VeLA: A Visual eLearning Analytics tool

Juan Cruz-Benito
Francisco J. García-Peñalvo

GRIAL Research Group
Department of Computers and Automatics
University of Salamanca

juancb@usal.es / @_juancb
fgarcia@usal.es / @frangp
Outline

1. Introduction
2. VeLA foundations
3. Video demo
4. Conclusions
5. References
1. Introduction
Reference Model

VeLA: A Visual eLearning Analytics tool. Learning Analytics Summer Institute (LASI), Bilbao 2015

(Chatti et al., 2012)
Visual Analytics: two definitions

Visual analytics is the science of analytical reasoning facilitated by interactive visual interfaces.

(Thomas & Cook, 2005)

Visual analytics combines automated analysis techniques with interactive Visualizations for an effective understanding, reasoning and decision making on the basis of a very large and complex datasets.

(Keim et al., 2010)
Visual Analytics

Machine
- Statistical Analysis
- Data Mining
- Data Management
- Compression & Filtering

Semantics-based approaches

Human
- Human-centered computing
- Information Design
- Perception

Visual Intelligence

Information Visualization
- Graphics and Rendering

Decision Making Theory

“The best of both sides”

(Keim et al., 2008; 2010)
Visual Analytics Mantra

- Analyse First
- Show the Important
- Zoom, Filter and Analyse Further
- Details on Demand

(Keim et al., 2008)
4. VeLA foundations
Visual eLearning Analytics (VeLA)

Level
- Very big and complex datasets

Goal
- Understanding, reasoning
- Effective decision making
- New knowledge acquisition

Level
- Course
- Department

Goal
- Data focused
- Prediction and educational deliberation
- Student’s success

Visual Analytics
- Institutional
- Regional
- National and International

Goal
- Organizational efficiency
- Help for planning, the strategy and decision making

learning Analytics

Academic Analytics

Visual Analytics in eLearning

Goals
- Understanding and improvement of educational learning process

Technological Instruments
- Statistical analysis, SNA, EDM (reduction of components, relationships analysis, text mining, classification);
  confirmation analysis
- Visual analytics, exploratory analysis, Artificial Intelligence, High Interactivity, Linked Views

Adapted from (Gómez-Aguilar et al., 2014; 2015)
VeLA Model: The goal

To define a model able to scaffold the visual analysis required steps of the information generated in teaching and learning processes, taking into account the latest designs and methodologies in the process of academic analytics, learning analytics, visual analytics and InfoVis

(Gómez-Aguilar et al., 2014; 2015)
Visual eLearning Analytics (VeLA)

https://www.youtube.com/watch?v=PZ7w_6EzMpI
5. Conclusions
Conclusions

• Data visualization and visual analytics tools empowers users to understand and manage complex datasets, even if they have not (too much) previous experience using this kind of systems.

• Nowadays researchers have access to many analytics tools and visualization tools. It is responsibility of them to distinguish what of them are the most suitable for solving their research problems.

• The systems for Learning Analytics and Visual Analytics should not be considered only as tools, but like complete systems backed by formal models.

• VeLA demonstrates the enormous potential of the Visual Analytics applied to Learning Analytics, and leaves open a promising line of research
References
References

VeLA: A Visual eLearning Analytics tool

Juan Cruz-Benito
Francisco J. García-Peñalvo

GRIAL Research Group
Departament of Computers and Automatics
University of Salamanca

juancb@usal.es / @juancb
fgarcia@usal.es / @frangp