Persona-based Analytics Framework for Learner Experience Mapping

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Persona-based Analytics Framework for Learner Experience Mapping

Location: iFest

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Allow the Course Author to:

- Review the selected class’ status using current data and predicted data; i.e., default page
- Review the selected class’ status using filters via a selected Learner Group
  - Learner Groups can be:
    - Single variable selected by the Course Author
    - Multi-variable Learner Group(s) based on a digital ‘persona’ created using historical data
- Review variables to explore the effect on a performance measure

**User-Centered Design**
- Determine instructor needs
- Incorporate practices and principles from Customer Journey Mapping and Personas
- Visualize data in intuitive and actionable format

**Data Analysis**
- Identify statistically significant variables to performance
- Manage complexity of data
- Build a predictive model

**Persona Creation**
- Use of regression and clustering to group learners

**Validation**
- Compare to initial data model
- Are we able to see what we anticipated
- Do our models predict performance and is our dashboard intuitive
What it Does
Course Name: BRM

Learner Group: Class View

<table>
<thead>
<tr>
<th>Course Milestones</th>
<th>Pre-Test</th>
<th>Homework</th>
<th>Post-Test</th>
<th>Shot Fire</th>
<th>Go - No Go</th>
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</thead>
<tbody>
<tr>
<td>Performance Measure</td>
<td>E A</td>
<td>A E</td>
<td>A E</td>
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<tr>
<td>Completion Time</td>
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<td>Self-Efficacy</td>
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<tr>
<td>Motivation</td>
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<tr>
<td>Breathing</td>
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</tbody>
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The image shows a diagram comparing the performance measures for high and medium self-efficacy groups across different course milestones.

**High Self-Efficacy**
- **Performance Measure**:
  - Pre-Test: [Expected (E) vs. Actual (A)]
  - Completion Time: [E vs. A]
  - Motivation: [E vs. A]

**Course Milestones**
- **Homework**
  - Actual (A)
- **Post-Test**
  - Actual (A)
  - Motivation: [A vs. E]
- **Shot Fire**
  - Actual (A)
- **Go - No Go**
  - Actual (A)

**Medium Self-Efficacy**
- **Performance Measure**:
  - Pre-Test: [Expected (E) vs. Actual (A)]
  - Completion Time: [A vs. E]

**Course Milestones**
- **Homework**
  - Actual (A)
- **Post-Test**
  - Actual (A)
  - Motivation: [A vs. E]
- **Shot Fire**
  - Actual (A)
- **Go - No Go**
  - Actual (A)
How it Works
1. Calculate descriptive statistics

2. Perform correlation/association analyses to identify statistically significant variables to performance

3. Dimensionality reduction to manage complexity of data (e.g., PCA)

4. Build a predictive model associating most significant factors and course performance (e.g., regression)
Identify Digital Personas based on Historical Data

Simplest Form of Digital Persona: Single, statistically significant variable
- Digital Persona A
  - Self-Efficacy
- Digital Persona B
  - Domain Knowledge
- Digital Persona C
  - Handedness

Digital Persona: Multiple, high contributing variables to variance
- Digital Persona D
  - Self-Efficacy & Handedness
- Digital Persona E
  - Self-Efficacy & Domain Knowledge
Explore Current Class’ Journey Through the Course based on Digital Personas IAW Historical Data

Based on correlation/association with a performance measure

- Digital Persona A
  - Self-Efficacy
- Digital Persona B
  - Domain Knowledge
- Digital Persona C
  - Handedness

All current students would be in each Digital Persona.

These are then further divided into segments.

Based on regression analysis and clustering

- Digital Persona D
  - Self-Efficacy & Handedness
- Digital Persona E
  - Self-Efficacy & Domain Knowledge

Round represents multiple people

Square represents one person

Colored is current class
Divide Current Class into Segments for each Digital Persona

Simple single variable

Digital Persona A
Self-Efficacy

The Digital Persona Self-Efficacy is divided into three segments.

High

Medium

Low

Parse class according to variable levels to (a) review performance prediction per DPS level and (b) compare across levels to identify differences that might explain the levels.
Current Class – Sorting into Digital Persona Segment IAW Historical Data

Multiple variables

Digital Persona D Self-Efficacy & Handedness

The Digital Persona D Self-Efficacy and Handedness is comprised of six segments.

- High Self-Efficacy
  - Right Handed

- High Self-Efficacy
  - Left Handed

- Medium Self-Efficacy
  - Right Handed

- Medium Self-Efficacy
  - Left Handed

- Low Self-Efficacy
  - Right Handed

- Low Self-Efficacy
  - Left Handed

Parse class according to variable levels to (a) review performance prediction per DPS level and (b) compare across levels to identify differences that might explain the levels.
Segment the historical data into the same Digital Persona Segments

Calculate the descriptive statistics per variable per Digital Persona Segment to serve as the expected value per the current class.
Compare Current Class Variable Values to Historical Data Values based on Segments

- High Self-Efficacy Right Handed
- High Self-Efficacy Left Handed
- Medium Self-Efficacy Right Handed
- Medium Self-Efficacy Left Handed
- Low Self-Efficacy Right Handed
- Low Self-Efficacy Left Handed

ACTUAL CLASS average values

HISTORICAL DATA average values