



## Quick guide to citizen science with school students

### Citizen Science

When students are given the opportunity to become citizen scientists, the motivation to do so is generally skewed toward student education, the promotion of science, the raising of awareness regarding certain issues, and the learning of skills. Ideally, student citizen scientists should be involved from the start and participate throughout the scientific process from identification of research needs to communication of research findings. However, research outputs are often of secondary importance, even though young citizen scientists can contribute meaningfully to impactful research.

This guide briefly presents a case study and key recommendations of a citizen science project conducted with year 9 and 10 students from four Queensland public schools.

### Case Study: Maggot Menageries



Conflict-affected communities are often isolated and have limited access to healthcare. Most surviving casualties have limb wounds from injury or surgery, and many of these become infected which compromises healing. Maggot therapy is the treatment of wounds with living fly larvae to remove dead tissue, control infection, and promote wound healing. In 2020, MedMagLabs ([www.medmaglabs.com](http://www.medmaglabs.com)) and the Queensland Virtual STEM Academy partnered to engage high school students in a citizen science program to co-develop medicinal maggot production technology, test related methodologies, and develop instructional manuals. Grade 9 and 10 students performed the role of surrogate conflict-affected communities because MedMagLabs had no direct access to these communities. Four teams from Queensland public high schools designed and built fly- and maggot cages and laboratory equipment with commonly available resources. At the same time, students tested and evaluated production methodologies and visual user manuals developed by the MedMagLabs research team. A case study of this citizen science collaboration has been published and can be [accessed free of charge](#).

Stadler, F., Arjona, T., Beaumont, G., et al., 2021. Maggot Menageries: High School Student Contributions to Medicinal Maggot Production in Compromised Healthcare Settings. *Citizen Science: Theory and Practice*, 6(1), p.36. DOI: <http://doi.org/10.5334/cstp.401>



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### Recommendations

**1**

To maximise research collaboration, there must be direct lines of communication between the professional researchers and the student citizen scientists. This may require researchers to obtain education department clearance to work with children prior to commencing the research.

**2**

Communications IT such as virtual meeting software needs to be compatible with the IT systems used by collaborators and accessible across the entire research team.

**3**

Student citizen scientists must have enough time to conduct the research and keep detailed records. This will require negotiation with teachers, parents, and students. Researchers need to consider the competing demands on students and adjust their objectives accordingly while students must be prepared to invest additional homework time.

**4**

Researchers should collaborate closely with teachers to prepare information material and research-related tasks for students using instructional language and formatting in line with the school curriculum. This will ensure familiarity and minimise confusion.

**5**

Research that requires students to care for live invertebrate animals must be considered with great care. Even though in most jurisdictions, such as Australia, ethics protocols and approvals are not necessary for research with invertebrate animals, their welfare must be protected, and safeguards must be put in place to minimise animal distress and unnecessarily high mortality.