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OPEN ASIA
UNIFYING SCIENCE, EMPOWERING INNOVATION

VU VRIJE UNIVERSITEIT AMSTERDAM

Survey on citizen science practice

MS 8 WP 3

Project Acronym:	**OPEN ASIA**
Project No:	101128493
WP / Deliverable/ Action:	WP3/MS 8 – Survey on citizen science practice P3-VU/NL
Project partner (s)	P3 -VU/NL
Place/ Date	**March 2025, VU University, The Netherlands**

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Survey on citizen science practice

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Content

1. Introduction

Citizen science and community-based participatory research (CBPR) have gained significant traction in higher education as effective approaches for fostering collaboration between academic institutions and society. These methodologies encourage active participation from the public and various stakeholders in the research process, contributing to knowledge co-creation, problem-solving, and increased societal impact. Universities worldwide are increasingly incorporating these practices to enhance engagement, knowledge exchange, and research inclusivity. Despite the growing emphasis on citizen science and CBPR, there remains a gap in understanding the level of knowledge and awareness among staff and students in higher education institutions regarding these concepts.

In the Open Asia project we aim to stimulate citizen science and CBPR activities. Therefore it is important to gain insight into the knowledge staff of higher education has on citizen science and CBPR and how staff compare their activities in this field to universities that have this in place (as the VU university, Amsterdam) and among other universities in this project. The universities that participate int his project are University Malaya Univeristy of Sarawak, Malaysia, University Malaysia Sabah, in Malaysia and Thapar Institute of Engineering and Technology (TIET), Narsee Monjee Institute of Management Studies (NMIMS) in India. This study aims to:

1. Assess the knowledge and awareness of citizen science and CBPR among university staff and students.
2. Examine the citizen science and CBPR activities conducted by universities within the OpenAsia project.
3. Compare these activities with those implemented at VU University and other partner institutions to identify best practices, challenges, and opportunities for improvement.

By evaluating both knowledge levels and practical applications, this research provides valuable insights into how universities engage with citizen science and CBPR. The comparative aspect will help institutions within the Open Asia identify strengths, gaps, and potential strategies for enhancing their public engagement efforts. Ultimately, the findings will contribute to fostering more inclusive, impactful, and collaborative research practices within higher education.

The study is structured into two sections. Following this introduction. The methodology section will detail the research design, data collection, and analysis techniques. The results and discussion section will present the findings and comparative analysis, followed by the conclusion and recommendations for future research and institutional strategies.

2. Methodology

This study consists of two sub- studies. The first is an in-depth comparison of public engagement activities. Each participating university of the Open Asia project is required to compare its public engagement initiatives with those conducted at VU University, The Netherlands and with the activities of one of the other partner institutions within the Open Asia project; University Malaya Univeristy of Sarawak, Malaysia, University Malaysia Sabah, in Malaysia and Thapar Institute of Engineering and Technology (TIET), Narsee Monjee Institute of Management Studies (NMIMS) in India. Secondly a questionnaire is conducted withen India and Asia among Higher education Insitutes to gain insight into their knowledge on Citizen Science and Community Based Participatory Research.

2.1 Research Design for the comparative research design

This study employs a comparative qualitative research design, utilizing a structured questionnaire to facilitate an in-depth comparison of public engagement activities. Each participating university is required to compare its public engagement initiatives with those conducted at VU University and with the activities of one of the other partner institutions within the Open Asia project. This comparative approach allows for a deeper understanding of best practices, challenges, and institutional strategies.

Sampling Method

All universities of the Open Asia project participated in this study; University Malaya Univeristy of Sarawak, Malaysia, University Malaysia Sabah, in Malaysia and Thapar Institute of Engineering and Technology (TIET), Narsee Monjee Institute of Management Studies (NMIMS) in India.

Questionnaire Development

The questionnaire was designed to guide universities in systematically comparing their public engagement efforts. It consists of open-ended and structured questions organized into key themes:

- Description of the university's public engagement activities
- Comparison with VU University's engagement strategies
- Comparison with one other partner university's engagement efforts
- Identification of similarities, differences, and unique approaches
- Lessons learned and areas for improvement The questions were developed to encourage critical reflection and detailed responses, ensuring that meaningful comparisons could be made.

Data Collection

The questionnaire was distributed electronically to designated representatives at each participating university. Respondents were encouraged to engage with relevant colleagues and institutional reports to ensure a

comprehensive response. Follow-up meetings and clarification sessions were conducted as needed to enhance data quality.

Pilot Testing

A pilot test was conducted with a small number of universities to assess the clarity and applicability of the questionnaire. Based on the feedback received, minor refinements were made to improve question wording and structure, ensuring ease of use and consistency in responses.

Ethical Considerations

Participation was part of the Open Asia project

Conclusion

This methodology provides a structured approach to comparing public engagement activities across universities. By examining similarities and differences with VU University and another partner institution, the study contributes to a broader understanding of effective engagement practices and potential areas for collaboration and improvement within the Open Asia project.

2.2 Research design for the Quantitative survey on Citizen Science and participatory research

This study employs a quantitative research design, utilizing a structured survey to collect data on citizen science and public engagement activities conducted by universities in India and Malaysia. This survey is part of the OPEN-ASIA project, an initiative aimed at supporting the digital economy and connectivity in India and Malaysia. This survey seeks to gather insights into Citizen Science (CS) and Community-Based Participatory Research (CBPR) practices, including public engagement activities within higher education in India and Malaysia. The survey consists of both closed-ended and open-ended questions to ensure a comprehensive understanding of the respondents' perspectives.

Sampling Method

A stratified random sampling technique was used to select participants, ensuring representation from universities across different regions in India and Malaysia. The target population includes staff members of higher education institutes, eg. faculty members, researchers, administrators and students involved in citizen science and public engagement initiatives.

Survey Development

The survey was developed based on a thorough review of relevant literature on citizen science and public engagement. It was divided into sections covering demographic information, types of citizen science activities, levels of public engagement, challenges faced, and perceived impact. The questions were designed to be clear, concise, and unbiased to ensure accurate responses and covered topics on familiarity with both citizen science and Community based Particpatory research. Multiple-choice and open-ended questions were included to capture qualitative insights. The survey is presented in appendix 1.

Data Collection

The survey was developed in MS Forms and distributed through online platforms (LinkedIn and social media) and university networks, ensuring accessibility for respondents. Participants were provided with an informed

consent statement, outlining the purpose of the study, confidentiality measures, and their right to withdraw at any time. Follow-up reminders were sent to increase response rates.

Data analysis

Data are presented as received from the partners. The partners collected and integrated the institutional data on their own knowledge and expertise. The data are complied and integrated in this report.

Pilot Testing

Before the final distribution, a pilot test was conducted with colleagues of the project team of Open Asia from both India and Malaysia to assess the clarity, reliability, and validity of the survey. Based on the feedback received, minor modifications were made to enhance the quality of the instrument.

Data Analysis

Quantitative data will be analyzed using Excel, and the analysis generated from MS forms. Also the open-ended responses will analyzed.

Ethical Considerations

Participation was voluntary, participants could skip any question, and could stop taking the survey at any time without any consequences. All responses were kept anonymous to maintain confidentiality. Respondents were informed about the purpose of the study, and their consent was obtained before participation.

Limitations

Potential limitations of this study include self-report bias, sample representativeness, and the constraints of a survey-based approach, which may not capture deeper contextual insights. Efforts were made to mitigate these limitations by ensuring a diverse sample and complementing quantitative findings with qualitative responses where applicable.

Conclusion

This methodology ensures a systematic approach to data collection and analysis, providing reliable and valid insights into the citizen science and public engagement activities conducted by universities in India and Malaysia. The findings from the survey will contribute to a better understanding of the current landscape and inform future policy and practice in these regions.

3. Comparison of Open Science activities.

In this section the results are shown for the comparison of the Open Science activities. All institutes compared their activities to activities conducted in the Netherlands and they compared it with one other partner. First data of Malaysia are presented followed by the data of the Indian universities.

3.1 University Malaya

A. The community engagement activities within our universtity has the **following similarities** to the Community Service Learning activities within the VU University

The Community Engagement initiatives at UM and Community Service Learning at VU share common principles:

1. Student-centered learning with societal impact.
2. Strong collaboration with external partners.
3. Integration with academic courses and research.
4. Commitment to sustainable development and social equity.
5. Help students develop critical thinking, problem-solving, leadership, and teamwork skills while fostering a sense of social responsibility

B. The community engagement activities within our universtity has the **following differences** to the Community Service Learning activities within the VU University:….

Aspect	Universiti Malaya	The VU
Science Shop Model	No formal Science Shop, but UMCares serves a similar role	Established Science Shop with structured operations
Community Engagement	Focus on Malaysian communities & national development.	Strong connection with NGOs, international issues
Student Involvement	1. Through internships & projects, less structured. 2. Students from the same faculty/courses.	1. Integrated into coursework, problem-based learning. 2. Interdisciplinary students.
Funding Sources	Government, CSR, university grants	EU funding, Dutch government, university

Impact	Local & ASEAN-focused	International collaborations, global outlook

C. These are the lessons learnt / inspirations drawn from these comparisons

a. UM is more focused on community-based research within Malaysia, integrating projects through its UMCares and outreach programs.

b. VU Amsterdam follows the European Science Shop model, emphasizing co-creation, student-led projects, and interdisciplinary research.

c. Encouraging more interdisciplinary projects in UM.

d. UM can expand its partnerships beyond Malaysia and ASEAN by seeking international collaborations, research funding, and exchange programs to scale up its global impact.

e. UM can consider establishing a more structured Community Service Learning (CSL) framework, making community-based projects a core part of coursework rather than just extracurricular activities.

D. Based on the learning we aim to make the following changes in our citizen / science shop practices in our university. ….

a. Develop collaboration between the university, public & private organization, NGOs and the society
b. Establish the Science Shop hub in the university, previously in 2000 quite a similar concept of Science Shop was set up in UM under the Danish fund, DANIDA
c. Conduct awareness program to the campus community and the society
d. Develop promotion strategies and engagement activities to make the Science hub platform vibrant.
e. Provide incentives to the collaborators.
f. Develop a structured impact assessment framework to track community projects over time, ensuring they lead to sustainable development rather than short-term interventions.

2. **Comparison between your university and one of the partner universities (UNIMAS):**

A. The community engagement activities within our university has the **following similarities** to the community engagement activities within the UNIMAS…

UM and UNIMAS share a strong commitment to community engagement, focusing on:

a. Research-driven solutions for societal challenges
b. Empowerment of marginalized communities

c. Student involvement in service learning
d. Sustainability and environmental conservation
d. Collaborations with government, NGOs, and industry

B. The community engagement activities within our universtity has **the following differences** to the community engagement activities within partner… (UNIMAS):….

a. UM focuses more on urban and national-scale projects and UNIMAS specializes in rural and indigenous community development.

b. UM emphasizes research-driven, industry-linked engagement, while UNIMAS prioritizes indigenous knowledge and rural development research.

c. UM's sustainability focus is on urban environmental challenges, while UNIMAS specializes in biodiversity conservation and rural ecological sustainability.

C. These are the lessons learnt / inspirations drawn from these comparisons

a. Universities should customize their engagement strategies based on community needs, whether urban, rural, or indigenous.
b. Universities should recognize traditional knowledge as a valuable resource alongside scientific innovation.
c. Cross-university exchange programs could create well-rounded graduates who understand both urban and rural community needs.
d. Joint programs, knowledge exchange, and shared research projects can help both universities expand their reach and strengthen Malaysia's community engagement efforts.

D. Based on the learning we aim to make the following changes in our citizen / science shop practices in our university.

a. Empowers communities to actively participate in research
b. Strengthens collaboration between researchers and local stakeholders
c. Increases real-world impact of university-led studies
d. Brings more funding, expertise, and resources into community research
e. Builds trust and long-term relationships with community partners.
f. Enhances students' leadership, research, and social responsibility.

Encourages open innovation and wider public

3.2 Univeristy of Sarawak, Malaysia

1. Comparison between your institution and VU Amsterdam
    a. The community engagement activities within our university has the following similarities to the Community Service Learning activities within the VU University.

Universiti Malaysia Sarawak abides by the Service Learning Malaysia-University for Society (SULAM). The SULAM initiative was introduced by the Ministry of Higher Education Malaysia to promote experiential learning through community engagement. Notably, both SULAM and Community Service Learning (CSL) at VU Amsterdam share common principles and objectives in their approach to community engagement. Some key similarities include:

- Integration of community service with academic coursework, allowing students to apply theoretical knowledge to real-world issues while addressing community needs.
- Emphasis on experiential learning and skill development to equip students with problem-solving, teamwork, leadership, and critical thinking skills
- Collaborations with NGOs, local government, businesses, and other stakeholders
- Encouraging civic engagement and social responsibility to produce graduates who are socially conscious and actively contribute to their communities
- Encourage interdisciplinary and multidisciplinary approach that allows students from various academic backgrounds to work together

    b. The community engagement activities within our university has the following differences to the Community Service Learning activities within the partner institutes.

While Service Learning Malaysia-University for Society (SULAM) and Community Service Learning (CSL) at VU Amsterdam share common objectives, they also differ in several aspects, particularly in their framework, implementation, and contextual focus:

- SULAM is a national-driven initiative under the Ministry of Higher Education Malaysia, while CSL is a university-led initiative developed as a part of VU's educational vision.
- SULAM is mandatory in some university courses to ensure structured, credit-bearing community service projects where assignments and reflections are assessed as part of coursework. CSL is more flexible and is a form of voluntary participation, placing emphasis on interdisciplinary collaboration and real-world stakeholder engagement to create sustainable solutions.
- SULAM primarily addresses local community issues, such as rural development, poverty, education, and environmental sustainability , while CSL focuses on both local Dutch communities and international challenges placing emphasis on global and European policy issues such as climate change, migration, and digital transformation.
- SULAM's collaboration structure is more government-driven partnerships with local authorities, NGOs and community groups, while CSL is more diverse

partnership structure, including European policymakers, international NGOs, and multinational corporations. Students in SULAM work more on direct service activities while students in CSL work on policy recommendations, research projects, and innovative solutions.

- The SULAM courses are short-term and semester-based projects that fit within a university course, focusing on solving immediate community challenges rather than long-term systemic challenges. The CSL courses are longer-term projects that span multiple semesters or years, encouraging sustained engagement with communities and creating projects with measurable long-term impact.

c. These are the lessons learn / inspirations drawn from these comparisons.

The comparisons between SULAM and CSL offer several key lessons and inspirations that can help universities improve their community engagement and service-learning programmes:

i) The importance of strong institutional support and policy alignment to ensure sustainability and effectiveness in service-learning programmes. This is exemplified from SULAM's benefits from national policy alignment (Malaysia Education Blueprint 2015-2025) to ensure widespread adoption while CSL at VU Amsterdam thrives from university-led flexibility that allows for more innovative and interdisciplinary approaches.

ii) The need to balance local and global community engagement to equip students with long-term problem-solving skills through multi-tiered engagement models. This is drawn from SULAM's focus on nation-building and localised community development, but lack of global focus, while the CSL at VU Amsterdam engages students in both Dutch and international societal issues to foster global citizenship.

iii) Service-learning should be flexible and encourage interdisciplinary collaboration to maximize student learning and social impact. CSL at VU Amsterdam is seen to incorporate students from various disciplines to allow diverse perspectives and knowledge sharing on complex societal issues. Whereas SULAM, while more structures, is discipline-specific, focusing on relevance to students' academic backgrounds.

iv) There should be sustained community partnerships that lead to long-term impact rather than short-term interventions. As seen in CSL at VU Amsterdam, the university fosters long-term projects with external organizations that lead to policy recommendations and sustainable solutions. SULAM, on the other hand, focuses on short-term, semester-based engagements which may limit long-term sustainability.

v) Universities should broaden their network of partners to provide students exposure to both grassroot and high-level engagements. This is to ensure effective community engagement through collaboration with NGOs, business, and policymakers to maximise impact. Drawing from CSL at VU Amsterdam, the university partners with policymakers, social enterprises and international NGOs, exposing students to diverse stakeholders while SULAM emphasises

government partnerships and local community projects, ensuring alignment with national goals.

vi) Universities should position service-learning as a career development tool to create workplace ready graduates. Both SULAM and CSL develop problem-solving, teamwork, communication and leadership skills to increase the employability of graduates. However, CSL students goes further by engaging with international organisations to gain a competitive edge in the global job market.

d. Based on the learning we aim to make the following changes in our citizen/science shop practices in our university.

Drawing from the comparisons between SULAm and CSL, we aim to enhance our Citizen/Science Shop practices by implementing the following changes to improve sustainability, impact, and student learning outcomes:

i) Strengthening institutional support and policy alignment by developing a university-wide framework that aligns with national and global service-learning best practices. As the current service-learning initiatives are more faculty-driven with limited institutional-level policies that ensure long-term sustainability, researchers should advocate for policy integration into the university's strategic plan to institutionalise service-learning as a core academic component.

ii) Expanding beyond local engagements by introducing international collaboration opportunities, such as joint service-learning projects with global universities and NGOS. Currently, UNIMAS's service-learning programmes focus on local issues, limiting students' exposure to global challenges. Through joint service-learning, the university can encourage students to apply local solutions to global contexts, fostering adaptability and global citizenship.

2. Comparison between your university and one of the partner universities:
   a. The community engagement activities within our university has the **following similarities** to the community engagement activities within the… (please fill in the name of the university which you take up in your comparison):

A comparison between Service-Learning Malaysia – University for Society (SULAM) at UNIMAS and Community Service Learning (CSL) at VU Amsterdam reveals several key similarities in their approaches to community engagement:

1. Integration of Service-Learning into Academic Curriculum
   - Both SULAM at UNIMAS and CSL at VU Amsterdam embed community service-learning into formal academic courses.
   - Students apply theoretical knowledge to real-world problems, ensuring a practical, hands-on learning experience.
2. Emphasis on Social Impact and Sustainable Development Goals (SDGs)
   - Both universities design community projects aligned with sustainable development, education, and societal well-being.

- SULAM at UNIMAS focuses on local nation-building efforts, while CSL at VU Amsterdam integrates local and global sustainability goals.

3. Collaboration with Local Communities and External Stakeholders
   - SULAM at UNIMAS and CSL at VU Amsterdam engage with NGOs, government agencies, and businesses to co-develop impactful projects.
   - Partnerships are essential in ensuring real-world impact and sustainability of the initiatives.
4. Student-Centered Learning and Leadership Development
   - Both programs encourage students to take an active role in designing and implementing projects that address community needs.
   - Through community engagement, students develop leadership, communication, and critical thinking skills, which enhance their employability.
5. Reflection as a Core Component of Learning
   - Both SULAM and CSL integrate structured reflection processes, such as journals, presentations, and group discussions.
   - Reflection ensures that students connect their service-learning experiences with academic knowledge and personal growth.

These similarities demonstrate a shared commitment by both universities to using community engagement as a transformative learning tool, fostering social responsibility, experiential learning, and real-world problem-solving.

b. The community engagement activities within our university has **the following differences** to the community engagement activities within partner… (please fill in the name of the university which you take up in your comparison):

While both SULAM at UNIMAS and Community Service Learning (CSL) at VU Amsterdam share a common goal of integrating service-learning into education, there are key differences in their approaches to community engagement:

1. Institutional Structure and Policy Alignment
   - SULAM at UNIMAS is strongly aligned with Malaysia's national education policy (Malaysia Education Blueprint 2015–2025), ensuring a structured, nationwide implementation.
   - CSL at VU Amsterdam is university-led and decentralized, allowing for greater flexibility and innovation in service-learning program design.
2. Scope of Community Engagement (Local vs. Global Focus)
   - SULAM at UNIMAS primarily focuses on nation-building and localized community development, addressing rural development, education, and socio-economic empowerment in Malaysia.
   - CSL at VU Amsterdam engages students in both local Dutch communities and international service-learning projects, fostering a broader global citizenship perspective.
3. Interdisciplinary and Cross-Faculty Collaboration

- SULAM at UNIMAS is typically discipline-specific, where students engage in community service projects relevant to their academic backgrounds.
- CSL at VU Amsterdam encourages interdisciplinary collaboration, where students from various faculties work together to tackle complex societal issues.

4. Project Duration and Sustainability
   - SULAM at UNIMAS is often semester-based, meaning projects are designed to be short-term interventions, with new cohorts of students engaging in different projects each term.
   - CSL at VU Amsterdam fosters long-term partnerships with external organizations, where students work on projects that contribute to policy recommendations and sustainable impact over multiple years.
5. Types of Partnerships and Stakeholder Engagement
   - SULAM at UNIMAS primarily collaborates with government agencies, local communities, and small NGOs, ensuring alignment with national goals.
   - CSL at VU Amsterdam partners with a wider range of stakeholders, including social enterprises, international NGOs, and policymakers, giving students exposure to both grassroots and high-level engagements.
6. Reflection and Learning Approach
   - SULAM at UNIMAS incorporates structured reporting and presentations to assess student learning and impact.
   - CSL at VU Amsterdam employs more creative reflection methods, such as blogs, storytelling, and interactive discussions, allowing for personalized and deeper student engagement.

These differences highlight how cultural, institutional, and policy factors influence service-learning approaches. While SULAM at UNIMAS is nationally structured and focused on local community development, CSL at VU Amsterdam offers greater flexibility, interdisciplinary collaboration, and a global outlook. By learning from each other, both universities can further enhance the effectiveness and sustainability of their service-learning initiatives.

c. These are the lessons learnt/inspirations drawn from these comparisons

The comparisons offer several key lessons and inspirations that can help universities improve their community engagement and service-learning programs:

i) The need for a balance between structured policy alignment and flexibility as universities should find a balance between institutionalised policies and flexibility. This allows for both structured national support and room for creative service-learning models. This is seen from how SULAM benefits from Malaysia's national policy alignment for nationwide implementation and consistency while CSL at VU Amsterdam, despite thriving on university-led flexibility, lacks nationwide standardisation.

ii) Universities should incorporate global elements into service-learning projects to equip students with the skills to apply international best practices to local challenges

and vice versa. This is seen from the comparison between SULAM and CSL whereby SULAM focuses on local community-building efforts while CSL draws from a broader perspective, integrating both local and international community service to help students develop a global perspective on societal issues.

iii) Study plans and courses should introduce interdisciplinary service-learning to encourage students to collaborate across faculties and provide multi-dimensional, holistic solutions to community problems. SULAM in Malaysia follows a discipline-specific approach while CSL at VU Amsterdam fosters interdisciplinary collaboration where students from various fields work together to address complex societal issues.

iv) Universities in Malaysia should transition from one-off, short-term projects to long-term partnerships with communities, where new student cohorts build on past work for sustained impact, as SULAM's service-learning projects are often semester-based while CSL builds long-term community partnerships.

v) Based on the comparisons, universities in Malaysia should broaden their networks by engaging social enterprises, private sector organisations, and international NGOs to provide students with opportunities to work with a diverse set of stakeholders (i.e., CSL partners with NGOs, businesses, policymakers, and international organisations while SULAM partners with government agencies and local communities).

vi) Malaysian universities can exemplify CSL by positioning service-learning as a career development pathway through the integration of internships, mentorships, and real-world problem-solving opportunities into community engagement projects, thereby enhancing students' competitiveness in the job market.

d. Based on the learning we aim to make the following changes in our citizen/science shop practices in our university

From these comparisons, there is a need to enhance the Citizen/Science Shop practices to maximise community impact, interdisciplinary collaboration and long-term sustainability. This can be done through:

i) The introduction of more adaptable and student-driven approach to community projects that allow inter-disciplinary and creative problem-solving beyond rigid course structures while encouraging students to co-design projects with communities to ensure locally relevant and context-sensitive solutions.

ii) To overcome faculty-specific community engagement practices, the university could establish interdisciplinary service-learning projects where students from different faculties work together, allowing for holistic problem-solving.

iii) The introduction of international collaborations and virtual service-learning programmes, allowing students to engage with global communities and international organisations. This can be conducted through exchange programmes with universities like VU Amsterdam where students can work on global social challenges while applying local knowledge.

iv) Transitioning from short-term to long-term sustainable community partnerships as many community projects in UNIMAS are currently semester-based, the university may develop a multi-year engagement model where different student cohorts continue working on long-term, evolving community projects. This could also

strengthen partnerships with local NGOs, businesses, and government agencies to ensure continuity and sustainability of community initiatives.

v) Diversifying partnerships with various sectors for greater impact through the expansion of collaboration with private companies, social enterprises, international NGOs, policymakers, and industry leaders to bring diverse perspective, resources and policy-driven and scalable community solutions.

vi) Positioning Service-Learning as a career development pathway by establishing internship and mentorship programmes within the Science Shop. Students would utilise the model to work with real-world professionals and community leaders. This also encourages students to create a service-learning portfolio system to allow students to document their experiences and use them as evidence of practical skills when applying for jobs.

Overall remark:

A. What do you like about the Community Service Learning of the VU?

VU's CSL promotes flexibility, interdisciplinary collaboration, and global engagement, making it innovative and impactful.

B. What do you like about the public engagement activities of the partner?

The partner's public engagement activities foster long-term community partnerships, involve diverse stakeholders, and integrate policy-driven solutions. It also foster students that are adaptable and aware of global societal issues.

C. What do you like about the public engagement activities conducted within your university?

UNIMAS' public engagement activities are well-structured, aligned with national policies, and contribute to local community development.

D. What are the lessons learning or inspirations that you would want to apply in your context to improve citizen science / science shop practice?

Some of the lessons learnt/inspirations that we would want to apply to improve citizen science / science shop practices in UNIMAS include:

a) Encourage interdisciplinary collaboration
b) Expand engagement from local to global contexts
c) Strengthen long-term partnerships
d) Diversify stakeholder involvement
e) Enhance reflection and impact assessment methods

3.3 University Malaysia Sabah

COMPARISON BETWEEN UNIVERSITI MALAYSIA SABAH (UMS) AND VU AMSTERDAM

The community engagement activities within UMS has the **following similarities** to the Community Service Learning activities within the VU University:

- **Curriculum integration:** Both UMS and VU embed community engagement directly into their academic curricula. For example, PuPUK UMS is a compulsory module in the medical and nursing programs, similar to how VU incorporates CSL into interdisciplinary master electives.
- **Stakeholder collaboration:** UMS and VU emphasize co-creation with external stakeholders. Rakan Akuakultur and PuPUK work closely with government bodies, NGOs, and local communities, just as VU's CSL fosters collaboration between students, academic staff, and societal actors through projects defined in cooperation with communities.
- **Interdisciplinarity:** Both institutions integrate various faculties and academic disciplines into community engagement. UMS involves faculties like science, business, psychology, and medicine, while VU's CSL includes interdisciplinary master electives and collaborative problem-solving across diverse fields.
- **Reflection and impact:** At both universities, there is an emphasis on reflection, evaluation, and impact — UMS assesses student competencies and community outcomes; VU encourages students to reflect on their role in society and their learning process.

The community engagement activities within UMS has the **following differences** to the Community Service Learning activities within the VU:

- **Duration and immersion:** ums programs such as PuPUK span over five years with long-term family engagement. VU CSL projects, in contrast, are typically shorter-term, course-based engagements tied to elective modules.
- **Institutional anchoring:** UMS's initiatives like Rakan Akuakultur and PuPUK are long-established, large-scale, and recognized nationally (e.g., HICoE status), whereas VU's CSL activities are structured within the Aurora framework and emphasize modular learning experiences.
- **Geographic focus:** UMS focuses on rural and underserved populations, such as those in Kudat or Sabah's aquaculture villages. VU's CSL projects tend to be more **urban-centric** and framed within European civic engagement contexts.
- **Framing and branding:** VU uses a strong theoretical framework (like the Aurora Toolbox) and consistent branding around "Community Service Learning" and "citizen science," whereas UMS uses various localized program titles (e.g., PuPUK, Rakan Akuakultur) without consistent branding under a single CSL or Citizen Science identity.

These are the lessons learnt / inspirations drawn from these comparisons:

- **Modular & scalable design:** ums can explore offering shorter CSL modules within various programs (especially non-health sciences) to complement long-term engagements and scale participation across faculties.
- **Structured reflection tools:** Inspired by VU's use of learning goals, rubrics, and self-assessment forms (e.g., via the Aurora SL Toolbox), UMS could introduce more structured and standardized reflection and assessment tools for student learning and community feedback.
- **CSL identity and visibility:** VU's emphasis on branding and visibility of CSL could inspire UMS to develop a unified CSL or citizen science identity, aiding institutional recognition and international collaboration.
- **Public event integration:** VU's integration of public events into student learning provides a model for UMS to enhance visibility, outreach, and impact of student-led community activities (e.g., public forums, exhibitions, seminars co-led by students and community members).

Based on the learning, we aim to make the following changes in our citizen / science shop practices in our university:

- **Develop a central framework for csl:** Consolidate existing community engagement projects under a University-wide Community Service Learning or Citizen Science framework, inspired by the Aurora model.
- **Introduce modular csl electives:** Design interdisciplinary CSL electives that allow students outside traditional engagement-heavy programs (like medicine or marine sciences) to participate in shorter, impactful community projects.
- **Create reflective and co-creation toolkits:** Adopt or adapt tools from VU's Aurora SL Toolbox to support co-creation with communities, structured student reflection, and impact evaluation.
- **Strengthen public event integration:** Formalize public engagement events as part of student assessment and community dissemination, such as community-led poster presentations, community hackathons, or mini-symposia.
- **Increase visibility and partnerships:** Position UMS as a regional leader in citizen science and CSL in Southeast Asia, leveraging its strength in long-term, rural-based programs to develop new international partnerships, especially within the Aurora or Global South-CSL networks.

COMPARISON BETWEEN UNIVERSITI MALAYSIA SABAH (UMS) AND UNIVERSITY OF MALAYA:

The community engagement activities within our universtity has the **following similarities** to the community engagement activities within the University of Malaya:

- **Integration into curriculum**: Both UMS (e.g. PuPUK and Rakan Akuakultur) and UM (via SULAM and UMCares) integrate community engagement into academic programs as core or elective components.
- **Stakeholder engagement**: In both universities, activities are co-designed with stakeholders (e.g. local communities, NGOs, local government).
- **Focus on real-world impact**: Both emphasize addressing real community needs – UM via social innovation and UMS through living laboratory initiatives in health and aquaculture.
- **Multidisciplinary involvement**: Community engagement spans across faculties (e.g. Health Sciences, Business, Social Sciences).
- **Student-centered learning**: Students at both institutions take on active roles through fieldwork, data collection, and interventions.
- **Government and institutional support**: Both receive institutional backing and national funding, including from the Ministry of Higher Education.

The community engagement activities within our universtity has **the following differences** to the community engagement activities within University of Malaya:

- **Living Laboratory focus**: UMS explicitly anchors its engagement in the "Living Lab" concept (e.g. Rakan Akuakultur as a recognized Living Lab), whereas UM focuses more on structured volunteerism and civic responsibility through UMCares and SULAM.
- **Longitudinal student engagement**: PuPUK at UMS uniquely integrates long-term engagement (over five years with foster families), while UM's engagements are often semester-based.
- **Geographical context**: UMS focuses on rural and remote communities (e.g., Kudat), addressing logistical and healthcare access issues, whereas UM often works in more urban or peri-urban contexts.
- **Citizen Science trajectory**: UMS is explicitly working toward incorporating open science and citizen science elements, while UM's frameworks (though community-based) are less focused on participatory research and open data culture at present.

These are the lessons learnt / inspirations drawn from these comparisons:

- **Value of structured centres**: UM's centralized coordination through UMCares and SULAM provides a model for institutionalizing community service learning.
- **Scalability through short modules**: UM's short-term, modular engagements (via electives and SULAM) offer models for scaling and diversifying outreach activities in UMS.
- **Digital presence and visibility**: UM's websites and digital platforms serve as effective tools for outreach and recognition—an area UMS could strengthen for greater visibility.
- **Assessment frameworks**: UM uses clear indicators for student and community impact assessment, suggesting potential frameworks that UMS can adapt for PuPUK and Rakan Akuakultur.
- **Public event integration**: Aurora-VU's integration of public events into student courses offers a replicable model for increasing public engagement in academic delivery.

Based on the learning, we aim to make the following changes in our citizen / science shop practices in our university:

- **Establish a centralized coordination hub** (similar to UMCares) for citizen science and public engagement activities across faculties to facilitate strategic alignment.
- **Develop short-term elective-based modules** inspired by SULAM and Aurora-VU to complement long-term programs like PuPUK.
- **Increase public visibility and digital presence** of UMS's engagement projects through dedicated websites, media outreach, and open data repositories.
- **Incorporate community-led public events** and exhibitions within student programs, co-designed with community partners, inspired by the Aurora-VU model.
- **Formalize assessment tools** for evaluating student competencies and community outcomes to inform continuous improvement and institutional learning.
- **Pilot open science practices** such as community-accessible data dashboards or storytelling platforms to enhance transparency, engagement, and knowledge transfer.

OVERALL REMARK

What do you like about the Community Service Learning of the VU?

- What we find most inspiring about VU's Community Service Learning approach is its deep commitment to co-creation—where students, teachers, and community stakeholders collaboratively shape the learning and problem-solving process. This shared ownership not only empowers communities but also cultivates critical thinking and real-world problem-solving skills in students.
- We also appreciate how public events are seamlessly integrated into the learning experience, making the university's engagement with society more visible, participatory, and impactful. It reflects a strong culture of learning through doing, where interdisciplinary teams tackle societal challenges in real-time settings.
- VU's emphasis on reflection and mutual learning—where both students and community actors learn from each other—is particularly valuable. It resonates with the core values of inclusivity, respect, and sustainability. The use of the Aurora SL Toolbox to support these practices is also commendable, offering structured guidance and resources that can be adapted across diverse learning contexts.
- Overall, VU's model stands out as a mature and forward-thinking form of engaged scholarship—one that aligns academic work with social transformation.

What do you like about the public engagement activities of the partner?

- The University of Malaya demonstrates a well-structured and institutionalized approach to public engagement through initiatives like UMCares and SULAM. What stands out most is their systematic integration of community service learning into academic curricula, allowing students from various disciplines to engage meaningfully with real-world issues while enhancing their academic learning.
- We particularly appreciate the central coordination through UMCares, which ensures coherence, visibility, and impact measurement across faculties and projects. This structure enables strategic partnerships with NGOs, local government, and industry—fostering sustained community collaboration.
- Another aspect we find impressive is how UM leverages service learning to promote civic responsibility, leadership, and empathy among students. Projects under SULAM are often issue-driven and responsive to national priorities, including education access, environmental sustainability, and public health—demonstrating clear alignment between academia and societal needs.
- UM's strong emphasis on reflection and assessment helps both students and communities grow from each engagement. The use of digital platforms to showcase projects also enhances transparency, knowledge sharing, and recognition of both student and community contributions.

What do you like about the public engagement activities conducted within Universiti Malaysia Sabah (UMS)?

- What we truly appreciate about the public engagement activities in UMS is the way they are deeply embedded in real community contexts and sustained over time. Our programs reflect a genuine commitment to co-creation with communities, emphasizing not only knowledge transfer but also mutual learning.
- One of the most inspiring elements is how students are placed at the heart of the engagement process—not just as observers, but as active contributors to solving real-world challenges in health and aquaculture. This long-term, hands-on approach, is unique and allows for deep, empathetic learning that shapes more socially conscious and competent professionals.
- We value the living laboratory approach that UMS is taking forward, where academic research and community practices merge in real-time environments to produce sustainable and locally relevant outcomes. Both programs showcase strong interdisciplinary collaboration and are well-supported through national recognition and funding, such as the HICoE status for BMRI and WHO Collaborating Centre designation for FMHS.
- Overall, what we like most is that these initiatives reflect UMS's identity as a university rooted in its local context, yet reaching out with global aspirations—bridging education, research, and community transformation through authentic partnerships.

What are the lessons learning or inspirations that you would want to apply in your context to improve citizen science / science shop practice?

- One key lesson is the importance of structured coordination—as seen in models like University of Malaya's UMCares and VU's Community Service Learning, which are supported by clear frameworks, digital visibility, and institutional integration. At UMS, formalizing a similar structure dedicated to citizen science or science shop activities could help streamline engagement across faculties and amplify impact.
- Another inspiration is the way other universities foster short-term, interdisciplinary community-based projects alongside long-term ones. While UMS has strong longitudinal models like PuPUK and Rakan Akuakultur, introducing modular citizen science electives or short co-creation labs—especially with public events as part of coursework—can attract broader student participation and promote agile innovation.
- We also see great value in embedding open science principles, including data sharing and community-led inquiry, more intentionally in our practices. This would democratize knowledge and empower communities to use scientific tools and data for their own problem-solving.
- We are inspired by the way institutions like VU and UM using digital platforms and storytelling to showcase outcomes and voices from the community. Creating an online portal for UMS science shop outputs, case studies, and citizen-generated insights would help increase visibility, encourage collaboration, and build a stronger culture of public scholarship.

3.4 Thapar Institute of Engineering and Technology (TIET)

1. Comparison between your institution and VU Amsterdam

A. The community engagement activities within Thapar Institute of Engineering & Technology (T.I.E.T.) have the **following similarities** to the Community Service Learning activities within the VU University:

- Both universities prioritize using **education to create tangible social impact**, ensuring students learn by **engaging with the community** and addressing **real challenges**.
- In both institutions, **students actively design and execute** engagement activities rather than merely participating in **predefined programs**.
- Both universities recognize that **real-world problems require diverse perspectives** and encourage students to **work across disciplines** for more effective community impact.
- Both institutions encourage **ethical and reflective learning**, ensuring that **community service is not just an activity but a mindset** for students.
- Both institutions **support community engagement through structured mechanisms** through **student-led societies (TIET)** or **curricular integration (VU Amsterdam)**.

B. The community engagement activities within T.I.E.T. have the following differences from the Community Service Learning activities within the VU Amsterdam:

Aspect	**TIET (India)**	**VU Amsterdam**
Community Engagement Model	Student-driven extracurricular initiatives (clubs, societies, voluntary service)	Institutionalized within the curriculum (CSL as part of academic courses)
Academic Credit	Mainly voluntary participation, no direct academic credit	Integrated into coursework, students earn credits for CSL activities
Project Scope	Mostly social service (education, environment, health awareness, entrepreneurship)	Broader societal issues, including sustainability, governance, policymaking, and social justice
Collaboration Approach	Student-led with faculty mentorship, grassroots impact	Interdisciplinary faculty-student-community partnerships, structured approach
Sustainability & Long-Term Impact	Dependent on student enthusiasm and continuity of societies	Systematically embedded into academic programs for sustainable impact

C. These are the lessons learned / inspirations drawn from these comparisons

- **Integrating Community Engagement into the Curriculum** (Inspired by VU Amsterdam): While TIET's engagement is **mostly extracurricular**, VU Amsterdam has successfully **integrated CSL into academic coursework**, making public engagement a part of **formal learning**.
- **Establishing Long-Term & Sustainable Community Partnerships**: VU's CSL focus on **long-term university-community collaboration** rather than one-off volunteering efforts.
- **Promoting Interdisciplinary Collaboration & Research for Societal Impact**: VU encourages **multidisciplinary CSL projects**, where students from different fields work together on **real-world problems**.
- **Structuring & Institutionalizing Public Engagement Activities**: While **TIET's engagement is mostly student-driven**, VU & UM have **institutional structures** ensuring systematic and sustained engagement.
- **Shifting from Volunteering to Service-Learning**: While **TIET promotes student volunteering**, VU Amsterdam ensures **students actively learn from their engagement experiences** through reflection & structured assessment.

D. Based on the learning, we aim to make the following changes in our citizen/science shop practices in our university (TIET):

- Institutionalizing the Science Shop Model

  i. Establish a **Science Shop Office** that acts as a bridge between **students, faculty, and community stakeholders**.
  ii. Allow **local communities, NGOs, and industries** to submit **real-world problems** that require **scientific, technological, or entrepreneurial solutions**.

- Establishing a Citizen Science & Research Impact Hub

  i. Partner with **local government, NGOs, and industries** to support long-term research projects.
  ii. Encourage **patent filing & commercialization** of innovative community solutions developed through Science Shop projects.

2. Comparison between your university and one of the partner universities

A. The community engagement activities within TIET have the following similarities to the community engagement activities within the Universiti Malaya (Malaysia):

- **Focus on Social Impact & Community Welfare**

  i. **TIET:** Community engagement at Thapar Institute is **student-driven**, with initiatives like **Pratigya Society** (education for underprivileged children), **ENACTUS** (social entrepreneurship), and **NSS** (health & social services).

ii. **UM (UMCares):** UMCares acts as a **coordinating center for community engagement**, ensuring students, researchers, and faculty **collaborate on projects that benefit local communities** in areas such as **education, social welfare, and sustainability**.

Similarity: Both universities prioritize **social impact projects** that address **community education, health, and welfare needs**.

- **Research-Based Community Engagement**

i. **TIET:** While TIET primarily has student-led initiatives, there is **a growing interest in using AI & deep learning for community-driven research**, particularly in **healthcare, structural safety, and smart infrastructure**.
ii. **UM (UMCares):** UMCares has established **ResPACT (Research Impact Platform)**, ensuring **academic research translates into real-world community solutions**.

Similarity: Both universities are moving towards **research-based community engagement**, where **students & faculty develop real-world solutions for local challenges**.

B. The community engagement activities within TIET have the following differences to the community engagement activities within Universiti Malaya (Malaysia):

Aspect	**TIET (India)**	**UMCares – Universiti Malaya (Malaysia)**
Engagement Model	Student-driven, voluntary, extracurricular activities	Institutionalized, university-led, research-integrated model
Academic Integration	Primarily extracurricular with no mandatory academic credit	Community engagement embedded into research & coursework
Project Sustainability	Dependent on student enthusiasm & leadership continuity	Long-term partnerships with communities, industry, and government
Research & Citizen Science	Limited structured Citizen Science initiatives	UMCares' ResPACT platform ensures that research is translated into community impact
Monitoring & Evaluation	Informal assessment of impact, driven by student societies	UMCares systematically tracks, evaluates, and reports community impact
Institutional Support	Student-run initiatives with faculty mentorship	Fully funded and supported by UM's administration & research framework

Interdisciplinary Collaboration	Student clubs focus on specific social or environmental issues	UMCares promotes cross-disciplinary research addressing complex societal problems

C. These are the lessons learned / inspirations drawn from these comparisons

Lessons Learned & Inspirations from UMCares (Universiti Malaya)

- Unlike TIET's **student-led, society-driven model**, UMCares operates as a **university-wide initiative** with dedicated administrative support. We at TIET should institutionalize Public Engagement for Sustainable Impact.
- While TIET offers **extracurricular engagement**, UMCares ensures **structured academic credit** for community projects through **ResPACT**. TIET should plan to integrate public engagement into the curriculum.
- UMCares emphasizes **research-driven community engagement** (e.g., ResPACT), ensuring **measurable social impact**. To strengthen Research Impact & Knowledge Transfer, TIET can plan this type of thing/initiative.

D. Based on the learning, we (TIET) aim to make the following changes in our university's citizen/science shop practices.

i. **Current Gap:** Community engagement is mostly **extracurricular**, led by **student clubs and societies** without a formal structure for **long-term impact**.

Establish a **Science Shop Office** within TIET that:

- Serves as a **bridge between students, faculty, and the community**.
- Allows **NGOs, local governments, and industries** to submit real-world problems for students to solve.
- Matches **faculty mentors with interdisciplinary student teams** to work on these challenges.
- Ensures projects **align with academic research goals and result in measurable outcomes**.

ii. **Current Gap:** No centralized **mechanism to track the impact of student engagement & research contributions to the community**.

Develop a **Citizen Science & Research Impact Hub** that:

- Monitors **all community engagement projects** at TIET.
- Tracks project impact using **data-driven evaluations**.
- Supports **funding applications** for community-based research grants.
- Encourages **technology transfer & innovation** from citizen science projects to real-world solutions.

3. Overall remark

A. What do you like about the Community Service Learning of the VU?

We at TIET find the Community Service Learning (CSL) approach of Vrije Universiteit (VU) Amsterdam quite impressive because of its structured integration into the academic curriculum. Unlike many universities where community engagement is primarily extracurricular, VU ensures that students earn academic credit for engaging in real-world problem-solving through CSL. This means that students are not just volunteering but are actively applying their disciplinary knowledge to address societal issues, making learning more meaningful.

Admirable Key aspects:

1. **Curricular Integration**: CSL is embedded within courses, ensuring that every student has an opportunity to participate in public engagement as part of their academic journey.

2. **Interdisciplinary Collaboration**: It encourages students from different disciplines to work together on societal issues, fostering a multidimensional approach to problem-solving.

3. **Real-World Impact**: Students collaborate with local communities, businesses, and organizations, ensuring that their projects have tangible social benefits.

4. **Reflective Learning**: VU promotes reflection as a core component of CSL, helping students understand the broader implications of their work and develop a deeper sense of social responsibility.

Overall, what stands out the most is that CSL at VU bridges the gap between academia and society, ensuring that students learn by doing, while also making a meaningful contribution to the community.

B. What do you like about the public engagement activities of the partner?

T.I.E.T. admire the **public engagement activities of Universiti Malaya (UM) through UMCares** because of its **systematic and well-coordinated approach to community service and research impact**. Unlike many universities where engagement activities are scattered, UM has **a dedicated center (UMCares)** that ensures all public engagement initiatives are **strategic, impactful, and aligned with community needs**.

Admirable Key Aspects:

1. **Institutional Support & Coordination** – UMCares serves as a **central hub** for community engagement, providing structured support to students, faculty, and researchers. This ensures that public engagement is **not just a side activity but an integral part of the university's mission**.

2. **Sustainable & Long-Term Projects** – Instead of one-off community service events, UM focuses on **long-term collaborations** with local communities, ensuring that engagement activities **lead to lasting change** rather than temporary interventions.
3. **Research Impact Through Community Engagement** – UMCares takes public engagement beyond volunteering by encouraging **researchers to translate their academic work into real-world applications**. The **ResPACT (Research Impact Platform)** is particularly innovative, as it ensures that research benefits **academia and industries, policymakers, and society**.
4. **Student Involvement & Civic Responsibility** – UM has designed community engagement programs that allow students to **apply their skills in real-life settings**, fostering a sense of **social responsibility and active citizenship**.
5. **Monitoring & Evaluation** – Unlike many institutions where community service efforts are anecdotal, UMCares strongly emphasizes **measuring and reporting the impact of engagement activities**. This ensures that projects are **meaningful, effective, and continuously improved**.

C. What do you like about the public engagement activities conducted within your university?

TIET's public engagement is highly dynamic, student-driven, and hands-on. The direct involvement of students in everything from teaching underprivileged children to working on environmental sustainability and mental health awareness makes a significant impact.

Unlike some universities with structured top-down initiatives, TIET's engagement activities thrive on grassroots participation, allowing students to take ownership and create meaningful change in the community. This fosters students' strong sense of responsibility, empathy, and leadership while contributing positively to society.

D. **What are the lessons, learning, or inspirations that you would want to apply in your context to improve citizen science/science shop practice?**

To improve **Citizen Science and Science Shop practices** in our context, we would take inspiration from **the structured integration of public engagement at VU Amsterdam, the coordinated institutional support of UMCares (Universiti Malaya), and the student-driven, grassroots approach of TIET**. By learning from these models, we would focus on the following key lessons and adaptations:

a) Institutionalizing Community Engagement in Research (Inspired by UMCares & VU Amsterdam)
b) Embedding Community Engagement in the Curriculum (Inspired by VU Amsterdam)

c) Fostering Grassroots & Student-Driven Initiatives (Inspired by TIET)
d) Strengthening Interdisciplinary & Transdisciplinary Collaboration (Inspired by VU & UMCares)
e) Building Long-Term, Sustainable Engagement Models (Inspired by UMCares)

3.5 Narsee Monjee Institute of Management Studies (NMIMS)

Comparison of CSL activities at NMIMS and UM

1. Scope of Public Engagement Initiatives

- UM: Focuses on institutionalized, grant-supported engagement projects such as UMCares, UMSDC, and SULAM UM. These projects involve formalized funding mechanisms, interdisciplinary collaborations, and government-backed service learning. The engagement includes students, faculty, NGOs, and policymakers.

- NMIMS: Offers diverse engagement opportunities through multiple schools (Engineering, Law, Business, Mathematics). The initiatives include community service, Enactus, Social Impact Cell, EPICS, We Care internships, and environmental efforts. Some programs are structured (credit-based), while others rely on volunteer participation.

Comment:

- UM's approach is structured, with a well-defined funding mechanism and government support, making long-term impact more measurable.

- NMIMS, has a broader variety of initiatives but lacks a centralized framework like UMCares. NMIMS could benefit from establishing a dedicated institutional body for engagement.

2. Funding & Institutional Support

- UM: Provides Community Engagement Grants funded by the government for interdisciplinary projects, supporting research application in real-world settings.

- NMIMS: Uses institutional and external support (e.g., industry and NGO partnerships). Some projects receive funding, like EPICS (partner-funded), but many rely on voluntary efforts.

Comment:

- UM's structured funding provides stability for long-term engagement, whereas NMIMS relies on partnerships. There is a possibility for NMIMS to explore dedicated funding programs.

3. Student & Faculty Involvement

- UM: Public engagement is deeply embedded in faculty responsibilities. Faculty are responsible for project execution and evaluation. Students are involved primarily through coursework or service-learning models.

- NMIMS: Faculty act as mentors but rely heavily on student-led committees. Programs like Enactus, Social Impact Cell, and EPICS place significant decision-making responsibility on students.

Comment:

- NMIMS empowers students but risks inconsistencies in execution due to turnover in student leadership. NMIMS could benefit from formal faculty mentorship structures.
- UM's faculty-driven approach ensures stability.

4. Evaluation & Impact Measurement

- UM: Evaluates engagement projects through appointed panels, star ratings, and structured assessments of knowledge transfer and community impact.
- NMIMS: Uses rubrics, faculty evaluations, NGO feedback, and student self-reflections. Projects like We Care have strong assessment metrics.

Comment:

- Both institutions emphasize impact measurement,
- UM's centralized star-rating system offers a clearer benchmarking framework.
- NMIMS' approach is more qualitative and decentralized.

5. Government & External Support

- UM: Strong backing from the Malaysian Ministry of Education, with mandatory service-learning requirements for students.
- NMIMS: Support from AICTE, DST, MoEFCC, and legal bodies (e.g., District Legal Services Authority). However, support is scattered across different schools.

Comment:

- UM benefits from a national policy mandate, ensuring sustainability.
- NMIMS has strong government connections but can have unified institutional backing. NMIMS could advocate for similar national mandates in India.

6. Interdisciplinary & Cross-Sector Collaboration

- UM: Encourages interdisciplinary projects within faculties and partners with NGOs and governmental bodies.

- NMIMS: Includes multi-school collaborations but mostly within independent student-driven groups.

Comment:

- UM fosters interdisciplinary faculty research, while NMIMS focuses more on student-led interdisciplinary work. NMIMS could establish institutional mechanisms to encourage faculty collaboration across disciplines.

7. Challenges & Future Needs

- UM: Identifies sustainability, funding constraints, stakeholder engagement, and institutional silos as challenges.

- NMIMS: Highlights financial limitations, credibility of NGO partners, logistical constraints, and legal/IPR concerns.

Comment:

- Both institutions share challenges in sustainability and funding.

- NMIMS faces unique legal/IPR issues, suggesting a need for formal agreements with partners.

- UM could enhance stakeholder engagement strategies.

8. Dissemination of Outcomes

- UM: Outcomes and impact of public engagement projects are disseminated through the UM Community Engagement Centre (UMCares) website and social media platforms. A panel of stakeholders, including faculty, researchers, and community representatives, evaluates projects and provides feedback. Evaluation results, project findings, and community impacts are shared publicly for transparency and accountability.

- NMIMS: Dissemination methods include, Poster presentations, Documentary-making competitions, Photography exhibits, Stakeholder feedback is incorporated into the assessment process. Stakeholder feedback is considered important for refining projects.

Comments:

- UM takes an institutional approach, ensuring that dissemination is centralized through the UMCares platform and social media.

- NMIMS uses diverse, interactive dissemination techniques, such as competitions, exhibits, and presentations, engaging a wider audience.

9. Interdisciplinary Involvement & Community Collaboration

- UM: The Community Grant encourages interdisciplinary collaboration by bringing in faculty from different disciplines. Community engagement is facilitated via NGOs, governmental institutes, and civil society organizations. Projects often involve non-academic staff and students, fostering volunteerism and social service.

- NMIMS: Community Service is compulsory for all first-year students, so multiple faculties are involved. The Jasani Centre for Social Entrepreneurship & Sustainability Management plays a key role in interdisciplinary coordination. NMIMS has developed partnerships with 1000+ NGOs across India. Collaborations are built with Corporate Social Responsibility (CSR) departments and government entities (e.g., District Legal Services Authority, Gram Panchayat).

Comments:

- UM takes a structured approach, ensuring faculty involvement and interdisciplinary research-based engagement.

- NMIMS has a strong outreach model, with broad NGO and CSR collaborations.

10. Training & Support for Public Engagement

- UM: UMCares provides centralized training on grant execution and impact planning. Training includes sharing sessions with external stakeholders to enhance engagement knowledge.

- NMIMS: The process is explained through meetings and orientation sessions. Faculty mentors receive Faculty Development Programs (FDPs) for handling public engagement projects. Students receive training on communication, organizing activities, and cultural.

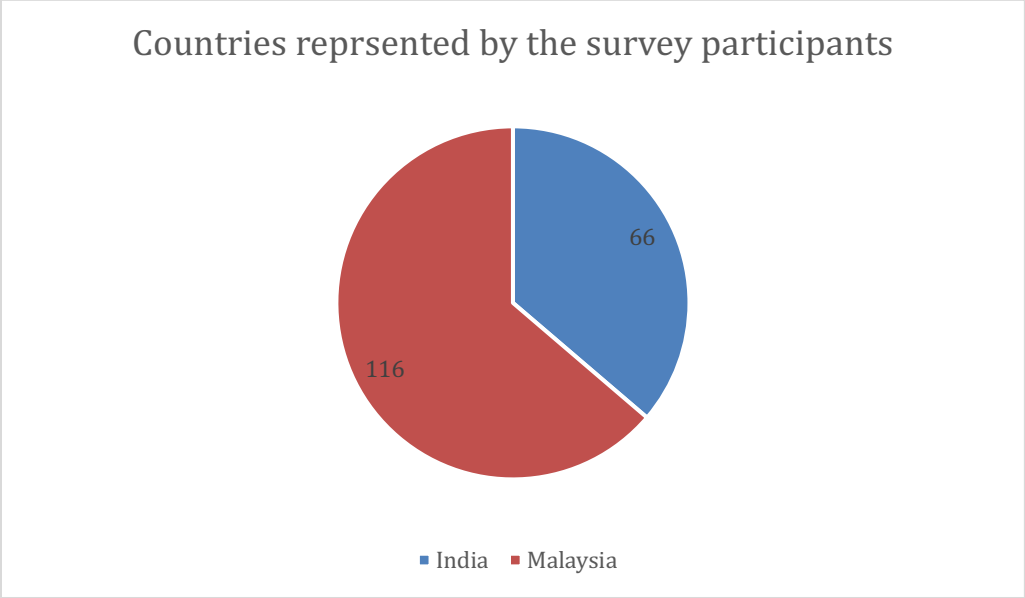
Comments:

- UM has a structured training program, ensuring faculty and students receive specific skills related to public engagement. NMIMS offers informal support through faculty development programs (FDPs) and student mentoring.

4 Insights from Citizen science questionnaire

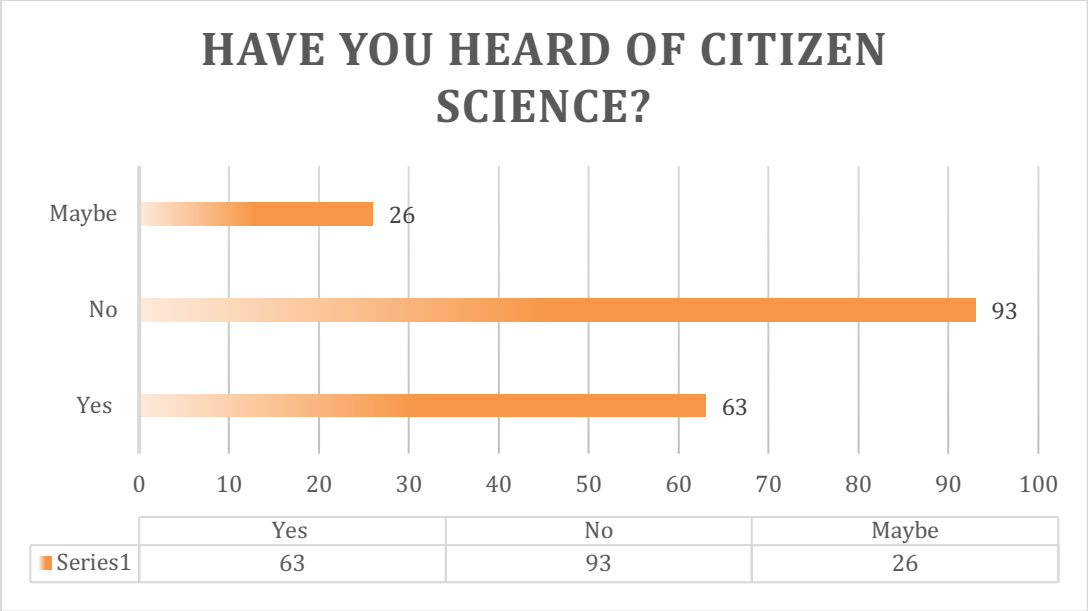
Preliminary Insights from the Public Survey: Citizen Science and Public Engagement Practices in Higher Education

A total of 182 participants filled the public survey, out of which 66 were from India and 116 were from Malaysia.



Awareness of Citizen Science

We wanted to investigate the awareness related to citizen science, for which we asked the question “have you previously heard of citizen science?”. Most survey respondents had not heard of citizen science (51%), while 35% had heard of it, and 14% were unsure.

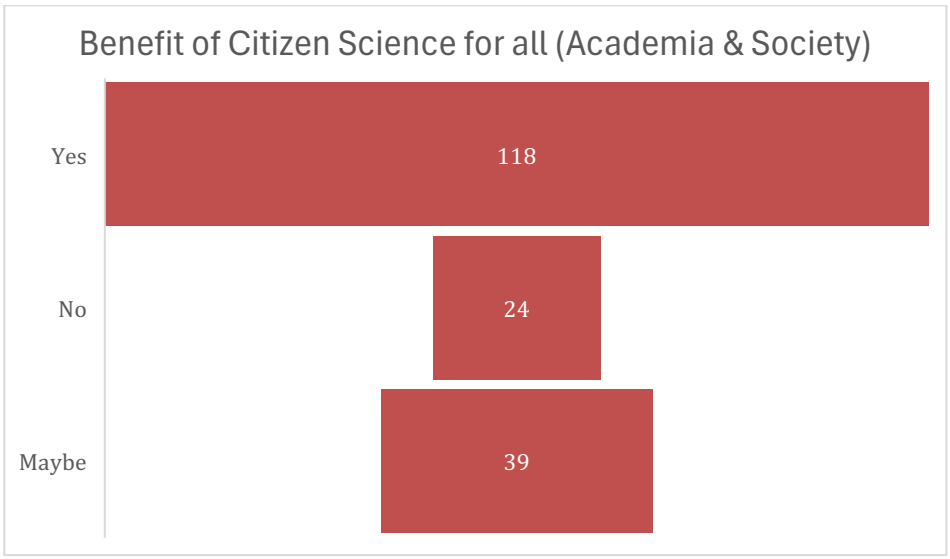


Perceptions on Citizen Science

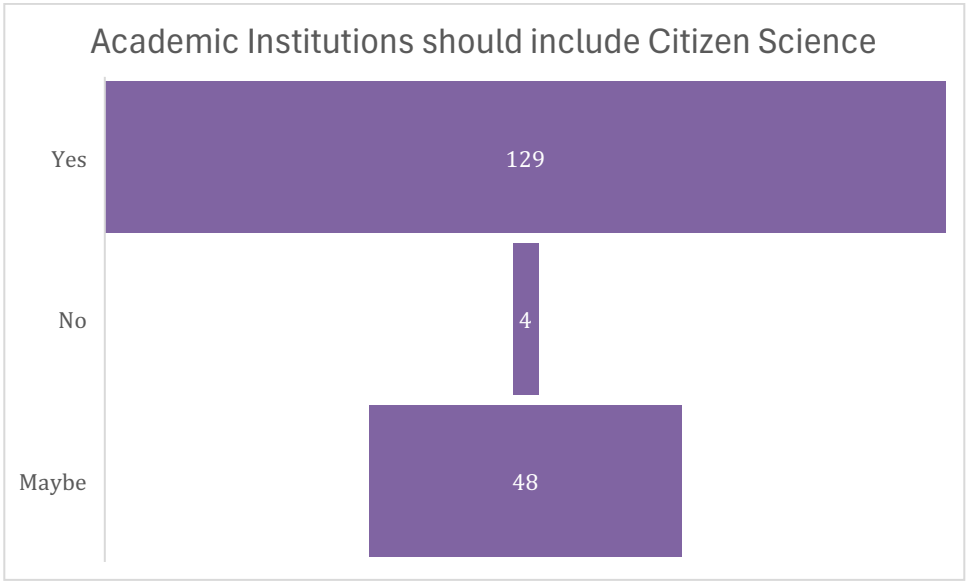
We wanted to explore the perceptions among the participants on citizen science, for which we asked the following five questions:

1. Do you think Citizen Science is beneficial for all (academia & society)?
2. Do you think academic institutions should Citizen Science in your practice?
3. Do you think it's important for students to collaborate with citizens/societal partners?
4. Do you think it's important for citizens/societal partners to participate in education?
5. Do you think it's important for citizens/societal partners to participate in research?

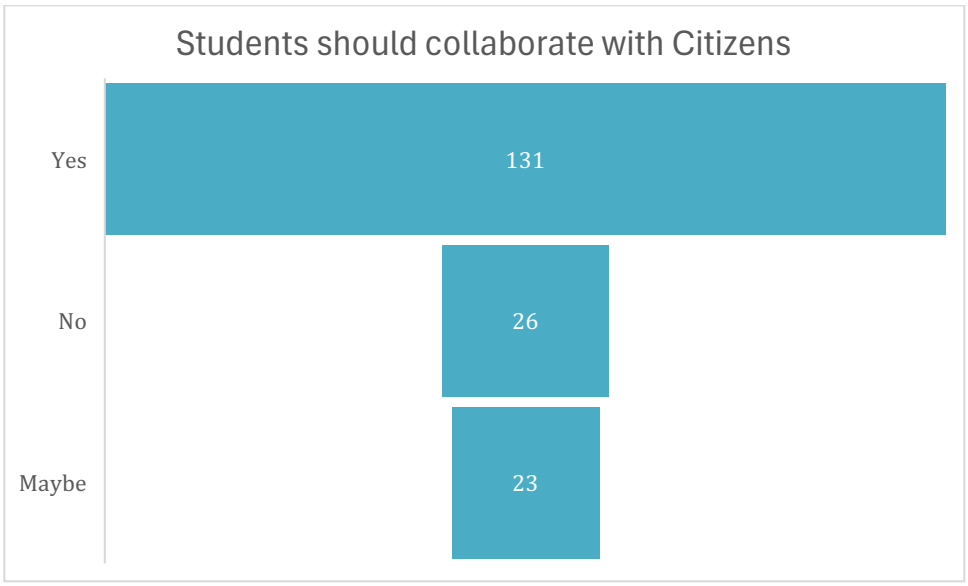
The majority of the respondents (64%) perceived the benefit of citizen science for both academia and society. Around 13% of the respondents did not see any benefit of citizen science for all (academic and society), while 21% were undecided.



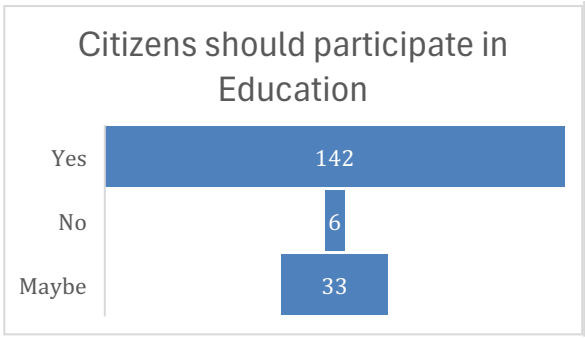
When asked if academic institutions should include citizen science in their practice, most participants (70%) agreed that citizen science and its practices should be included in academic institutions

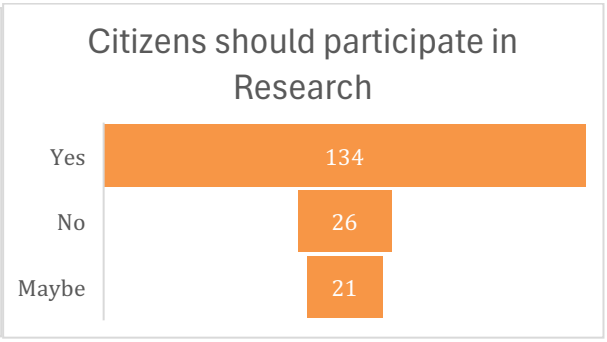


When the respondents were asked if students should collaborate with citizens as a part of citizen science practice, the majority of participants (72%) answered yes.



In regard to the questions if citizens should participate in education and/or research, most participants (78%) agreed citizens should participate in education, and 74% agree that citizens should participate in research.



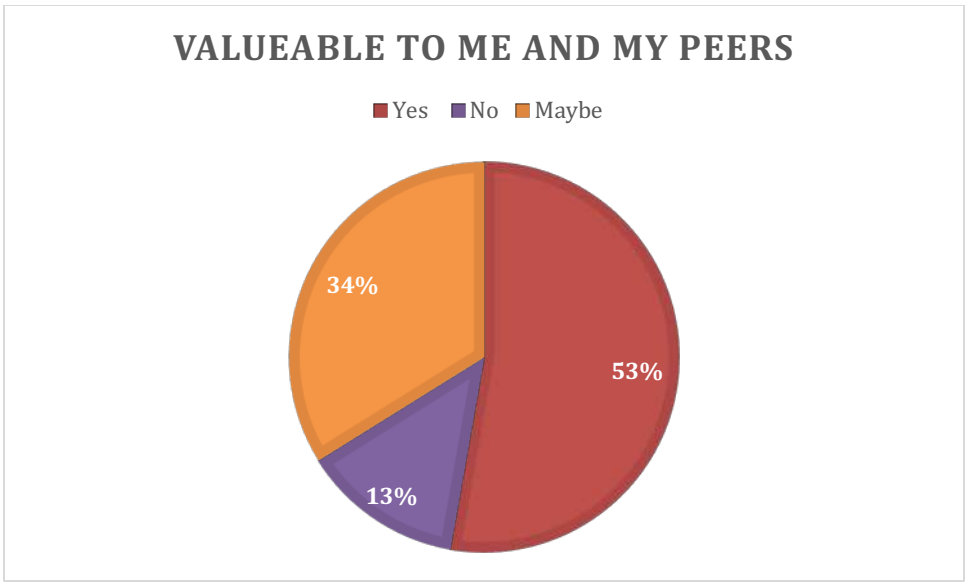


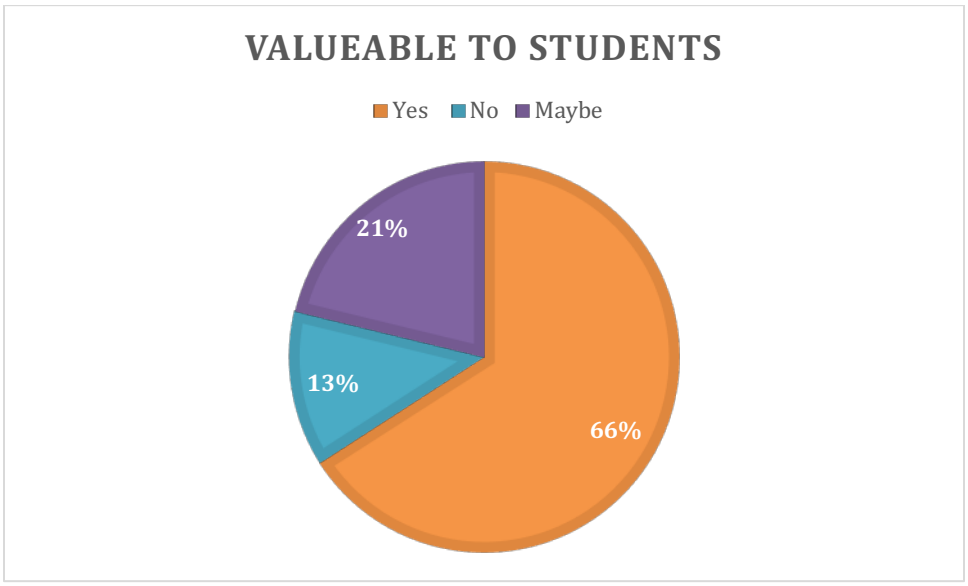
Value of Citizen Science

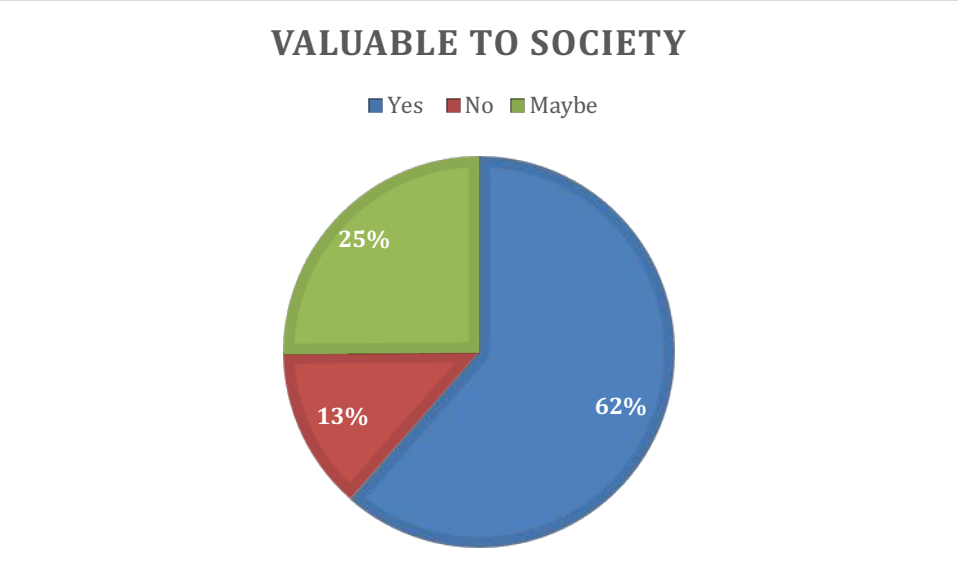
The following statements were posed to the survey participants to understand the value they perceive of citizen science:

1. Citizen science is valuable to me and my peers
2. Citizen science is valuable to students
3. Citizen science is valuable to citizens/societal partners

Majority of the participants agreed that citizen science was valuable to them and their peers (53%), to students (66%) and to citizens/societal partners (62%)


VALUEABLE TO ME AND MY PEERS
Yes
No
Maybe
34%
53%
13%


VALUEABLE TO STUDENTS
Yes
No
Maybe
21%
13%
66%

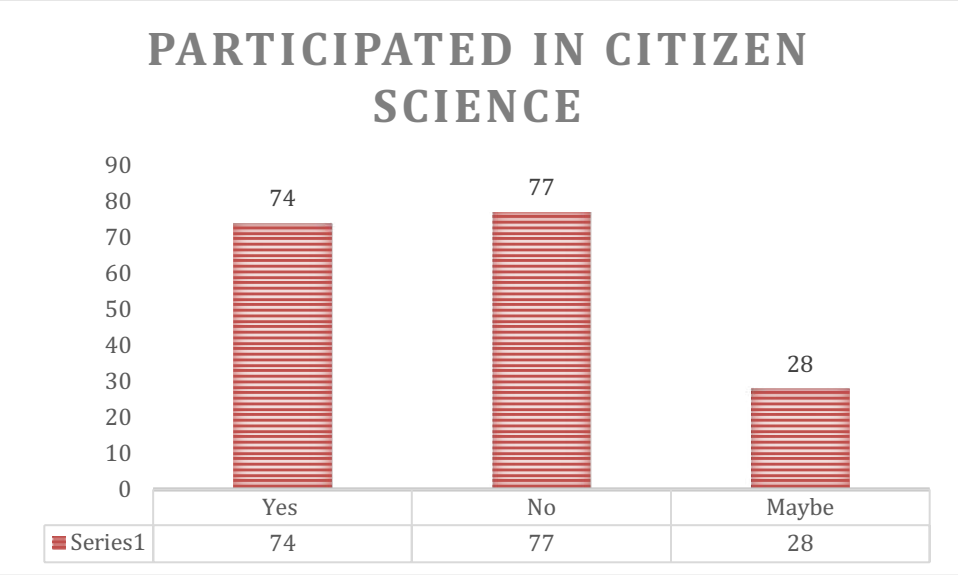


Practical experiences of participating in Citizen Science initiatives

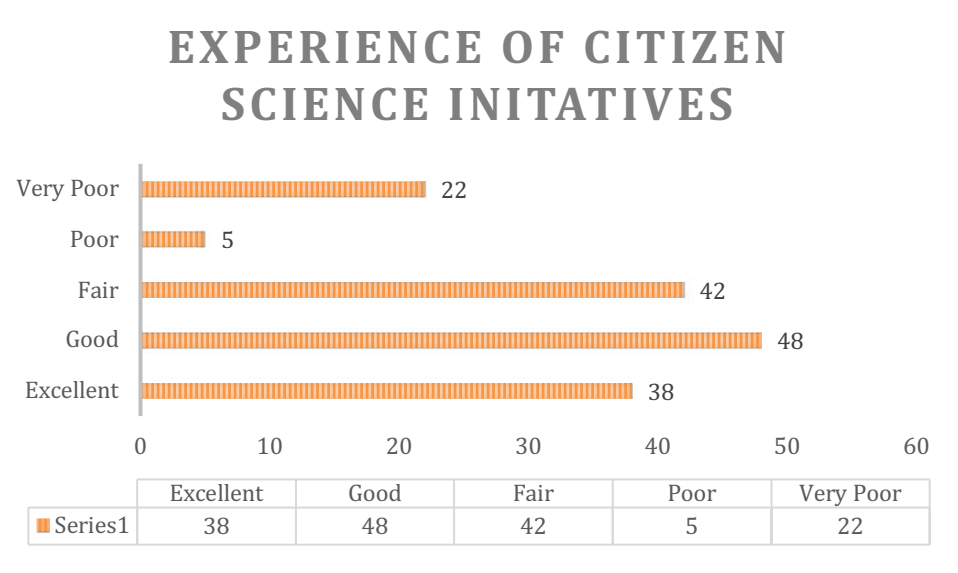
We wanted to know if the respondents had experience of participating in citizen science initiatives, and how was their experiences of being involved in/participating in citizen science initiatives, as follows:

1. I have participated in Citizen Science initiatives
2. How was your experience of being involved in Citizen Science initiatives?

Around 41% of the participants reported having participated in citizen science initiatives before, while 43% had not participated in any citizen science initiatives before. 16% of the participants were undecided.



While most of the participants (38%) had an excellent or good experience of citizen science, there were some participants who experienced it as fair (23%), and the rest (15%) did not have a satisfactory experience.



Overall impression from the survey results

These preliminary insights showcase that more and more academics are getting informed about citizen science, and many are participating in citizen science practices. However, these data also highlight the need for more engagement and awareness raising activities as still a considerable percentage of academics are unaware of citizen science and its benefits.

The perception around citizen science seems very positive, as most academics see the value of citizen science. They also see its benefits for themselves, students and the citizens.

There seems to be a gap in regard to practice. Still a considerable number of academics have not participated in citizen science initiatives, and this highlights the importance of institutional commitment and impetus to foster citizen science practices in higher education.

Appendix 1 Survey on citizen Science and Public engagement.

Survey: Citizen Science & Public engagement projects within the OPEN ASIA project

Dear colleague of the Open Asia project ,

This survey consists of TWO parts. The **first part** is a a comparison on the public engagement activities conducted in education of each university (read public engagement activities) with the Community Service Learning (CSL) Activities conducted within the VU university Amsterdam and a comparison on the public engagement activities in education of each university (read public engagement activities) with the activities of one other partner of this project (For example: UMCares from Universiti Malaya or We-Care from NMIMS, etc.).

The **second part** is a quantitative survey aimed to get insight in the citizen science and public engagement activities conducted by colleages. It would be appreciate it if you can share this questionnaire with colleagues both in your institute and beyond. This questionnaire is filled in by individuals. (We hope we get a lot responses on this questionnaire).

Part 1 (only filled in 1 time per organization).

Thank you in advance for filling in the questionnaire. This in-depth qualitative questionnaire is solely distributed to the direct partners in the Open Asia project. With this questionnaire we aim to gain more detailed insights in the public engagement project(s) that currently exist within your institutional context. We invite you to **fill in this questionnaire as a team (one questionnaire filled in by one organization only)** to get a wide range of perspectives integrated.

Though it is hard to come to one common terminology, we understand **public engagement projects** as a way to facilitate collaborative research projects addressing concerns from society. These concerns could be brought forward by Civil Society Organizations (CSOs) or local communities, students could also be included in this research. Public engagement projects should create synergies between social issues and scientific development, representing an innovative model that put an emphasis on the social responsibility of research and the benefit to local communities. As part of public engagement projects, community-based participatory research (CBPR) is often employed, but also various forms of citizen science. What is important, regardless of the terminology used, is that we aim to see (i) students engage with society during their studies, and / or (ii) researchers create partnerships with civil society groups and/or disadvantaged groups, and (iii) CSOs get into contact with formal academic institutions, universities or research centers.

To give you a better idea of how we understand public engagement initiatives we would like to share with you **three possible initiatives** that we came in contact with during our recent visit at the University of Malaya in October.

- The UMCares initiative, who's core mission is to impact the community though inclusiveness, innovative engagement and sustainable programmes. Within UMCares there is close collaboration with local government officials whom, through UMCares, get connected to researchers and students to address issues in local communities.

- The UMSDC (Universiti Malaya Sustainable Development Centre) initiative which aims to address the sustainability of its key operations (Education, Research. Operations and Governance, and External Leadership) for the wellbeing of its internal campus community (Student, Staff, Flora, and Fauna). Though this initiative is mainly still within the walls of the university campus, they do actively involve students and staff to address urgent sustainability issues.
- The SULAM UM (Service-Learning Malaysia-University for Society) initiative were students, for 3 months, assist local communities and write a report based on their experiences. This initiative thereby aims to integrate meaningful experience, teach civic responsibility and strengthen communities. Interestingly, Ministry of Education Malaysia has made service learning a mandatory requirement for university students to complete before graduating.

Your initiatives, however, could also be smaller projects. What is important is that mutual learning, co-design and reciprocity between students / researcher and community, should be central in addressing societal (grand) challenges. If you still have questions or this are unclear **do not hesitate to contact us: [** g.tijsma@vu.nl **and** s.s.rai@vu.nl **].** Again, thank you for taking the time to fill in the survey (please be aware there is NO word limit, if you need more space than the boxes provide please make more space ☺).

QUALITATIVE SURVEY

This survey consists of two comparisons:

1. a comparison on the public engagement activities conducted in education of each university (read public engagement activities) with the Community Service Learning (CSL) Activities conducted within the VU university Amsterdam
2. a comparison on the public engagement activities in education of each university (read public engagement activities) with the activities of one other partner of this project (For example: UMCares from Universiti Malaya or We-Care from NMIMS, etc.).

For the comparison please fill in the following three points (for all A to D!):

1. **Comparison between your institution and VU Amsterdam:**

- A The community engagement activities within our universtity has the **following similarities** to the Community Service Learning activities within the VU University:….
- B The community engagement activities within our universtity has the **following differences** to the Community Service Learning activities within the VU:….
- C These are the lessons learnt / inspirations drawn from these comparisons
- D Based on the learning we aim to make the following changes in our citizen / science shop practices in our university. ….

2. **Comparison between your university and one of the partner universities:**

- A The community engagement activities within our universtity has the **following similarities** to the community engagement activities within the… (please fill in the name of the university which you take up in your comparison):….

- B The community engagement activities within our universtity has **the following differences** to the community engagement activities within … (please fill in the name of the university which you take up in your comparison):….

- C These are the lessons learnt / inspirations drawn from these comparisons

- D Based on the learning we aim to make the following changes in our citizen / science shop practices in our university. ….

3. Overall remark:

- A What do you like about the Community Service Learning of the VU?
- B What do you like about the public engagement activities of the partner?
- C What do you like about the public engagement activities conducted within your university?
- D What are the lessons learning or inspirations that you would want to apply in your context to improve citizen science / science shop practice?

For more information on the activities conducted within the VU University please take a look at the following websites:

Community Service Learing at the VU

https://vu.nl/en/about-vu/more-about/transform-your-education-with-community-service-learning

Community Service learning within the universities of Aurora (of which the VU is part of)

https://sites.google.com/vu.nl/aurora-sl-toolbox/aurora-sl-co-creation?authuser=0

Our public events are integrated in students activities please see more information on these courses on :

https://vu.nl/en/education/more-about/masters-electives-interdisciplinary-community-service-learning

QUANTITATIVE SURVEY

Thank you for taking the time to complete this questionnaire. This survey is part of the OPEN-ASIA project, an initiative aimed at supporting the digital economy and connectivity in India and Malaysia. The project's goal is The OPEN-ASIA projects proposal aims to support the digital economy and connectivity in the India and Malaysia (PCs) by advancing the implementation of Open Science principles and values considering the best practices of the European Union and needs of socio-economic environment in both project countries. This project is funded by the European Union under the Erasmus+ program (project number 101128493).

Purpose of the Questionnaire

This survey seeks to gather insights into Citizen Science (CS) and Community-Based Participatory Research (CBPR) practices, including public engagement activities within higher education in India and Malaysia. As a staff member at a higher education institution in one of these countries, your input is invaluable.

What to Expect

If you choose to participate, you will complete a questionnaire that takes around 15 minutes to finish. The questions will cover topics on your familiarity with both citizen science and Community based Particpatory research. Also if you have not heard of these terms it would be helpful if you can fill in the questionnaire.

Voluntary Participation

Your participation is completely voluntary. You may skip any question, and you can stop taking the survey at any time without any consequences.

Risks

There are no significant risks involved in this study. However, if any question feels uncomfortable, feel free to skip it or exit the survey.

Benefits

While there are no direct benefits to you, your responses will help will help create a comprehensive overview of current CS and CBPR activities within higher education in India and Malaysia. We aim to publish the results in a scientific journal to contribute to the broader academic and professional community.

Privacy and Confidentiality

Your responses are confidential. We will not collect any information that could identify you. Your answers will be anonymized and securely stored, accessible only to the research team.

Contact Information

If you have any questions about this study, feel free to contact:

- **Lead Researcher**: Marjolein zweekhorst (m.b.m.zweekhorst@vu.nl)
- **Malaysia**: [University of Malaya, Prof Ir.Dr. Shaliza Ibrahim, (shaliza@um.edu.my)
- **India (**Narsee Monjee Institute of Management Studies, NMIMS, Ms Meena Saxena (meena.saxina@nmims.edu)

Consent

By selecting "I Agree," you confirm that:

1. You understand the information provided above.
2. You agree to participate in this study voluntarily.
3. You are at least 18 years old.

[ ]I Agree

[ ] I Do Not Agree

Thank you once again for your contribution to this important project.

Submission Instructions

Once you have completed the questionnaire, please submit it to:

- The partner at the higher education institution (HEI) who shared this questionnaire with you (include email here), or
- Our European project coordinators, Sarju Rai (s.s.rai@vu.nl) or Geertje Tijsma (g.tijsma@vu.nl)

Thank you once again for your contribution to this important project.

Q	QUESTION ITEMS	RESPONSE
Profile/Characteristics of Respondents		
1	Please indicate your gender:	☐ Male ☐ Female ☐ Others

2	Please write down your age:	Open answer:
3	Please indicate your University/Institution/country:	Open answer:
4	Which faculty/department do you work in?	Open answer:
5	Please indicate your role/work	☐ Teacher/lecturer ☐ Researcher ☐ Student/intern ☐ Project manager/coordinator ☐ Academic program director/ administrator ☐ Support staff ☐ Others: please write_____
6	How long have you worked in your role?	☐ <3 years ☐ 3 to 6 years ☐ 7 to 10 years ☐ >10 years
Concept: Knowledge on Citizen Science		
1	Have you heard of citizen science before?	1. Yes 2. No 3. Don't know
2	What does citizen science mean to you?	Open answer:
3	Which of these interpretations of citizen science do you agree with?	☐ Citizen Science is the practice of public participation and collaboration in scientific research to increase scientific knowledge. ☐ Citizen Science (CS; also known as community science, crowd science, crowd-sourced science, civic science, or volunteer monitoring) is scientific research conducted, in whole or in part, by amateur (or nonprofessional) scientists. ☐ Citizen Science entails the engagement of volunteers in science and research. Volunteers are commonly involved in data collection but can also be involved in initiating questions, designing projects, disseminating results, and interpreting data. ☐ The participation of a range of non-scientific stakeholders in the scientific process. At its most inclusive and most innovative, Citizen Science involves citizen volunteers as

		partners in the entire scientific process, including determining research themes, questions, methodologies, and means of disseminating results. ☐ None of these definitions matches my interpretation of Citizen Science.
4	Do you think Citizen Science is beneficial for all (including academia, society)?	1. Yes 2. No 3. Don't know
5	If yes, what are the benefits of Citizen science?	Open answer:
6	To what extent are citizen science initiatives/projects available within your academic institutions?	1 — 10 Not available — Widely available
7	What are the current challenges in the practice of citizen science in your context?	Open answer:
8	What according to you is required to improve the state of citizen science in your context?	Open answer:
Citizen Science in Education		
9	Do you think academic institutions should include citizen science related knowledge and practices in education?	1. Yes 2. No 3. Don't know
10	Do you think its important for citizens/public to participate in education?	1. Yes 2. No 3. Don't know
11	If yes, in what ways should the citizens/public participate in education?	Tick multiple options you agree with: ☐ Curriculum design and development ☐ Service learning/community-engaged learning/challenge-based learning ☐ Guest lectures ☐ Facilitating learning activities within courses ☐ Participate in joint evaluation of students (including feedback) ☐ Co-creation with students and teachers ☐ Providing inputs on the educational needs to address important societal needs (policy level) ☐ Others: (please write)_____

12	What benefits do you see of citizens/public participating in education?	Open answer:
13	What challenges do you see of citizens/public participating in education?	Open answer:
14	What would you recommend to foster the participation of citizens/public in education?	Open answer
15	Do you think it is important for students to collaborate or work with citizens/societal partners in education?	1. Yes 2. No 3. Don't know
16	If yes, in what ways should the students collaborate or work with citizens/societal partners in education?	Open answer (please feel free to share your ideas or experiences):
17	What would be the benefit of students collaborating or working with citizens/societal partners in educational context?	Tick multiple options you agree with: ☐ Better understanding of the study topics ☐ Better connection to understanding and/or addressing societal problems ☐ Better learning (experiential learning) by working with citizens/societal partners ☐ Students get to develop important skills/competencies relevant for real-life problem solving ☐ Students feel more socially connected and responsible ☐ Connection between academia/university and society is strengthened ☐ Citizens and society are more engaged in science ☐ Others: (please write)_____
Citizen Science in Research: Community-based Participatory Research (CBPR)		
18	Do you think community-based participatory research (CBPR) is a form of citizen science initiative?	1. Yes 2. No 3. Don't know
19	Do you think its important for citizens/public to participate in research?	1. Yes 2. No 3. Don't know

20	If yes, in which phases of the research should the citizens/public participate in?	Tick multiple options you agree with: ☐ Question formulation ☐ Research design ☐ Collect data ☐ Analysis ☐ Reporting of data ☐ Dissemination
21	Community-based participatory research is useful in:	Tick multiple options you agree with: ☐ The generation of knowledge by academics together with the public and other societal stakeholders ☐ Aligning scientific research and community/public engagement ☐ Delivering significant societal impact via community partnerships ☐ Preventing research from not being impactful for society ☐ Having an enduring impact because of power sharing and ongoing conflict resolution ☐ Mutual learning for academic and the community partner ☐ Other: Please write:_____
22	What do you think are the benefits of community-based participatory research initiatives?	Tick multiple options you agree with: ☐ They are inclusive and participatory ☐ They are better planned and executed ☐ They are mutually beneficial for all partners/stakeholders involved (including citizens) ☐ They address societal issues ☐ They are sustainable in the long run ☐ Others – please add:
23	What do you think are the downsides of community-based participatory research initiatives?	Tick multiple options you agree with: ☐ They take too much time ☐ They are expensive ☐ They are not financially sound ☐ It is difficult to get consensus from different partners/stakeholders

		including citizens ☐ They are not sustainable in the long run ☐ Others – please add:
24	What do you think of the financial implications of community-based participatory research initiatives?	1 — 10 Financially unrealistic — Financially sound
25	To what extent are community-based participatory research initiatives/projects available within your academic institutions?	2 — 10 Not available — Widely available
26	What do you think should be the role of the university in supporting citizen science models like community-based participatory research?	Tick multiple options you agree with: ☐ Conduct more citizen science/ Community-based participatory research projects/activities ☐ Enhance collaboration with community stakeholders ☐ Engage students in citizen science ☐ Promote citizen science/community-based participatory research in curriculum ☐ Allocate funding for citizen science/community-based participatory research ☐ Others – please add:

Attitude

Please choose on which level do you agree with each statement:
1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Neither Disagree nor Agree, 4 = Somewhat Agree, and 5 = Strongly Agree.

		1	2	3	4	5
27	I think citizen science is an important topic					
28	I would want to use citizen science in my work (research, education)					
29	I find it valuable to have citizen science based research and education projects					
30	I find it feasible to have such projects					
31	I would recommend the use of citizen science to others					

32	Citizen science options are available in my academic curriculum					
33	I would like the implementation of citizen options in my work (research, education)					
34	To what extent would you like the implementation of citizen science in your work (research, education)	1				10
35	In which aspect of work are you interested in using citizen science?	Tick multiple options you agree with: ☐ Research (community-based participatory research) ☐ Education ☐ Both research and education ☐ Others: (please write)_____				
Value Perception						
Please choose on which level do you agree with each statement on Citizen Science practices: 1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Neither Disagree nor Agree, 4 = Somewhat Agree, and 5 = Strongly Agree.						
		1	2	3	4	5
36	I find it useful					
37	It creates valuable partnerships between universities and community					
38	It bridges the gap between science and society					
39	It allows new ways of thinking and creativity					
40	Reduces the risk of non-beneficial scientific research for the society					
41	It can help students be prepared for future career prospects					
42	It can help improve and strengthen existing research and education					
43	It can help in tackling community problems					
44	It is valuable to me and my peers	1. Yes 2. No				

		3. Don't know
45	If yes, in what way is it valuable to you and your peers?	Open answer:
46	It is valuable for students	1. Yes 2. No 3. Don't know
47	If yes, in what way is it valuable to students	Open answer:
48	It is valuable for community/societal partners	1. Yes 2. No 3. Don't know
49	If yes, in what way is it valuable to them	Open answer:
Participation and Practice		
50	I have participated in Citizen Science initiatives (like engaged education, challenge-based learning, service, learning, community-based participatory research, etc.)	1. Yes 2. No 3. Don't know
51	What primarily motivates you to participate in/ or be part of citizen scienec initiatives?	Check all that apply. ☐ Civic and community benefit ☐ Conservation, environmental, or nature protection ☐ Education & learning ☐ Research advancement ☐ It is a fun and social activity ☐ Other:
52	Briefly elaborate on an important citizen science project/initiative you participated in	Open answer:
53	What was the extent of involvement of citizens/public in that project/initiative	1 — 10 Low involvement — High involvement
54	Indicate your preference to participate in a citizen science project in the future	1 — 10 Not preferred — Highly preferred
Satisfaction		
55	How was your experience of participating in or being part of citizen science project/initiative? (Community-based participatory	1. Excellent 2. Good 3. Fair 4. Poor

	research, and/or educational practice like service learning, engaged learning, challenge-based learning, etc.)	5. Very Poor
56	Are you satisfied with the outcome of the project that you were a part of?	1 10 Highly Dissatisfied Highly Satisfied
57	What were you satisfied/dissatisfied with in this project?	Open answer:
58	Have you benefitted from the Community-based participatory research project that you were a part of?	1. Yes 2. No 3. Don't know
59	If yes, In what way?	Open answer:
60	Have the citizens who participated in the project benefitted from it?	1. Yes 2. No 3. Don't know
61	If yes, In what way?	Open answer:

Can we reach out to you for an interview on this topic?

If yes, please leave your email: _____

We thank you for your active participation and helpful contribution!