

Story maps to support sense of place and conservation within urban greenspace

Anna E de Jager

^a *University of South Africa, djageae@unisa.ac.za*

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Abstract:

Maps make a world of difference in visual communication (Klettner, 2020). Mapping is done in different contexts and various types of maps are used to organise data and indicate links between various components. Spatial mapping is useful in diverse applications ranging from tourism marketing (de Jager, 2005) to disseminating scientific research results (Bede_Fazekas & Somodi, 2023). The message, purpose and audience are important for visual communication. It is therefore important to select a relevant tool to clearly disseminate your message to the intended audience. Will Goodlet (Goodlet, 2017) created an e-guide for the Rietvlei Nature Reserve including 20 custom maps, bird and wildlife guides, as well as photographs of the reserve. The purpose of this e-guide is to encourage birding opportunities and nature photography. It can be downloaded on a cell phone and used while travelling in the conservation area.

The capability of web maps to combine a base map with links to various data sources and services provides an advantage over static or paper-based maps – especially as they retain the links when they are internet-enabled, mashed up, shared, and published (ESRI 2012). The popups used in intelligent maps display text, photos, and graphs or charts that represent data. The map design as well as the descriptive annotations of the map enhances visual communication of the message of the map, especially when links are included to key words on the map (ESRI, 2012). Story maps go one step further by also providing a context for the map as well as the possibility of adding user experience. Stories are compared to building blocks in the communication process and story maps have been applied in various contexts for shared understanding, even before the ESRI Story Map software was launched. “Story Mapping is a technique that provides the big picture that a pile of stories often misses” (Patton, 2014, p. xiv). Story mapping is regarded as the bridge between design and implementation and aims to maximise output and impact (Patton, 2014, p.xli). “A story map is an integrated set of map(s), related content (legend, text, photos, video, etc.), and functionalities (pan/zoom, pop-ups, swipe, time slider, etc.) that make it a fully functioning information product” (ESRI, 2012). Community involvement and user experiences can therefore be included. In addition to that advantage, the swipe function enables comparisons between maps or showing change over time. Various examples of the application of this programme can be found on the ESRI website to, for example, disseminate research findings, share stories and experiences from fieldwork, and enlist support for project initiatives or crowdsourcing.

The aim of this paper is to illustrate how ESRI Story Maps software can be used to support a sense of place and conservation. The paper firstly explores the benefits of using story maps as tool for visual communication and then illustrates findings of case study research done in the Rietvlei Nature Reserve, Tshwane.

The Rietvlei Nature Reserve is an urban greenspace located on an urban fringe between the growing cities of Tshwane and Ekurhuleni. The context of the growing cities was explored through literature study, maps, and remote sensing images. The South African land cover data base of 1990 and 2014 was derived from equivalent remote sensing datasets and indicated land cover change over a 25-year period. The polygon shape file of the catchment area of the Rietvlei Dam was used by the company GeoterraImage to crop relevant sections from the data base. Changes in the different land use classes within the catchment area could therefore be derived from an Excel spreadsheet.

A fact sheet was developed and used to structure field notes for observation on the physical characteristics of the reserve, visitor activities, benefits, and stressors within the reserve. Semi-structured interviews were conducted with key informants as well as visitors to the reserve. The interview schedule included closed and open-ended questions. Descriptive statistics was used to calculate frequencies and percentages of closed questions. Responses to open ended questions were thematically clustered in terms of economic, environmental, and social benefits of and stressors within the reserve. Focus group discussions with stakeholder groups provided information about their involvement in the objectives of the conservation area. The data was analysed by content analysis, and identification of economic, environmental, and social benefits and stressors within the reserve. In a final focus group with key informants, the benefits and stressors identified in previous phases of the research were confirmed and ranked, and mitigation strategies for stressors were recommended.

Story mapping is a useful tool to manage and present both primary and secondary data. Not only the research findings, but also the design principles of visual communication (clarity, simplicity, universality, impact, and credibility), and functionality of the software are important in the design thereof. A similar base map and layout were used to illustrate benefits and stressors within the reserve for different themes, namely urban development, conservation, and sense of place. To optimise clarity, the location of data collection points for face-to-face interviews were plotted as point symbols on the base map with popups to data charts. Literature sources were integrated to the story map using links to relevant spatial planning documents, reports and academic articles. This enables the reader to obtain more information without cluttering the map. The side panel provide context for interpreting the map and data representations. The components of sense of place, namely form, function, activity, image, and connection are captured in relevant photographs of the landscape and charts with data analysis. Photographs support credibility as they illustrate observation by the researcher. The sense of place of this area is associated with tranquillity, conservation, and nature-based activities for example, birding, hiking, picnicking, participation in social events, and conservation activities.

Visitors often do not realise the importance of the supporting, provisioning, and habitat ecosystem functions. Urban growth leads to an increase in human needs and expectations regarding the ecological services provided by greenspace. The visual presentation of ecosystem functions can support environmental awareness and create a sense of place in a conservation area. Water provisioning is the most significant benefit of the Rietvlei Nature Reserve because, as part of green infrastructure, it provides ecosystem services. Supporting ecosystem services include carbon sequestration in grasslands and peatlands. Habitat services are provided in the conservation of biodiversity. The Rietvlei Nature Reserve is a birding hotspot and accommodates a variety of species associated with wetlands and the Bankenveld Grassland biome.

Stressors to the reserve include the declining water quality, the presence of invasive species, development pressures intensified by spatial development corridors and administrative boundaries, and insufficient environmental awareness. Mitigation strategies and examples of ecosystem restoration within the Rietvlei Nature Reserve are illustrated in the story map. Presenting these important aspects in a story map can enhance visual communication to convey messages regarding sustainable use and conservation of this urban greenspace. Multimedia was selected for visual impact when illustrating the extent of stressors such as eutrophication, invasive species, and urban encroachment.

The ESRI Story Map can be used in *ad hoc* environmental awareness presentations, uploaded on the website for the reserve to enhance sense of place through environmental awareness or be applied as a data management tool in support of the ecological management plan of the conservation area.

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