Comparing Student Perceptions of Cognitive Load, Course Design Quality, Engagement, and Online Community Between Text Only and Multimedia Rich Courses.

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“What gets measured gets managed.”

~Dale Lee, Director of Information Security & Projects
Questions:

Does the design of a course impact end of course total points?

Is there a difference between end of course total points between a multimedia rich course and a text only course?

Is there a difference in student perceptions of course design, cognitive load, teaching style, community and learner engagement between a multimedia rich course and a text only course?

When is multimedia, specifically learning objects created using course authoring tools such as Captivate or Articulate Storyline, most impactful?
Method: Educational Computing Level 1

*Designed according Quality Matters course design standards*

*Text only design in Blackboard (exception of video based discussion board assignments; text based assignment directions and project content)*

*Multimedia rich design in Blackboard (project lectures, project simulations, instructor narrated assignment directions)*
Method: Educational Computing Level 1

Evaluation of digital course materials added to learning objectives to allow for the inclusion of graded anonymous weekly surveys and 60 item survey at the end of the course.

Both courses co-facilitated by the instructors of record in Fall 2017

Non-QM designed course used to compare the impact of course design on end of course total points
Analytic Resources:

Attempt statistics for surveys
Column statistics for assignments
Rubric evaluation report for assignments
Course-at-a-glance report
Course Activity and Grade Scatter Plot
Course Activity Overview
Blackboard provided excel files
Participants: 77

Ethnicity:
- African American = 5
- Hispanic/Latino = 27
- White = 32
- Biracial = 4
- Unknown = 6

Age Range = 19-48:
- Traditional Undergrad = 23
- Online Program Students = 48
- Unknown = 6

Gender:
- Male = 17
- Female = 60

ETC305 Course Sections:
- Multimedia = 25
- Text-Based = 22
- Non-QM = 30

#BBANALYTICS
Does the design of a course impact end of course total points and is there a difference between multimedia rich and text-based course design?

<table>
<thead>
<tr>
<th>End of Course Total Points</th>
<th>Multimedia Quality Matters</th>
<th>Text-Based Quality Matters</th>
<th>Multimedia Non-Quality Matters</th>
</tr>
</thead>
<tbody>
<tr>
<td>929.95</td>
<td>923.72</td>
<td>849.14</td>
<td></td>
</tr>
<tr>
<td>93% A</td>
<td>92% A</td>
<td>85% B</td>
<td></td>
</tr>
</tbody>
</table>
Does the design of a course impact end of course total points and is there a difference between multimedia rich and text-based course design?

<table>
<thead>
<tr>
<th>MS Projects</th>
<th>Multimedia Quality Matters</th>
<th>Text-Based Quality Matters</th>
<th>Multimedia Non-Quality Matters</th>
</tr>
</thead>
<tbody>
<tr>
<td>232.04</td>
<td>223.91</td>
<td>220</td>
<td></td>
</tr>
</tbody>
</table>

97% A  93% A  92% A
Is there a difference in student perceptions?

### Perception of Course Design

<table>
<thead>
<tr>
<th>Quality Type</th>
<th>Perception Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multimedia Quality Matters</td>
<td>88.88</td>
</tr>
<tr>
<td>Text-Based Quality Matters</td>
<td>80.9</td>
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</tbody>
</table>

### Perception of Cognitive Load

<table>
<thead>
<tr>
<th>Quality Type</th>
<th>Perception Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multimedia Quality Matters</td>
<td>25.04</td>
</tr>
<tr>
<td>Text-Based Quality Matters</td>
<td>22.7</td>
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</table>
Is there a difference in student perceptions?

<table>
<thead>
<tr>
<th>Community and Learner Engagement</th>
<th>Multimedia Quality Matters</th>
<th>Text-Based Quality Matters</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>35.33</td>
<td>33.45</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Perception of Teaching Style</th>
<th>Multimedia Quality Matters</th>
<th>Text-Based Quality Matters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28.64</td>
<td>24.85</td>
</tr>
</tbody>
</table>
Findings

• Based on data examined the multimedia rich course produced slightly better outcomes with slightly more positive perceptions of course design, cognitive load, teaching style, community and learner engagement.

• Statistical significance not found
Findings on Cognitive Load

Total Points Earned = 849/1000 (85%/B)
Findings on Cognitive Load

Total Points Earned = 924/1000 (93%/A)
Findings on Cognitive Load

Total Points Earned = 930/1000 (93%/A)
Recommendations

- Consider applying a nationally recognized standard of course design to your Blackboard builds.
- Consider integrating multimedia based on the media’s potential to minimize cognitive load for specific learning outcomes.
- Continue building research process and investigating statistical trends.
Thank You! Stay in Touch!

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