**Open Social Student Modeling with Progressive Zoom: An Evaluation Using a Google Maps Approach**

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**Motivation & Inspiration**

- **Motivation**
  - Open Social Student Modeling enables student to benefit from both cognitive and social learning.
  - However, with traditional approaches, students may be subjected to information overloading in a large scale practical setting.

- **Inspiration**
  - Google Maps enables intuitive navigation in a multi-layer fashion!
  - A multi-layer zoomable interface of Google Maps provides remarkable flexibility in navigation support.
  - It effectively addresses information overloading issues.
  - Is it possible to extend the “power” of Google Maps to adaptive e-learning?

**Research Questions and Hypotheses**

- **Research Questions:**
  - Can we build such an intuitive navigation tool for adaptive e-learning?
  - Is it possible to provide students with their own "degree program knowledge maps" navigator, so they can reflect their individual and group progress based on their knowledge and pedagogical context?

- **Hypotheses:**
  - A multi-layer zoomable interface of Google Maps can be generalized as **Progressive Zoom**, which incrementally provides more details based on the context and level of abstraction.
  - It is possible to build multi-layer knowledge maps based on an integrated hierarchical structure.
  - Open Social Student Modeling based on Progressive Zoom can make this “dream navigation tool” come true.
  - This approach will address the information overloading issues in learning with a zoomable interface.
  - This will help students increase awareness and engagement in their learning process.

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**Open Social Student Modeling with Progressive Zoom**

- **Progressive Zoom** integrates the pedagogical model, knowledge model and open social student model in a multi-layer social knowledge map.
  - Pedagogical Modeling: The course is organized in hierarchical layers. This structure can be extended to include other courses and degree programs.
  - Knowledge Modeling: Key concepts are extracted along the hierarchical pedagogical structure.
  - Open Social Student Modeling: The students’ individual and peer performance progress are tracked along the hierarchical pedagogical structure.

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**Evaluation**

- **Survey Design**
  - Hypothesis: students who are familiar with Google Maps and Treemap should feel more comfortable with ProgressiveZoom.
  - Questionnaires were divided into four parts: the background (A1-2), perceptions (B1-6), preferences (C1-6) and free form comments
  - Nine students from the previous ISD course at iSchool at Pitt participated.
  - Students watched video and tested demo, then answered questions.

- **Findings**
  - All students can navigate the hierarchical course structure with the zoomable interface (B2). They are satisfied with interface (C2) and would recommend it to other students (C3).
  - The free form comments show that all of the students are enthusiastic about this new navigation approach.
  - A slight proportion of students had negative reactions to certain features or preferences: this confirms that we should conduct more in-depth research on this topic.

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**Future Work**

- Extend the open social model to provide adaptive social knowledge maps for students from different courses and degree programs
- Build effective knowledge model to help students better explore the course
- Conduct a semester-long classroom user-study to investigate information overloading issues

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Please refer to the diagrams and tables for detailed data and analysis.