

Change – The transformative power of citizen science

Participation and citizen science with young people – the u³Green participation framework

Sabine Hennig* (a), Robert Vogler (a), Tim Schötz (a)

(a) Paris-Lodron-University Salzburg, Salzburg, Austria

Abstract

Discussions about the quality of life in cities also emphasize urban green. This is underlined by increasing urbanization and climate change impacts and it requires the appropriate implementation of urban green. Essential to this is a fundamental understanding of how different social groups use urban green and what requirements they place on it. Young people are a particularly challenging social group. This refers to their needs for urban green, which are different from those of adults, and the difficulties in getting them to participate and share their needs. However, which forms of participation are most suitable for young people? What youth-specific results regarding urban green can be achieved through appropriate participation? These questions are being investigated in the project u³Green, whose aim is to develop a youth-centered data collection app, analyze the data collected using this app, and communicate the analysis results to stakeholders. In u³Green, a participation model was developed that combines different participation formats and methods, and thus provides new insights into the use and needs of young people regarding urban green.

Keywords: geo-participation, child-friendly cities, the youth, urban planning.

© 2024 Sabine Hennig, Robert Vogler, Tim Schötz

This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Published by NHM, BOKU and ECSA and peer-reviewed under responsibility of ECSA-ÖCSK-2024 (Change – The transformative power of citizen science)

Introduction

Quality of life in cities has been increasingly discussed. The reasons for this are the need for (more) livable urban spaces, reduced environmental pollution, and tackling climate change challenges. Here, urban green

* Corresponding author. E-mail address: sabine.hennig@plus.ac.at

significantly contributes to quality of life in cities (Carrus et al. 2015). Despite its importance, urban green is in growing competition with other urban uses, such as traffic, commerce, industry, and housing. Appropriate attention and measures are required to (better) consider urban green in urban planning (Boulton et al. 2018). For this, a fundamental understanding of how citizens use urban green and the demands they have is crucial. However, the uses and needs of urban green typically vary among different social groups. For instance, urban green usually plays a more important role for the youth than adults. One reason for this is that young people need easily accessible urban green for playing, sporting activities, meeting friends, and relaxing. To implement urban green in line with the demands of young people, it must be considered that they have demands on urban green that differ from what adults consider relevant and what adults consider important for young people (Hennig and Vogler 2016; Zhou et al. 2016).

Now, to learn about the relationship between people and urban green to support the implementation of (more) livable cities, citizen science and participation play an important role. This also applies to young people for whom the use of participatory methods, i.e. citizen science, is a promising approach to designing urban green that is actually suitable for them.

Although young people's participation offers numerous advantages, they are considered a difficult target group in terms of involvement (Aristeidou et al. 2021). Therefore, it is necessary to select and combine suitable participation methods. But which possibilities exist and can be used to support the appropriate involvement of young people that meet their needs? How can these aspects be optimally combined in the context of a participation framework? What youth-specific results regarding urban green can be achieved using a particularly developed participation framework? These questions are being investigated in the project u³Green (<https://u3green-zgis.hub.arcgis.com>; 10/2022-09/2025). u³Green aims to develop a youth-centered data collection app that allows youths to contribute their personal views on urban green, including infrastructure and characteristics. Such data are considered an important means of supporting the development of (more) livable cities for young people. In u³Green, the youth not only contributes data on urban green, but also participates in the creation of the data contribution app and the data analysis. To support this, a participation framework was created to fully involve young people in all development steps and tasks.

Methods

The design of a specific participation framework in u³Green is based on several steps using different methods (Figure 1): getting to know the target group in detail, identifying appropriate possibilities to support user involvement in different project tasks, selecting and combining appropriate possibilities for youth involvement, and assessing and optimizing the participation framework created.

Understanding the characteristics of young people is crucial for the development of the participation framework, which serves as a basis for further work steps: identifying and evaluating user involvement possibilities, selecting and combining possibilities that build up the framework to appropriately involve young people, and evaluating and optimizing the created participation framework. Literature and Internet

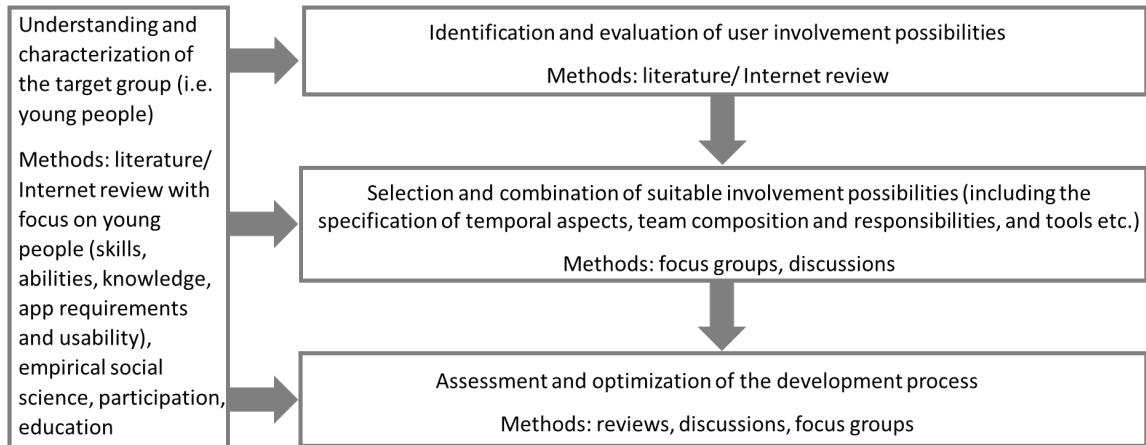


Figure 1. Creation of the u³Green participation framework

review was used to gain the required knowledge about young people and identify suitable possibilities for their involvement. Expert focus groups conducted allowed the selection and combination of possibilities to involve young people in the development process, as well as the evaluation and optimization of the created participation framework.

Results

The resulting development process focuses on involving young people in the development of the u³Green project solutions (data collection app, data analysis including visuals and geovisualization tools). The process is characterized by a combination of an appropriate design approach and a process model that applies different methods to engage the youth (Figure 2).

Thus, it is characterized by the design approach of strong participatory design (user input is solicited and decisions are made by the people involved in the process). Further, the prototyping model was applied: By creating and discussing various prototypes, the characteristics of the product to be developed can be collected and refined. This forms the basis for delivering the final solution.

The u³Green participation framework centers on the following tasks equal for the creation of all three u³Green solutions: The gathering of the initial characteristics always relies on information from literature and Internet review. To close knowledge gaps identified, the Metaplan method is applied, and the information obtained is, if needed, assessed and ranked using the Q-method (step 1; Vogler et al. 2023). In step 2, the initial characteristics are used to develop prototypes using the parallel design method (several groups of young people develop solutions in parallel). By discussing these prototypes, additional characteristics can be obtained (step 4). These are combined into a single prototype (step 5), which is further refined using the station discussion method. These insights allow the implementation of the final solution, which is tested (e.g., cognitive walkthroughs, focus groups) and optimized (step 6).

Process model: prototyping model / **Design approach:** strong participatory design

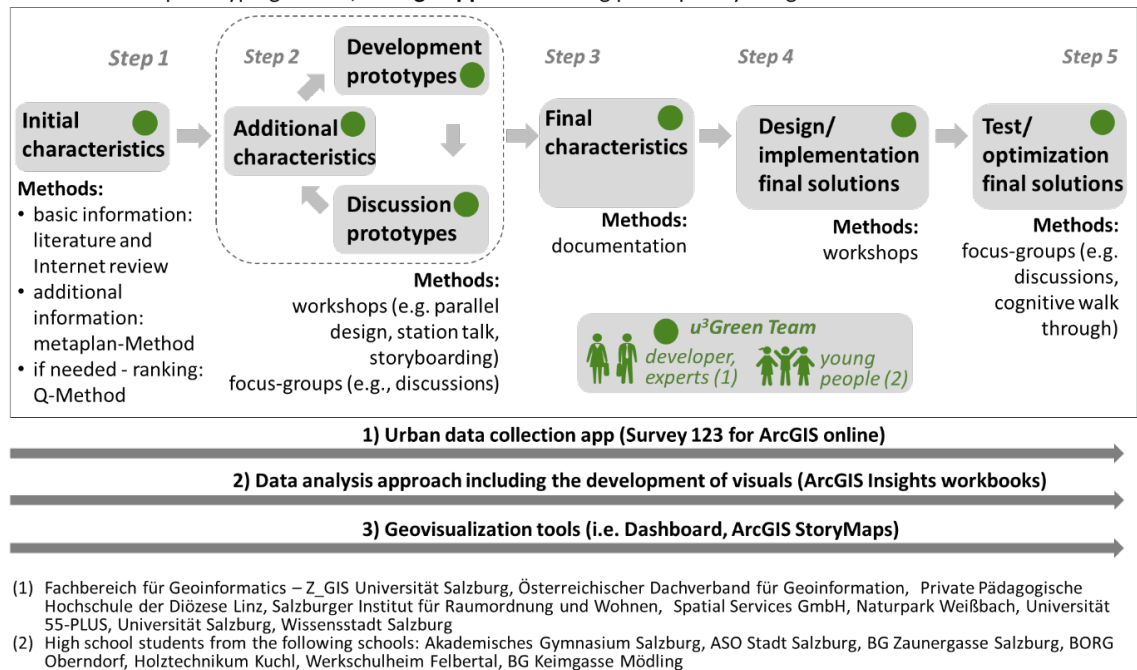


Figure 2. Schematic development process using the u³Green participation framework regarding the development of the u³Green solutions: urban green data collection app, data analysis with visuals, geovisualization tools

As part of the participation framework, young people are involved using various methods in connection with different participation formats (Figure 2): interactive in-class workshops in school (step 1), short-term internships (4 days; step 2), and long-term internships (6–8 months; step 1–5).

Conclusion

The u³Green participation framework presented here has already been used successfully to fulfill the project goals (development of data collection app, data analysis including the creation of visuals) and will also be used to reach the still open project goal (creation of geovisualisation tools). However, through the participation of the youth based on the particularly developed participation framework, we obtained results on young people's use of and demands for urban green. This refers to the relevance of urban green, which is particularly related to walking (including the provision of seating) and the importance of safety and the feeling of security (lighting, open space, e.g., in connection with lawns) and cleanliness. Even if the implementation of the described participation framework is time-consuming and intense, it can be considered a fruitful approach to involve young people in participatory and citizen science initiatives to match their needs and interests.

Acknowledgments

This research is based on findings from the u³Green project funded by the Federal Ministry of Education, Science and Research of the Republic of Austria (BMBWF) through the Sparkling Science 2.0 program.

References

- Aristeidou M, Herodotou C, Ballard H, Young A, Miller A, et al. (2021) Exploring the participation of young citizen scientists in scientific research: The case of iNaturalist. *PLOS ONE* 16/1: e0245682. <https://doi.org/10.1371/journal.pone.0245682>
- Boulton C, Dedekorkut-Howes A, Byrne J (2018) Factors shaping urban greenspace provision: A systematic review of the literature. *Landscape and Urban Planning* 178, 82–101. <https://doi.org/10.1016/j.landurbplan.2018.05.029>
- Carrus, G, Scopelliti M, Laforteza R, Colangelo G, Ferrini F, Salbitano F, Agrimi M, Portoghesi L, Semenzato P, Sanesi G (2015) Go greener, feel better? The positive effects of biodiversity on the well-being of individuals visiting urban and peri-urban green areas. *Landscape and Urban Planning* 134, 221–228. <https://doi.org/10.1016/j.landurbplan.2014.10.022>
- Hennig S, Vogler R (2016) User-Centered Map Applications through Participatory Design: Experiences Gained during the „YothMap 5020“ Project. *The Cartographic Journal* 53/3, 213–229. <https://doi.org/10.1080/00087041.2016.1148217>
- Vogler R, Hennig S, Albrecht F (2023) Urban Green for Child- and Youth-Friendly Cities. *GI_Forum Journal*, 2023/1,118-139. https://doi.org/10.1553/giscience2023_01_s118
- Zhou X, Li D, Larsen L (2016) Using Web-Based Participatory Mapping to Investigate Children’s Perceptions and the Spatial Distribution of Outdoor Play Places. *Environment and Behaviour* 48/7, 1–26. <https://doi.org/10.1177/0013916515571732>