

# Implementation of shape and style into content recognition

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## Introduction



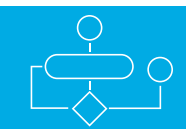
Visual perception is essential for human cognition, enabling us to interact with our environment (Harrison et al., 2015; Lin & Atkinson, 2011). The visual system processes attributes like color, brightness, shape, and texture, helping us understand surroundings and perform tasks such as reading and driving (Yarbrough, 2019). These skills also support social interaction and coordination, as vision integrates with other sensory inputs to maintain balance (Sober et al., 2005; Evans & Treisman, 2011; Glaser & Schwan, 2020). The "Typography World Map" project, a collaboration between the University of Ljubljana and Wichita State University (Pušnik et al., 2022a, 2022b), aimed to teach students about data visualization and design.

The aim of this study was to find out how well students can design an infographic that incorporates the existing typography of a particular US state in a recognisable and representative way, while including important information about the state. We also wanted to find out how well first-year students could do this task without any prior knowledge, as one of our goals was to identify gaps in their graphic design skills.

Specific research objectives included assessing students' ability to:

- Apply basic typography and design principles in the creation of infographics.
- Apply graphic prepress techniques to improve the clarity and aesthetics of data presentations.
- Analyse the effectiveness of their visualisations to facilitate understanding of the information.

## Methods



The first step of the project was performed in the winter semester of the academic year 2021/2022, when the Slovenian master's students of the Creative Typography course individually developed various typographic solutions, which were combined into sets, presented in the course's seminar and linked to the content of the "Typography World Map" semester project. The results of this project were presented in the works Pušnik et. al, 2022a and Pušnik et. al, 2022b. In the second step, data visualisations and information designs were created for 16 selected US states, using the same typography as in 2022. A total of 32 students worked together to create 16 infographics, each showing the chosen typography along with relevant information highlighting the typical characteristics and statistics of each state. Students researched their chosen U.S. state or country, focusing on cultural, social, and natural aspects, and shared their findings online with U.S. peers. They then designed infographics using Adobe Illustrator and Photoshop, paying attention to graphic prepress for both print and web. At the end, infographics were evaluated on typography, image quality, content placement, and file preparation. The 16 designs were printed and displayed in an exhibition at the University of Ljubljana.

## Results



The students were provided with pre-designed motifs for the names of various US states, each of which was reproduced in a different typographic style (Figure 1). Some of these selected typographic motifs contained recognisable features typical of the respective states, which added to the complexity of the task for the students. To streamline the process of fulfilling the project requirements, students were first instructed to research meaningful facts and data about each state. These findings were then to be supported by the integration of carefully selected graphic elements and illustrations.



Figure 1 Motifs of US state names

Students created infographics summarizing their research on U.S. states, covering topics like demographics, landmarks, wildlife, climate, economy, and notable cities. They highlighted unique or unexpected facts, resulting in diverse designs, from university prestige to historical events. As many first-year Graphic and Media Technology students had limited design experience, some struggled with technical aspects, especially in preparing files for web and print, despite weekly consultations. Typographical and grammatical errors were common, partly due to students being native Slovenian speakers creating infographics in English. Frequent issues included inappropriate font choices and sizes (Figure 2), leading to small text or poor contrast.



Figure 2 Examples of inadequate typography

Text alignment was inconsistent, with poor breaks and indents (Figure 3). Graphic elements were misaligned, obscuring text, and improper file formats caused transparency issues (Figure 4). Some infographics ignored bleed requirements (Figure 5), and while visuals were sourced online, they didn't always match the state's motifs (Figure 6).



Figure 3 Examples of inadequate text alignment and hyphenation

Figure 4 Example of inadequate layout

Some images were improperly cropped, lacked size/style uniformity, or had poor detail (e.g., square-cropped river, disproportionate animals, watermelon) (Figure 7).

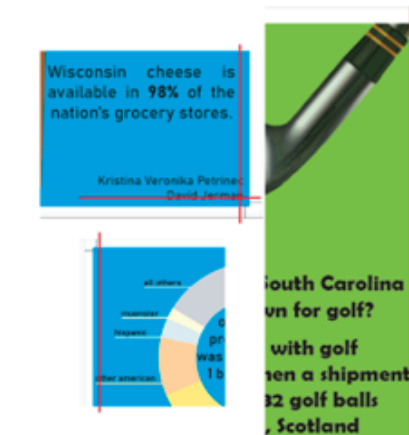


Figure 5 Example of inadequate layout



Figure 6 Example of a poorly choice illustration



Figure 7 Examples of poorly chosen illustrations

Despite these issues students created 16 engaging infographics with varied color pallets and arose, but students evaluated their work and peers using the "Post-it method," with preferences shaped by personal design tastes.



Figure 8 Exhibition of 16 infographics evaluated with "Post-it method"

## Conclusion



The "Typography World Map" project highlighted the importance of visual design in simplifying complex data and making it engaging for diverse audiences. By using consistent typography and design, students created infographics that reflected the unique characteristics of each U.S. state, combining research on cultural, social, and natural elements. The project demonstrated how thoughtful, research-driven design can effectively convey information while capturing the essence of a subject. It emphasizes the role of visual perception and data visualization in enhancing communication, showing the value of interdisciplinary collaboration and visual literacy in modern information design.

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