| FORMAT | | | |
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| **1. Name of resource** | **Opening museums' science communication to dialogue and participation: the "Experimental Field for Participation and Open Science" at the Museum für Naturkunde Berlin** | | |
| 2. Location | https://jcom.sissa.it/article/pubid/JCOM_2204_2023_N01/ | | |
| 3. Alternative location | | | |
| 4. Author[s] | W. Rössig, B. Dietermann, Y. Schultka, S. Poieam, U. Moldrzyk | | |
| 5. Publisher/producer/host | Journal of Science Communication | | |
| 6. Year | 2023 | | |
| 7. Suggested citation | Rössig, W., Dietermann, B., Schultka, Y., Poieam, S. and Moldrzyk, U. (2023). Opening museums' science communication to dialogue and participation: the "Experimental Field for Participation and Open Science" at the Museum für Naturkunde Berlin JCOM 22(04), N01. https://doi.org/10.22323/2.22040801, | | |
| 8. Languages in which available | English, web page translates automatically | | |
| 9. Geographic area resource relates to | Germany, with wider relevance | | |
| 10. Does the resource relate to a specific time frame? | | | |
| **11. Type** | Report | | Yes |
| | Toolkit/Framework/Roadmap | | Yes |
| | Sign-post to other resource (database) | | |
| | Case studies | | Yes |
| | Other | | |
| 12. If this is part of an initiative, what is the initiative? | | | |
| COLLECTIONS AND COLLECTIONS-BASED INSTITUTIONS | | | |
| 13. Explicit links to collections | Yes | | |
| 14. Explicit links to museums/libraries/archives | Yes | | |
| 15. Types of institutions the resource covers | Museums | | X |
| | Archives | | X |
| | Libraries | | X |
| | Other | | X |
| | Arts, humanities and social sciences: | X | |

| 16. Does the resource relate to specific disciplines? | philosophy, psychology, religion, social sciences, law, politics, language, arts and recreation, architecture, literature, history, geography and ethnology, anthropology, archaeology | |
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| | Science, natural history, technology, medicine, engineering, manufacturing | X |
| 17. If no explicit links to collections, justification for inclusion | | |

| **HOW IT CONTRIBUTES TO SUSTAINABLE DEVELOPMENT** | |
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| **18. Collections-related activities the resource relates to (mark all that apply)** | |
| **Develop collections to protect and safeguard wider cultural and natural heritage more effectively**, for example by targeting collecting to threatened forms of heritage in strategic ways | |
| **Use collections to promote learning and educational opportunities that contribute to sustainable development more effectively**, for example education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development and/or skills development relating to collections | X |
| **Use collections to promote cultural participation/social inclusion more effectively**, for example by reducing barriers to participation, to ensure no-one is 'left behind' | X |
| **Use collections to promote sustainable tourism more effectively**, for example by developing new products based on local cultural heritage, and/or considering the rights of stakeholder groups in relation to collections | |
| **Use collections to support research that contributes to sustainable development** (including all forms of personal and self-directed research at all levels that make use of stored collections) more effectively, for example by providing effective facilities, collections and information to meet researchers' needs | |
| **Make decisions around collections that contribute to sustainable development more effectively** | |
| i.      employment (recruiting, staff training, staff safety) | X |
| ii.     energy consumption, greenhouse gas emissions, reduction, monitoring and reporting | |
| iii.    waste management and reduction of waste | |

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| iv.       transport (forms of transport, energy use) | |
| v.       commercial activities including copyright and IP | |
| vi.       governance and management | |
| vii.       security, disaster preparedness and risk reduction | |
| **Direct external leadership, partnerships and collaborations towards sustainable development more effectively**, for example by developing impactful partnerships | X |
| **19. Does the resource relate clearly to any international conventions (mark all that apply)?** | |
| Culture conventions: | |
| 1952, 71 Protection of Copyright and Neighbouring Rights | |
| 1954 Protection of Cultural Property in the Event of Armed Conflict | |
| 1970 Fighting Against the Illicit Trafficking of Cultural Property | |
| 1972 Protection of the World Cultural and Natural Heritage | |
| 2001 Protection of the Underwater Cultural Heritage | |
| 2003 Safeguarding of the Intangible Cultural Heritage | |
| 2005 Protection and Promotion of the Diversity of Cultural Expressions | |
| Rio Conventions: | |
| Convention on Biological Diversity (CBD), Convention to Combat Desertification (UNCCD), Framework Convention on Climate Change (UNFCCC) | X |
| **AIMS AND CONTENT** | |
| **20. What issues does the resource aim to address?** | **"The Museum für Naturkunde Berlin (Natural History Museum — MfN) established participation and exchange as central elements of the entire institution alongside its research. In order to experiment with formats and settings for dialogue-oriented exchange and participation, an area within the exhibition round walk was designated for this purpose in 2018. Over the course of three years, the "Experimental Field for Participation and Open Science" has developed the practice of opening the museum's research and collection in a dialogue-oriented, participatory way. Focus lies on museum visitors and on reaching new groups who are not in close contact with science yet. The practice of opening and participation was tested, reflectively accompanied, and further developed during the whole time period. This article describes the idea, concept, design, and the results of the external evaluation of the formats of dialogue-oriented and participatory outreach in the Experimental Field at the MfN. It gives an overview of underlying ideas, design of the space, and how the goal of creating mutually beneficial encounters and enabling participation and co-creation was addressed."** |

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| 21. Intended audience of resource | [Museums, educators, science communicators, researchers] |
| 22. Process of development | |
| 23. Organisation/structure/contents | Table of Contents<br>1 Introduction<br>2 Genesis of ideas<br>3 Concept of the Experimental Field<br>4 Engaging design<br>5 Programs<br>6 Evaluation<br>7 Conclusions and recommendations<br>Acknowledgments<br>References<br>Authors<br>Supplementary material<br>Endnotes |
| FRAMEWORKS | |
| 6. Framework structure | |
| 7. Relevant policy considerations | No |
| 8. Resources for implementation identified | Yes |
| 9. Specific assessment points/indicators/milestones/action plan for monitoring | Yes |
| **10. ASPECTS OF SUSTAINABILITY COVERED BY RESOURCE (mark all that apply)** | |
| People (social sustainability) | X |
| Planet (environmental sustainability) | X |
| Prosperity (economic sustainability) | X |
| Peace | X |
| Partnerships | X |
| **11. CROSS-CUTTING CONSIDERATIONS COVERED BY RESOURCE (mark all that apply)** | |
| Gender perspectives | |
| North and South perspectives | |
| **HOW THE RESOURCE CONTRIBUTES TO AGENDA 2030 AND THE SDGs** | |
| **HOW AGENDA 2030 AND THE SDGs FEATURE IN THE RESOURCE** | |
| 12. SDGs and Agenda 2030 specifically mentioned? | No |
| 13. SDGs specifically mentioned? | No |
| 14. SDG targets specifically mentioned? | No |

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| 15. SDG indicators specifically mentioned? | No |
| **SDGs AND SDG TARGETS AND LINKAGES** | |
| 16. Comments on SDG linkages | The resource is most closely related to SDGs around education, training and inclusion, including 4.4 (staff training), 4.7 (education for sustainable development), 4.A (safe and inclusive learning environments), 9.1 (resilient infrastructure), 9.5 (promote scientific research), 10.2 (universal inclusion), 11.7 (safe and inclusive green and public spaces), 11.B (Implement policies for inclusion, resource efficiency and disaster risk reduction), 12.8 (information for sustainable development and lifestyles in harmony with nature), 13.3 (Build knowledge and capacity to meet climate change), 16.7 (inclusive decision making), 17.17 (local partnerships). |
| **17. SDGs and SDG targets the resource helps advance** | |
| **SDG 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**<br>4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship | Number of young people and adults in skills-development activities and programmes drawing on collections, for employment, decent jobs and entrepreneurship<br><br>Increase in number of young people and adults in such programmes<br><br>Number and proportion of staff who have received training in the last year, to better support their contribution to the SDGs.<br><br>Programs and processes in place to ensure the availability of a skilled workforce. |
| **SDG 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**<br>4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global | Numbers of people in each type of programme drawing on collections from different demographic groups.<br><br>Increases in numbers of people in each type of programme from different demographic groups.<br><br>Proportion of people involved in such programmes in relation to overall audience size.<br><br>Evidence that learners have acquired knowledge and skills to promote sustainable development. |

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| citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development | |
| **SDG 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**<br>4.A Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all | Number and proportion of education facilities that are child, disability and gender sensitive.<br><br>Proportion of education facilities that provide safe, non-violent, inclusive and effective learning environments for all.<br><br>Number and type of initiatives to improve effectiveness of learning environments.<br><br>Support given to other education facilities to make them more inclusive and effective. |
| **SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**<br>9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all | Development of research-useful collections to support reliable, sustainable and resilient use by researchers and others.<br><br>Number and proportion of collections facilities and stores that support economic development and human well-being.<br><br>Number and proportion of collections facilities and stores that provide affordable and equitable access for all.<br><br>Investment in collections facilities.<br><br>Inclusion of collections information in regional and transborder initiatives, notably via digital access for discoverability. |
| **SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization**<br>9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially | Number and proportion of collections facilities that effectively support research and researchers.<br><br>Number and proportion of staff who are appropriately skilled to undertake and support collections-based research.<br><br>Expenditure on initiatives to enhance and upgrade collections facilities. |

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| increasing the number of research and development workers per 1 million people and public and private research and development spending | Numbers of staff engaged in supporting and developing research use based on collections.<br><br>Number of initiatives to encourage innovation drawing on collections.<br><br>Increase in number of research and development workers per 1 million people.<br><br>Increase in public and private research and development spending being used to develop and make use of collections. |
| **SDG 10. Reduce inequality within and between countries**<br>10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status | Collections development to ensure that collections effectively meet the needs of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.<br><br>Number and proportion of educational and participatory programmes that promote participation irrespective of social or other status.<br><br>Numbers and proportions of people making use of collections in relation to the demographic of the local population.<br><br>Numbers and proportions of people involved in focused programmes aimed at promoting social, economic and political inclusion.<br><br>Numbers and proportions of people from different demographic groups involved in decision-making processes relating to collections and collections-based institutions.<br><br>Number and types of partnerships that build relationships with marginalized groups, individuals and communities. |
| **SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable**<br>11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women | Numbers of people accessing collecting institutions from different demographic groups, notably women, children, older people and persons with disabilities.<br><br>Increases in numbers of people accessing collecting institutions from different demographic groups. |

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| and children, older persons and persons with disabilities | Measures taken to remove barriers to access green and public spaces.<br><br>Extent of green space provided by collections institutions. |
| **SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable**<br>11.B By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels | ***11.B.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030a***<br><br>Disaster Risk Reduction strategies and plans in place, in line with the Sendai Framework for Disaster Risk Reduction, to ensure collecting institutions and collections are factored into planning, and contribute effectively to Disaster Risk Reduction. |
| **SDG 12 Ensure sustainable consumption and production patterns**<br>12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature | ***12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment***<br><br>Extent to which global citizenship education and education for sustainable development (including climate change education) are mainstreamed in formal, informal and non-formal education programmes and activities drawing on and related to collections. |
| **SDG 13. Take urgent action to combat climate change and its impacts**<br>13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning | Plans in place to enhance positive contributions to addressing climate change through use of collections. Plans in place to ensure collections, collections institutions and broader society can adapt effectively to climate change.<br><br>Plans in place for effective education and awareness raising on climate change mitigation, adaptation, impact reduction and early warning. |

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| | Plans in place to reduce negative contributions of collections-related functions, e.g. measuring greenhouse emissions with plans and targets in place to reduce them. |
| **SDG 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.** 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels | *16.7.1 Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions* *16.7.2 Proportion of population [audience/users/non-users] who believe decision-making is inclusive and responsive, by sex, age, disability and population group* Decision-making addresses societal, environmental and economic challenges related to the community, considering short-term and long-term risks and opportunities. Decision-making draws on diverse backgrounds, viewpoints and interests, reflecting a broad base of stakeholders, and working to promote inclusion and provide effective services for all of society. |
| **SDG 17. Partnerships for the goals** 17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships | *17.17.1 Amount of United States dollars committed to public-private and civil society partnerships* Number and/or increase in number, and diversity of local, national and regional multi-stakeholder (public, public-private and civil society) partnerships that address the SDGs drawing on collections, or that otherwise involve collections-based organisations and institutions. |

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