IKT for Research Stage 5

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An Integrated Knowledge Translation Toolkit for Open Research

IKT for Research Stage 5: Data Collection

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Background

In 2020, the University of Dundee initiated the development of an Open Research strategy. As part of this initiative, in February 2021 the University's Library and Learning Centre together with Open Research Champions from the Schools of Health Sciences and Dentistry, formed an Open Research Working group. To build on the University's open research policy and infrastructure, the purpose of the group was to facilitate ongoing research and development of best practice approaches for our interdisciplinary environment to make outputs, data and other products of our research publicly available, building on University of Dundee's Open Research policy and infrastructure.

Through informal consultations with academic staff and students, the Open Research Working Group found that:

- access and reach of research findings can be amplified through effective knowledge mobilisation, and stakeholder and patient and public involvement; and

- there was a need for guidance and resources on how-to implement knowledge mobilisation activities with and for stakeholders throughout the entire research process – *from proposal development to project completion*.

In June 2021, the Open Research working group, in partnership with Simon Fraser University's Knowledge Mobilization Hub began the development of an Integrated Knowledge Translation (IKT) Toolkit, with funding support from the University of Dundee's Doctoral Academy and Organisational Professional Development. IKT is an approach to knowledge translation that emphasises working in an engaged and collaborative partnership with stakeholders throughout the research cycle in order to have positive impact.

The aim was to co-produce evidence-informed, best practice learning materials on how-to:

- maintain ongoing relationships between researchers, community stakeholders and decision-makers in research development and implementation; and

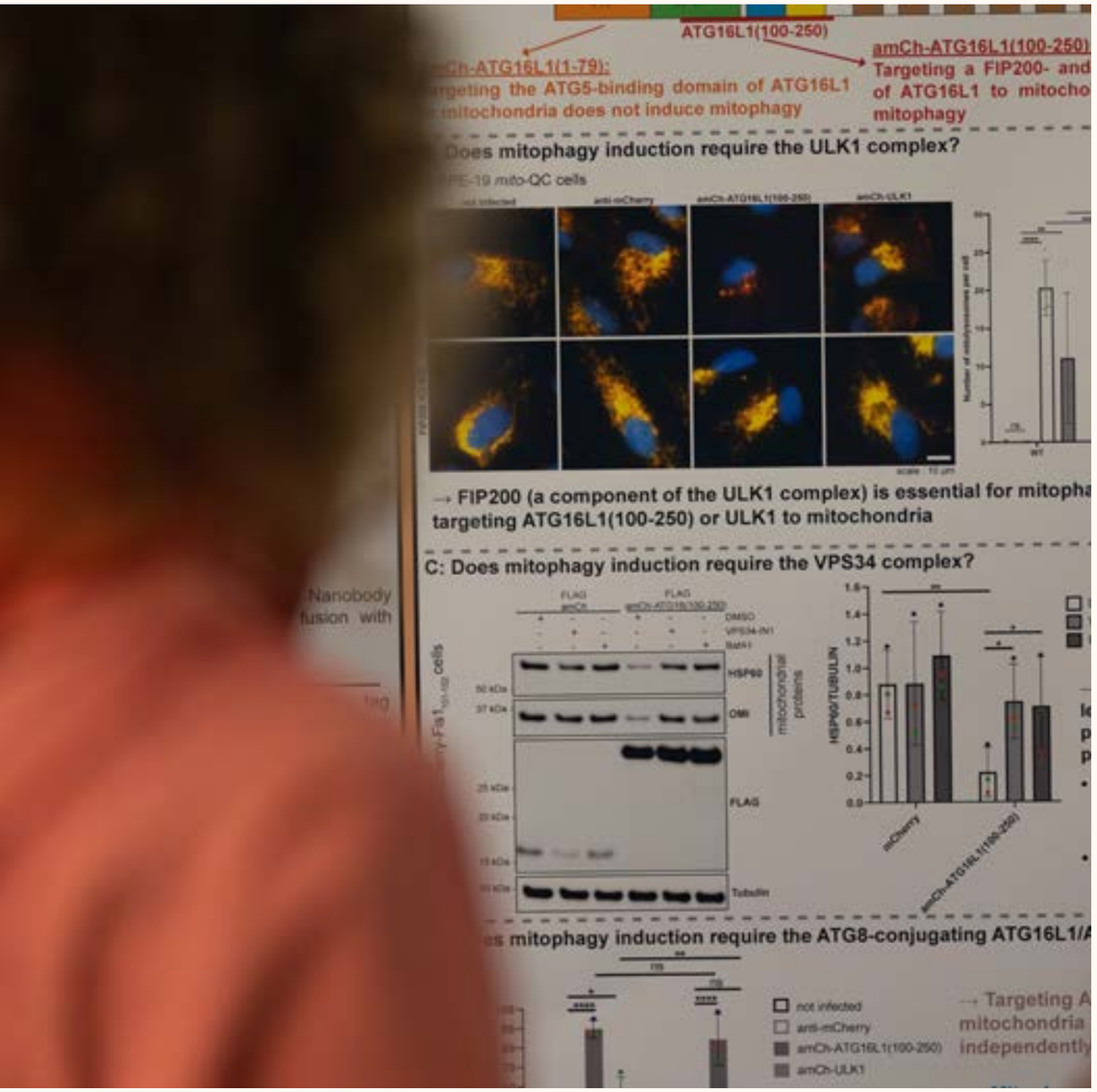
- facilitate an integrated, participatory way of knowledge production whereby researchers, practitioners and other knowledge users can collaborate to co-generate new and accessible knowledge that can be utilised in contexts ranging from supporting community development to policy guidance for practice.

The IKT Toolkit was informed by a focused evidence review and synthesis of published peer-reviewed and grey literature and consists of 8 knowledge briefs and a slide deck co-produced for use in any discipline or sector. Each knowledge brief provides practical guidance and resources to support an IKT process in each of eight key research stages: (i) Partnership Building; (ii) Generating Priorities and Ideas; (iii) Proposal development; (iv) Study Design; (v) Data Collection; (vi) Data Analysis; (vii) Reporting and (viii) Dissemination.

The current knowledge brief provides IKT guidance on Research Stage 5: Data Collection.

What is collaborative data collection in relation to IKT research?

Stage 5 of IKT informed research is about engaging a broad range of stakeholders in the data collection process especially with individuals who might have little or no knowledge of the science behind the topic, or how to conduct research. Often data collection in research is conducted by one or two members of the academic team. These researchers will have the necessary background and expertise in the topic area and are trained in scientific data gathering methods, however, they may not have the situational or circumstantial insights into the health, social, or environmental challenge that is being addressed. Involving stakeholders with different backgrounds, expertise, and knowledge, without a research background, is possible and often beneficial for both the academic team (e.g., enhancing quality of evidence) and non-academic partners (e.g., enhancing skills development) if planned appropriately ahead of time. Boxes 1 and 2 presents key principles and a checklist for how to do effective IKT in Research Stage 5: Data Collection.



BOX 1: IKT Principles for Research Stage 5 – Data Collection

1. Consult with those who may typically not be involved in the data collection process (such as non-academic community stakeholders) by asking them how they would like to be involved.
2. Collective effort should be made to support non-academic partners to enable meaningful engagement in the data collection process (Kitson et al., 2013).
3. Develop, with all team members, a working model, framework, or set of guidelines that can provide guidance and support for collaborative data collection (Bird et al., 2019).
4. Ensure an iterative feedback process whereby challenges and successes of collaborative data collection can be reviewed and adjustments to protocol can be made (Borst et al., 2019).
5. Explore creative and practical ways to integrate data collection and management in real life scenarios to enable 'easy' participation from non-academic partners (Echevarria, 2016; Reimer-Kirkham & Jule, 2015; Tõnisson et al., 2021) such as integrating data collection with partner organisation's everyday work practice and using public engagement methods such as 'travelling' public cafés to involve the community.
6. Ensure participants (such as community co-researchers) are appropriately compensated and their training and support needs are met.
7. Ensure that ethical considerations have been made and a data management and protection plan has been prepared including assessing that the research environments are appropriate for data collection by non-academic partners.
8. Maintain a focus on potential local uses and impact (Morton & Seditas, 2018) by linking findings directly with knowledge gaps and capturing issues of data quality, consistency and accuracy with non-academic partners

BOX 2: IKT Checklist for Research Stage 5 – Data Collection

1	Have you consulted with individuals, traditionally not involved in the research process, on how they would like to engage in collecting data, what training they require and how they would like to be compensated?	Yes	No
2	Have you sought to develop a dedicated process consisting of a model, framework, or guidelines that can help to facilitate collaborative data collection?	Yes	No
3	Have you consulted with researchers on the team on how they can work together to support collaborative data collection with non-academic partners?	Yes	No
4	Has a process for iterative working and feedback been developed to discuss the challenges and successes of collaborative data collection?	Yes	No
5	Have you explored creative and practical ways to enable collaborative data collection that align with stakeholders' everyday life?	Yes	No
6	Is there a process in place to ensure the diversity, quality, consistency, and accuracy of the data with non-academic partners?	Yes	No
7	Have ethical considerations been made about data collection, management, protection and privacy and working with stakeholders in vulnerable social positions?	Yes	No

How can ‘data collection’ be enhanced by applying IKT mechanisms and activities?

Involving stakeholders, especially those who live and work in the community, can have added value and benefits as they may have a greater understanding of the research challenge that is being addressed. Collaborating with different stakeholders in data collection has the potential to enhance not only the quantity but also the quality of information that is being gathered that can be used to enhance the quality of life of stakeholders who live and work in the community (Tõnisson et al., 2021). Collaborative data collection applied as a community-engaged process can help to maximise the outcomes of the knowledge producing activity, with less wasted duplicated effort collecting information that may be of little or no relevance in everyday scenarios, particularly for non-academic stakeholders (Kitson et al., 2013). Boxes 3 and 4 offer case examples of effective IKT implementation in Research Stage 3: Data Collection. Key messages from each case example are highlighted in bold.

BOX 3: Case Example 1 – Design and Implementation of LINKIN Health Census

The LINKIN Study aimed to investigate how a regionally defined health system (in South Australia) could gather local evidence of health need and service using a collaborative data collection approach. It was grounded on one of the foundational principles of IKT and focused on involving the local community in all phases of the research cycle (Kitson et al., 2013). They began planning their collaborative data collection with the view that involving members of the community in this research phase required genuinely engaging with the community. Both researchers and members of the community emphasised that **maintaining trustful academic-community working relationships was vital** for generating rich, relevant information from the community to address important knowledge gaps on how to effectively gather health and service needs information. As such, **local practitioners and members of the community were recruited who served as local indigenous and non-indigenous data collectors as well as local champions** to maintain consistent and open dialogue with the local community that was beyond the remit of data collection. **Building in mechanisms to develop and maintain strong academic community working relationships helped to inform, change and improve local health services**. Nevertheless, **challenges that surfaced and should be considered when working in this way included issues relating to a lack of time, maintaining strong partnerships, limited resources, and commitment difficulties by different stakeholders**. These are necessary considerations for any type of participatory project whereby a lot of time, effort, resources and dedication are required to create processes and environments that ensure accessible and meaningful participation by a diversity of stakeholders.

BOX 4: Case Example 2 – Knowledge Transfer with Citizen Science: The Luft-Leipzig Case Study

The Luft-Leipzig case study is part of a larger knowledge transfer and cocreation initiative that aimed to understand the level and type of knowledge gained by citizens who collected data in air quality projects (Tõnisson et al., 2021). In the Luft-Leipzig case, a citizen science approach was used to generate air quality awareness where people who lived and worked in the community acquired air quality measurements as the data collectors. **Citizen Science is a research approach whereby members of the public are empowered to undertake scientific exploration to advance their own understanding of the environment and address the complex challenges** that we face such as climate change and air pollution. As part of the Luft-Leipzig project, citizens who were 18 years of age or older who lived in Leipzig, Germany, or in surrounding municipalities were recruited to take part as citizen scientists. In total, 50 female and 48 male individuals met the **inclusion criteria all of whom had no existing training or expertise** in air quality science. The 98 i**ndividuals received intensive training from aerosol-physics and meteorology scientists on pertinent scientific information, and how to use data collection instruments.** Each were provided sensors pre-set to conduct air quality measurements. The citizen scientists were instructed to collect data at a given location at any time between April 2019 – February 2021 and conduct at least one hour of air quality sensing per day. Notes were collected using their mobile devices and included observations on air pollutants such as dense traffic or barbequing. Altogether, through collaborative data collection, the citizen scientists generated over more than 1000 hours of air quality measurements in the greater Leipzig area (approximately 300 km2) that resulted in a data set of more that 3 million data points.

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Resources

1 EU Citizen Science
eu-citizen.science

2 Participatory Action Research and Evaluation
organizingengagement.org/models/participatory-action-research-and-evaluation

3 How to engage stakeholders in research: design principles to support improvement
povertyalliance.org/wp-content/uploads/2021/10/Peer-Research-by-Children-and-Young-People-and-their-Allies-Rapid-Evidence-Review.pdf

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Further information

For more information about the IKT Toolkit and University of Dundee's Open Research Working Group please contact Dr Mei Fang at **mlfang@dundee.ac.uk**

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Notes and reflections

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