

# Evaluating Software for Affective Education: A Case Study of the Affective Walkthrough

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## Approach

Educational multimodal software needs better evaluation methods [7]. We have proposed a walkthrough approach to evaluating the *affective design*.

## MADE Affective Walkthrough

(*Multimodal Affect for Design and Evaluation*) [1] is based on:

- Wharton et al.'s cognitive walkthrough [2]
- Dormann and Biddle's affective walkthrough [3]

## MADE Walkthrough

Walk through the system answering each of the questions considering the new modalities and the teaching objectives

1<sup>st</sup> **Exploring:** Does the system use positive emotions to encourage the user to explore the learning environment?

2<sup>nd</sup> **Challenging:** Does the system provide more difficult material to challenge the user?

3<sup>rd</sup> **Overcoming:** Does the system allow the user to persevere and overcome challenges?

4<sup>th</sup> **Affirmation:** Does the system give positive affective feedback to affirm successful learning?

## Underlying theory

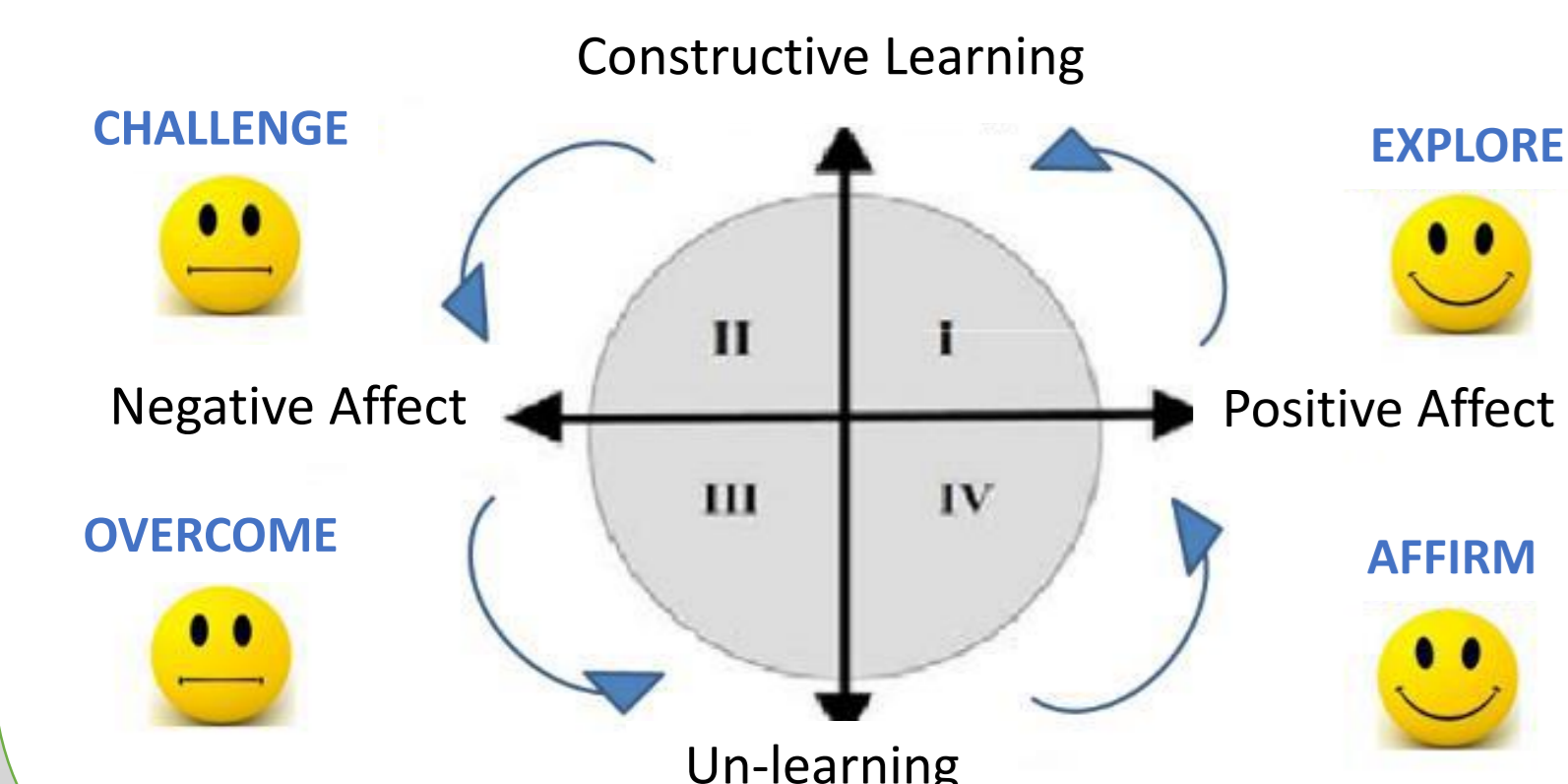
The affective model of education from Kort et al. [4] includes four phases of emotion desirable in learning:

1<sup>st</sup> phase: Encouraging exploration with **positive affect**.

2<sup>nd</sup> phase: Introduces challenges, and **negative affect** is expected

3<sup>rd</sup> phase: Support overcoming challenges and reduce the **negative affect**.

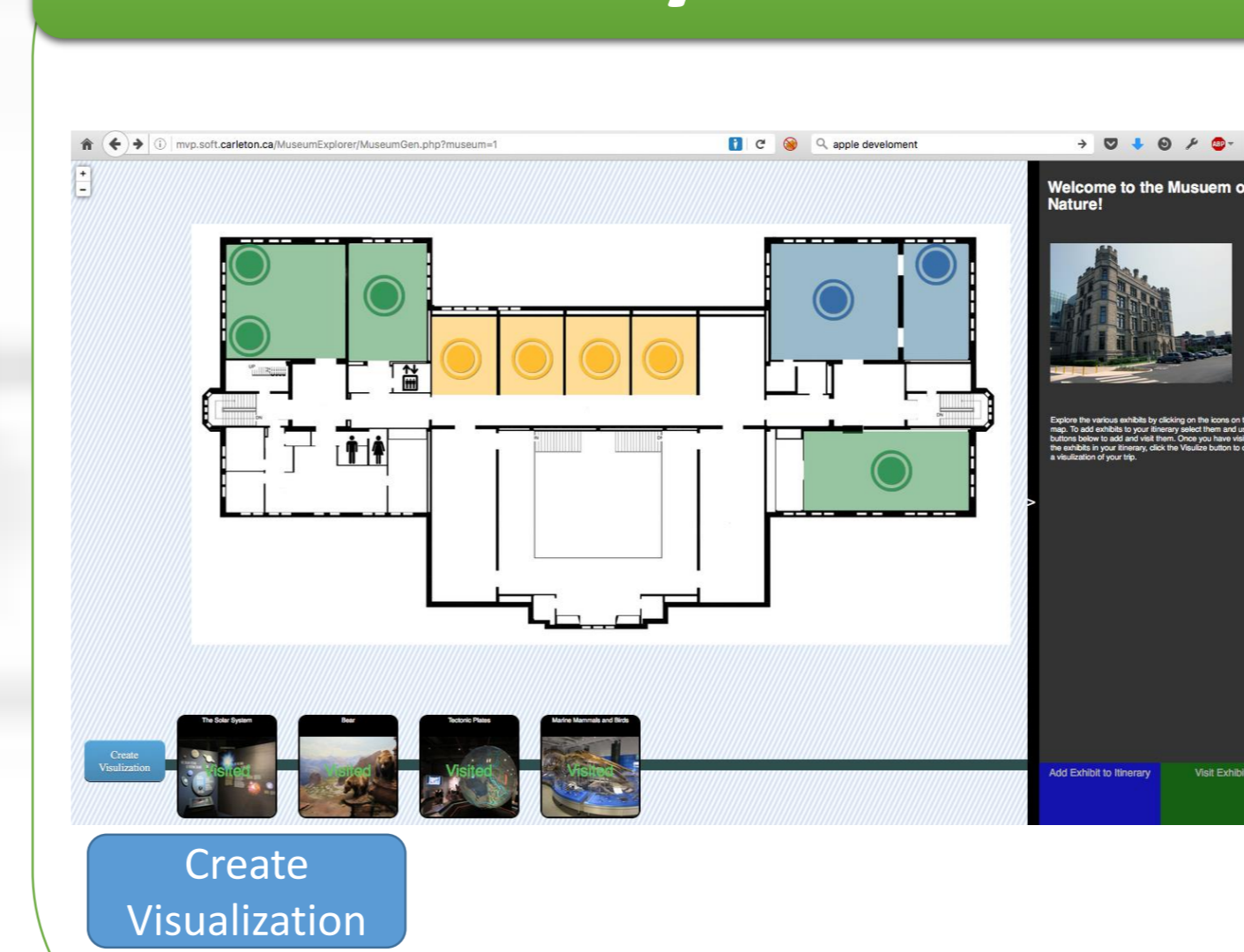
4<sup>th</sup> phase: Affirm learning and restore **positive affect**.



## Case Study: Museum Explorer

- Our case study is of software designed to apply **narrative visualizations** to help students visiting a museum [5]. Narrative should support continuity, storytelling and excitement [6].
- **To examine the effectiveness of the walkthrough**, we recruited only participants with Human-Computer Interaction (HCI) evaluation experience, but not members of our own research group.
- We applied a **qualitative approach**, audio recorded and took notes for our detail analysis to identify software issues.

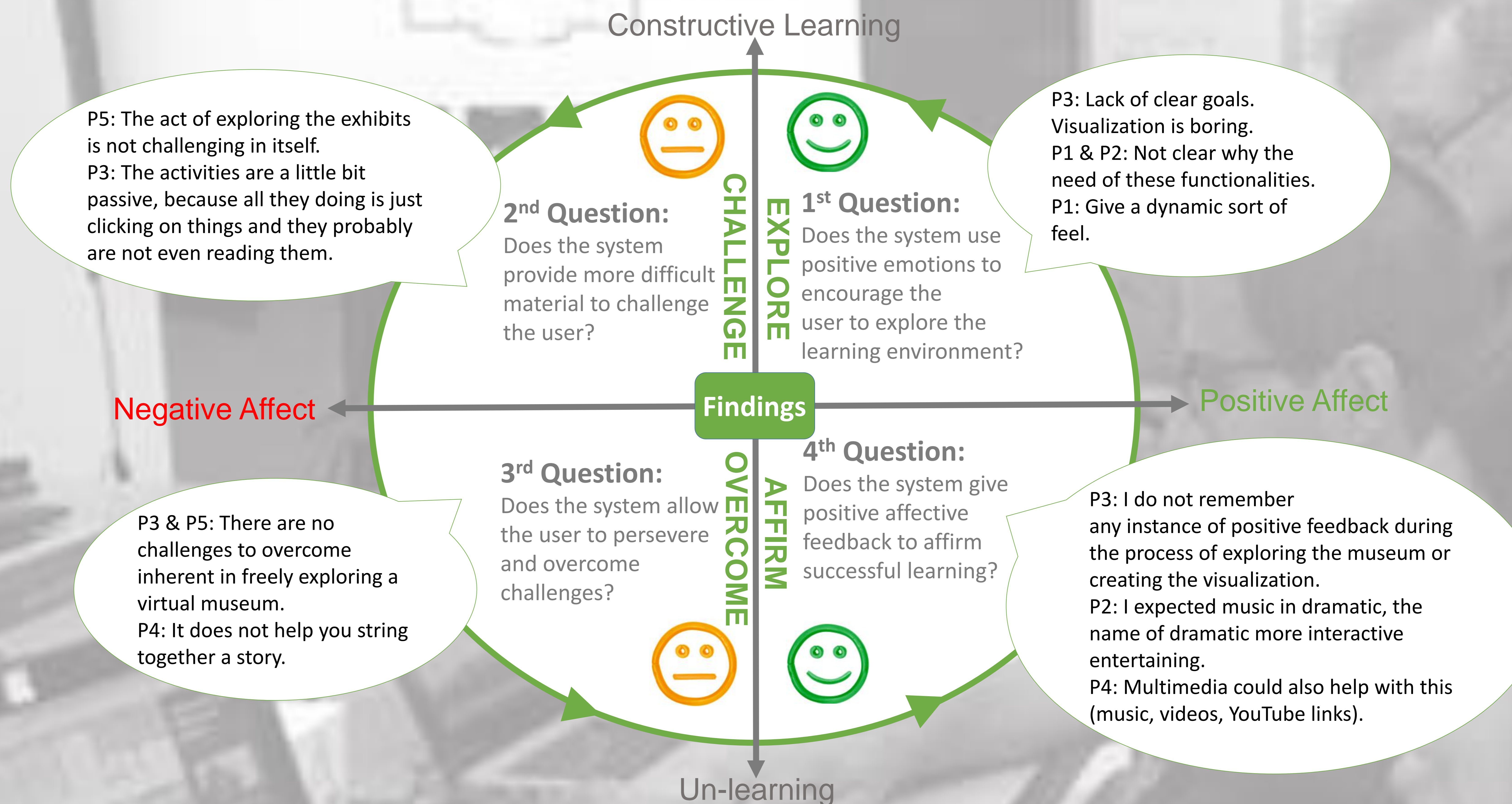
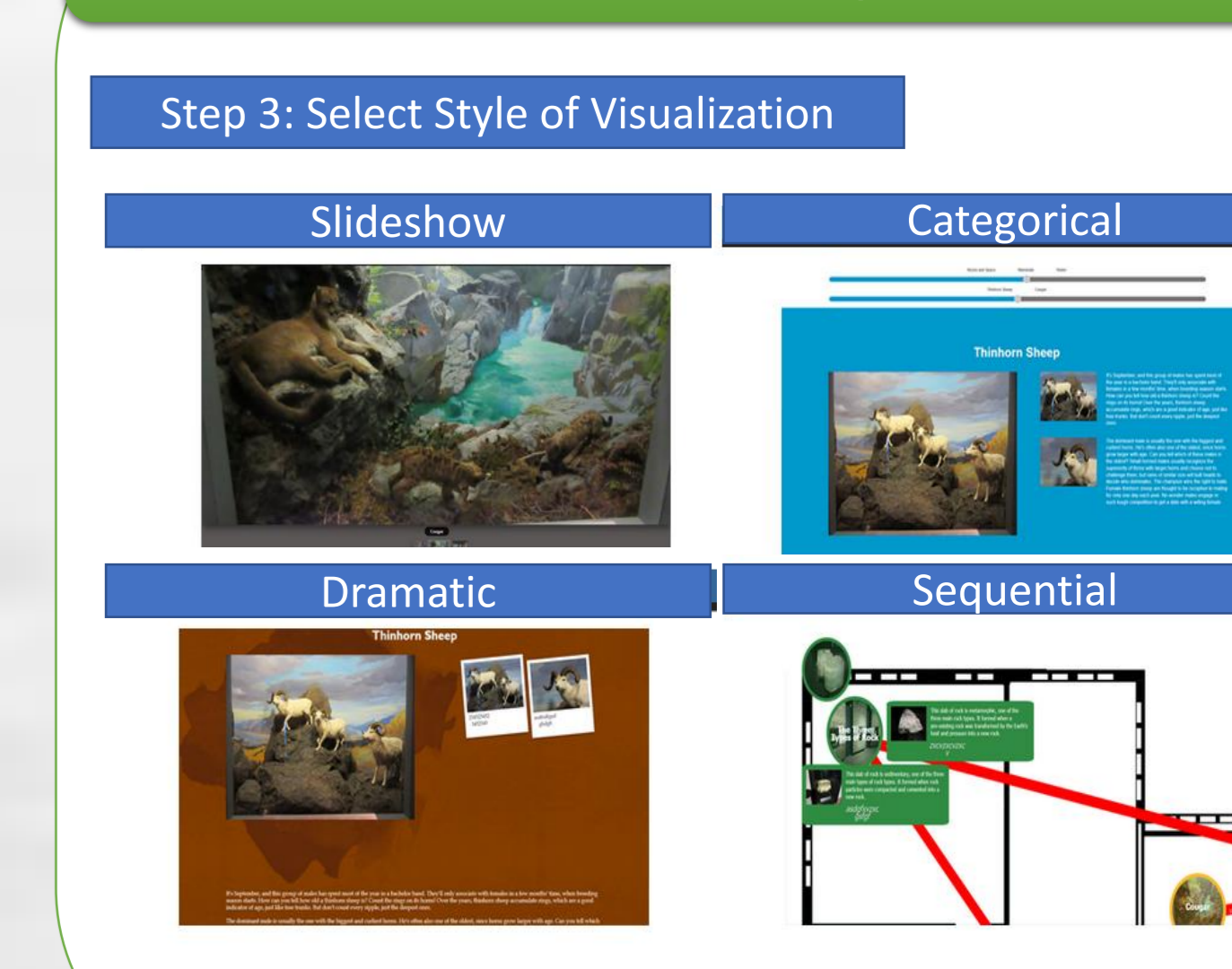
## Task 1: Plan your itinerary



## Task 2: Imagine you are visiting



## Task 3: Review your visit



## Conclusions

- Participants could apply the technique and make useful comments to significantly improve the software.
- However, by using qualitative analysis of our observations and transcripts of participant think-aloud comments, we were able to identify several ways to improve our inspection technique.
- We identified a need to de-emphasize ordinary usability, and state explicitly the teaching objectives, the educational strategies and modality advantages involved.

## The Revised MADE Walkthrough

The walkthrough questions were too holistic, and did not identify the four affective steps of learning: exploring, challenging, overcoming, and affirmation. For each task only one of those steps might be appropriate. We have now revised the walkthrough to address this and other problems.

Walk through the system answering each of the questions considering the new modalities and the teaching objectives

- 1<sup>st</sup> What is the learning goal of this task?
- 2<sup>nd</sup> Where in affective cycle of learning is this task? (i.e. exploring, challenging, overcoming, and affirmation)
- 3<sup>rd</sup> Is the appropriate affective support provided?
- 4<sup>th</sup> Does the affective support work as intended?

## References and Acknowledgments

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