**

- Exact participant level is not known. It is therefore difficult to gage whether the content level is appropriate or not.

- **Lesson Plan:**

- May be too specific and not allow for enough participant experimentation or unique interpretation of content.

- **Evaluation:**

- Instructor's Guide does not provide specific information for evaluating partial wrong answers or giving student feedback.

Conclusions and Implications...

- Overall, the Post-Boomer Training Initiative deems the implementation of both Modules 1 & 2 in Lenoir-Rhyne's 2015 STEM camp both acceptable and appropriate for the accomplishment of the overall camp goals.

Recommendations...

For the successful implementation of this Lesson Plan, The Post-Boomers Training initiative strongly suggests the following:

1. The content of the Instructor's Guide should be revisited by the client, the instructors involved in the camp, and a subject matter expert (SME) in order to validate the integrity of lesson content.
2. Formative Evaluation Techniques, such as pilot testing should be conducted before the implementation of the lesson plan in order to further validate the integrity of lesson content and make minor changes needed to streamline it's delivery.
3. Further Formative Evaluation Techniques, such as instructor and parent surveys, should be designed, implemented, collected, and analyzed before this implementation goes into effect in order to inform upon further pre-delivery implementation changes.
4. Summative Evaluation Techniques, such as instructor and parent surveys, should be designed, implemented, collected, and analyzed after this implementation goes into effect in order to inform upon future implementation designs.

Questions...?

References...

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