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## The potential of making competences acquired through Citizen Science visible

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The following article reflects on the competences acquired in Citizen Science and their visibility. It is based on a workshop at the Austrian Citizen Science Conference in June 2022, where it was shown that the acquisition of competences in Citizen Science projects is rarely discussed at project level, neither in relation to citizen scientists nor for academic scientists. Concepts, tools and practices existing in the D-A-CH region to valorize competences acquired through Citizen Science were collected, opportunities and challenges were addressed. Recommendations formulated during the workshop conclude the article.

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\*Speaker

## 1. Introduction

“Citizen Science projects provide an added value to both the citizen scientists and the academic scientists” (Swiss Citizen Science Principle 3)<sup>1</sup>. But what does “added value” actually mean? Do participants in Citizen Science (CS) projects know what their benefits are? Do they know what and how many competences they acquire through their participation?

In Switzerland, there are various examples of how competences acquired in related fields, such as voluntary work or stays abroad, can be named and shown. In this article, we want to explore whether such approaches could also be transferred to the field of CS, to express appreciation to project participants for their contributions and to make acquired competences visible. What are the chances and challenges? What needs to be considered? Based on the workshop at the Austrian Citizen Science Conference in Dornbirn in June 2022, this article focuses on approaches and experiences within the D-A-CH region and summarizes them into recommendations.

## 2. What competences are acquired through Citizen Science?

Competence is defined as “the ability to combine knowledge and skills in such a way that [...] tasks can be performed independently, on one's own responsibility and in accordance with the requirements of the situation”.<sup>2</sup> German scientist and author John Erpenbeck divides competences into four main areas: Personal competence, social-communicative competence, activity and action competence, and technical and methodological competence.<sup>3</sup>

The workshop began with a brief reflection on past personal experiences with CS projects: Did these projects clearly communicate which competences were required for participation? Did participants receive documentation or confirmation for the competences acquired through their participation? A quick mood picture showed that only a few participants had such experiences.<sup>4</sup> Afterwards, workshop participants were asked: What competences does one acquire or promote through CS? The graphic below shows the competences collected and then clustered according to John Erpenbecks classification mentioned above. In blue are the competences named for academic scientists, in red the competences named for citizen scientists (multiple mentions are not shown in the graphic):

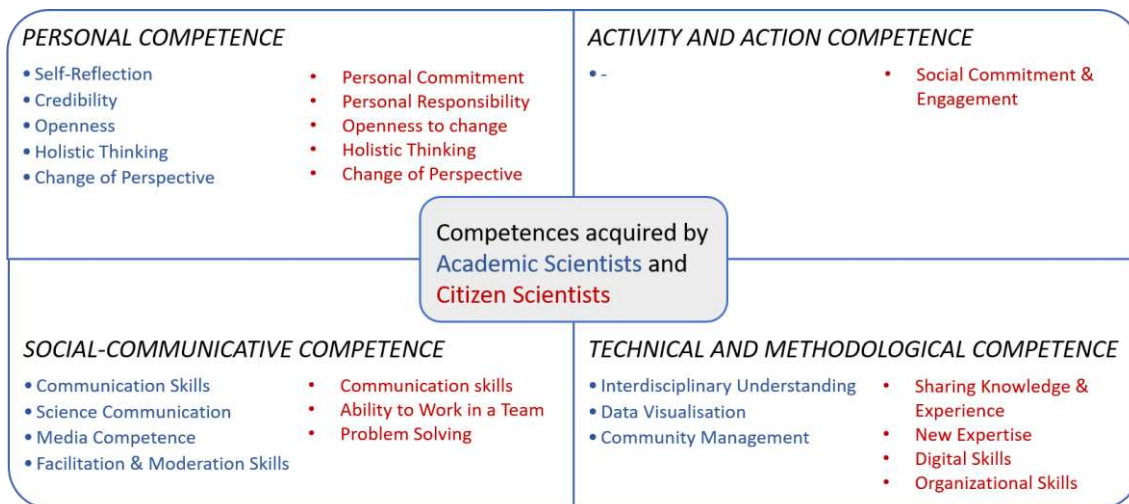
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<sup>1</sup>The Swiss Citizen Science Principles were developed in 2021/2022 in a participatory process to give common ground and orientation to all stakeholders in Switzerland.

<sup>2</sup> <https://www.kodekonzept.com/wissensressourcen/kompetenzen/> (29.9.2022)

<sup>3</sup> <https://www.kodekonzept.com/wissensressourcen/kode-kompetenzatlas/> (29.9.2022)

<sup>4</sup> Nearly 20 participants attended the workshop, some with a CS background at a more general, systematic and institutional level, and others with a background from specific CS projects.



Graphic: Visualization of collected competences, clustered in the four areas of competence according to John Erpenbeck

To name competences and not activities was a challenge. Therefore, it seems to be important to raise awareness that competence acquisition takes place in Citizen Science just as it does in volunteer work. The collection within the framework of the workshop gave a first overview and served as the basis for further discussions.

In three out of four areas of competence, participants named competences for citizen scientists as well as for academic scientists. Sometimes the same competence was mentioned for both groups, which indicates that they both acquire the same competences, especially when it comes to personal and social-communicative competences. For activity and action competence, surprisingly, only one competence was mentioned (for citizen scientists). For academic scientists, it is worthwhile to reflect not only on technical and methodological competences, but also on the other areas of competence, since it is precisely in these that much competence acquisition takes place.

### 3. How can acquired competences be made visible?

After the joint collection and discussion of the competences, attention moved to the question of how to make them visible. In this chapter, we will first introduce two exemplary approaches from the related fields of volunteer management and international youth exchange before opening up the field to current practice(s) in the D-A-CH region. Opportunities and challenges in proving competences will conclude this chapter.

### 3.1 Exemplary approaches from related fields

In the workshop, the following two exemplary approaches from related fields were introduced: The “Dossier freiwillig engagiert” by Benevol<sup>5</sup> and the self-reflection tool “Boostbox interkulturell” by Intermundo.<sup>6</sup>

The “Dossier freiwillig engagiert” is an offer for organizations that engage volunteers in their projects. Its goal is to recognize and value volunteerism so that acquired competences are taken seriously. The template allows the recording of activities, quantitative statements about the number of contributions or hours worked, as well as qualitative statements about the impact (what did the person contribute to, what skills did he or she acquire).

The “Boostbox interkulturell” is a self-reflection tool designed to help young people to articulate the competences they have acquired or strengthened during a stay abroad. Based on situation descriptions and various answer options, the competences and their respective expressions are specified by the tool. The results can be used for job interviews, among others.

### 3.2 Current practice in the D-A-CH region

When is it useful or appropriate to show acquired competences? What is the experience in the D-A-CH region? The following approaches were mentioned during the workshop in Dornbirn and show a variety of possibilities:

Methods:

- Self-reflection or self-declaration as part of a project debriefing
- Feedback loops during the project (to reflect and give feedback on competence acquisition)
- 360° feedback for assessing competences and performance from different perspectives<sup>7</sup>

Tools/ formats:

- Personalized, qualified job references with information on the nature and duration of the contribution, description and assessment of the participant's performance, skills and social competence in the context of the project may be appropriate<sup>8</sup>
- Confirmation of participation showing contributions (such as hours spent, number of entries etc.)
- "Passports" and stamp cards to visualize participation in multiple events
- The German Federal Association of Volunteer Agencies (BAGFA) has an online collection of examples of certificates of participation<sup>9</sup>

<sup>5</sup> Benevol is the umbrella organization of the regional offices for voluntary engagement in Switzerland. <http://www.dossier-freiwillig-engagiert.ch/de.html> (24.11.2022)

<sup>6</sup> Intermundo is the umbrella organization of non-profit youth exchange organizations in Switzerland. <https://www.intermundo.ch/schwerpunkte/boostbox/> The tool is currently offline due to an update (Status: 24.11.2022)

<sup>7</sup> Also called *multi-rater feedback*, is a method for assessing the competencies from different perspectives, such as employees, superiors, colleagues, team members etc.: [360 Grad Feedback zur effektiven Führungskräfteentwicklung \(360-grad-feedback.net\)](https://www.360-grad-feedback.net/)

<sup>8</sup> If an employment relationship exists, a qualified job reference is required by law (for Switzerland, see Art. 330a OR)

<sup>9</sup> <https://bagfa.de/wissenspool/nachweissammlung/> and [https://bagfa.de/wp-content/uploads/2021/09/B4\\_H2\\_B\\_NEZ\\_TeilnahmebescheinigungenFortbildungen.pdf](https://bagfa.de/wp-content/uploads/2021/09/B4_H2_B_NEZ_TeilnahmebescheinigungenFortbildungen.pdf) (24.11.2022)

### 3.3 Chances and challenges








What are the chances and challenges of certifying competences and what needs to be considered? The following aspects were gathered during the workshop: Certificates should ideally be specific and individualized (addressing the project, the participant's contributions, but also, for example, aspects valued by potential employers while avoiding irrelevant information). However, given that creating specific and individual certificates is time consuming and staff resources are often scarce in CS projects, a general confirmation of participation might be sufficient.

A certificate should always be target group oriented. In the best case, it is developed together in a debrief or group reflection. Doing so can help participants become aware of the competences they have gained or strengthened. Most importantly, however, it avoids reproducing an employer-employee logic.

Ideally, participants should be informed at the beginning of the project that their participation and/or the competencies acquired will be certified or can be certified upon request. Participants' competencies can also be strengthened with project-related workshops and training, for which they could then receive a certificate of attendance.

## 4. Recommendations

The following recommendations are drawn from the discussion above. They may not apply to all CS projects, but offer an overview of existing possibilities and can be used for further reflection.

	Depending on the type of contribution or activity (such as relevance of knowledge or overall contribution for the project), a personally prepared job reference is appropriate.
	<b>Attention: Do not artificially restore power imbalances through assessments, but rather develop a job reference together in a debriefing session.</b>
	Provide certificates for attended trainings such as introductions to project-relevant or project-specific tools, workshops, kick-off meetings etc.
	Expand existing certificates of participation to include more information on the type of activities or competences acquired.
	Include a skills development self-reflection in a final meeting at the end of your project or as part of the project evaluation.
	Get ideas from related fields that Citizen Science can draw inspiration from, such as volunteering or international youth exchange, and ask them for advice.
	Last but not least: Do not only think about citizen scientists but also about other contributors! Academic scientists also acquire competences other than research skills that can be certified.

These recommendations are especially aimed at project managers and community managers within CS projects. Since many in that role attend further training in volunteer management, we would like to encourage providers of training in volunteer management to take up the topic of competence development and certification in order to raise awareness.

## 5. Conclusion

It is important that citizen scientists and academic scientists can articulate which competences they have acquired and how this shows in their everyday and work life. Besides, the mention of voluntary activities can be of importance in job applications. For this reason, it is generally recommended to provide volunteers with proof of their contribution, the assumed responsibilities and further training attended.

Today, several organizations next to Benevol, such as the “Wegweiser Bürgergesellschaft” in Germany<sup>10</sup> and the “Freiwilligenpartnerschaft Tirol”<sup>11</sup> consider further training of volunteers as an important development opportunity and recommend to provide volunteers with a record of the time contributed, the type of contribution and training attended. The Swiss Citizen Science Principles<sup>12</sup> also recommend that activities or services should be documented and evaluated (Principle 8), that all contributions (financial contributions, volunteering etc.) should be made transparent (Principle 9) and that everybody’s contribution should be acknowledged appropriately (Principle 10). For these purposes, approaches from related fields can be transferred to the field of CS - with the following additional advantages: By keeping track of the participants and the contributions they make, one does not only have the necessary transparency and the means to evaluate a project properly, but also an indication of the project’s overall value. And if participants (citizen and academic scientists) are aware of what skills they have acquired and know how to articulate them, the overall value and impact of Citizen Science in general may increase as a result.

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## References

- [1] Aristeidou, M. & Herodotou, C. (2020). Online Citizen Science: A Systematic Review of Effects on Learning and Scientific Literacy. In: Citizen Science: Theory and Practice, 5(1), p.11. DOI: <http://doi.org/10.5334/cstp.224>
- [2] Bela, G. et al. (2016). Learning and the transformative potential of citizen science. In: Conservation Biology, 30(5), p.990. DOI: <https://doi.org/10.1111/cobi.12762>

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<sup>10</sup> <https://www.buergergesellschaft.de/praxishilfen/kampagnen-und-aktionen/engagement-in-aktion/wie-funktioniert-freiwilligenkoordination-und-management/was-bedeutet-freiwilligenmanagement> (29.9.2022)

<sup>11</sup> [Qualitätskriterien und Informationen | Freiwilligenzentren Tirol \(freiwilligenzentren-tirol.at\)](#) (29.11.2022)

<sup>12</sup> Swiss Citizen Science Principles, [https://www.schweizforscht.ch/images/Swiss\\_CS\\_Principles/220317\\_Swiss\\_CS\\_Principles\\_final\\_English\\_h.pdf](https://www.schweizforscht.ch/images/Swiss_CS_Principles/220317_Swiss_CS_Principles_final_English_h.pdf) (29.9.2022)

- [3] Edwards, R. et al. (2018). Learning and developing capital through citizen science. In: *Citizen Science: Innovation in Open Science, Society and Policy*, p. 381. London, UCL Press. DOI: <https://doi.org/10.14324/111.9781787352339>
- [4] Erpenbeck, J. & Heyse, V. (2022). <https://www.kodekonzept.com/wissensressourcen/kode-kompetenzatlas/> and <https://www.kodekonzept.com/wissensressourcen/kompetenzen/> (24.11.2022)
- [5] Freihardt, J. (2021). Transformatives Lernen und Lehren. In: *Draussen ist es anders. Auf neuen Wegen zu einer Wissenschaft für den Wandel*, p.165. München, oekom Verlag. DOI: <https://doi.org/10.14512/9783962388355>
- [6] Kloetzer, L. et al. (2021). Learning in Citizen Science. In: *The Science of Citizen Science*, p.283. Cham, Springer Verlag. DOI: [https://doi.org/10.1007/978-3-030-58278-4\\_15](https://doi.org/10.1007/978-3-030-58278-4_15)
- [7] Lorke, J. & Schmid-Loertzer, V. (2022). Wie wirkt eigentlich Citizen Science? Ein Blick in die Forschungsliteratur. Zenodo. <https://doi.org/10.5281/zenodo.6797923>
- [8] Reifenhäuser, O. & Reifenhäuser, C. (2013). *Praxishandbuch Freiwilligenmanagement*. Weinheim Basel, Beltz Juventa Verlag.
- [9] Swiss Citizen Science Principles Working Group (2022). *10 Swiss Citizen Science Principles*. Bern. [www.schweizforscht.ch](http://www.schweizforscht.ch) (24.11.2022)