University of Dundee

IKT for Research Stage 6

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An Integrated Knowledge Translation
Toolkit for Open Research

IKT for Research Stage 6: Data Analysis

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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 6: Data Anlaysis.

Can 'data analysis' be collaborative?

Stage 6 of IKT informed research is about engaging stakeholders or knowledge users in the 'data analysis' process. Data analysis is often seen as squarely within the expertise of the trained researcher and even in participatory research it is often considered as a difficult stage to share authentically with community partners (Fassinger & Morrow, 2013). There are a number of challenges and opportunities in both quantitative and qualitative data analysis to fully engage stakeholders in the process (Fassinger & Morrow, 2013). Involving stakeholders in data analysis for qualitative research has a more substantive body of literature than quantitative research but this is an emerging area. Key to an engaged data analysis process is to build on the established understanding, working dynamics, and trust established through the previous five stages of the research cycle. Boxes 1 and 2 present key principles and a checklist for how to do effective IKT in Research Stage 6: Data Analysis.

BOX 1: IKT Principles for Research Stage 6 – Data Analysis

1   People who live and work in the community (i.e., the partners) can be involved in the data analysis process, tailoring the level and type of involvement to the specific project (Jennings et al., 2018).

2   Consider partners' interest, time, resources, familiarity, and training needs as well as the scope and resources of the project (Graham et al., 2014).

3   Take time upfront to identify and address the ethics of collaborative data analysis in your project (Marshall et al., 2012; Wang & Bickenbach, 2021). You may want to also include the term 'information governance' or 'data protection' here, so that researchers consider not just if collaborative analysis is ethical, but also plan in advance to ensure data protection legislation is considered. (For example informing participants about how their information will be used and shared and gaining the appropriate consent to do so).

4   Data analysis is an iterative process, particularly when done collaboratively (Kothari & Wathen, 2017).

5   Additional information and resources will need to be provided to meaningfully engage partners in any planning or decisions regarding collaborative data analysis (Graham et al., 2014).

6   Together with the partners, decide on a collaborative data analysis plan and determine processes, materials, and resources needed to implement the plan (Banner et al., 2019).

7   Explore different methods that integrate knowledge co-creation and analysis such as joint consensus building (e.g. Delphi panels), concept mapping, and social network analysis (Jennings et al., 2018).

8   Look for evidence informed practices and strategies in participatory approaches to research and evaluation (Banner et al., 2016).

BOX 2: IKT Checklist for Research Stage 6 – Data Analysis

#	Question		
1	Are there opportunities for partners to collaborate on the data analysis?	Yes	No
2	Have you thought about and challenged any assumptions that you or other team members may hold about your partners' interests and abilities to contribute to the data analysis?	Yes	No
3	Did you provide the partners information about and examples of collaborative data analysis?	Yes	No
4	Have you asked the partners if they are interested in participating in the data analysis and the degree to which they want to be involved?	Yes	No
5	Have you asked the partners if they have the necessary resources to participate in data analysis (e.g. access to a computer)?	Yes	No
6	Are the partners also participants?	Yes	No
7	Have you considered if there are any potential risks and how these risks can be mitigated for participants and/or partners?	Yes	No
8	Does the collaborative data analysis plan align with data collection and project goals?	Yes	No
9	Have you created space, time, and structures that dismantle or reduce power differentials to allow for partners to contribute authentically to the data analysis process, for their voices to be heard and integrated into the data analysis?	Yes	No

How can 'data analysis' be enhanced by applying IKT mechanisms and activities?

Engaging community partners in the data analysis process can contribute to both understanding the findings and research impact. It can lead to discoveries and insights regarding the meaning of data that may be missed, overlooked, or misinterpreted by researchers external to that community. It supports ongoing relationships by demonstrating respect and provides capacity building in community members through involvement in the process. Being involved in data analysis can contribute to community members being more receptive and trusting of findings. Active engagement at this stage can then lead to innovative ideas regarding how the findings will be understood, used, or impact the broader community. Boxes 3 and 4 offer case examples of effective IKT implementation in Research Stage 6: Data Analysis. Key messages from each case example are highlighted in bold.

BOX 3: Case Example 1 – Patient & Public involvement in collaborative data analysis

Jennings and colleagues (2018) share the experience of developing and testing a collaborative data analysis framework in collaboration with patient and public (PP) co-researchers. This evidence-informed framework included reviewing relevant literature for different approaches, they identified four approaches and associated pros and cons of each. The approaches were: consultation, development, application, and development and application. For their project, RECOLLECT, they integrated approach 1 and 2. Consultation approaches to collaborative data analysis involve the academic researcher conducting the analysis with the PP co-researchers for commentary and feedback (Sweeney et al., 2013). Development approaches involve the PP co-researchers in the early stages of analysis, developing themes, codes, or frameworks on a subset of the transcripts, the academic researchers then complete analysis using that framework (Mjøsund et al., 2017). Combined, this involved the academic researchers generating a preliminary coding framework to which the PP researchers providing feedback on (Sixsmith et al., 2014). The academic researchers completed analysis and returned to the PP researchers for further feedback. The PP researchers than developed a model of change based on the coding framework and identified the most important components. Jennings et al., share a framework researchers can apply to their own collaborative data analysis process that includes three phases: preparation, co-production, and application. All in all, evidence from Jennings and colleagues' pilot helped to affirm that **PP co-researchers were able to interpret data through an overlapping yet unique lens distinct from academic researchers. As such, they were an important resource for highlighting assumptions and thus reducing interpretive bias (Jennings et al., 2018)**.

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

Cashman and colleagues (2008) present a series of four case studies of community-based participatory research projects that each took a different approach to data collection and analysis. One of the cases used survey and qualitative data collection methods. Health care providers, programmers, academics, and lay health advisors were on the project steering committee that met monthly. The committee was actively involved in all stages of the project from defining the scope of the project to dissemination. The survey data was reviewed, analyzed, and implications identified at the monthly meetings and a half-day retreat. Initially the aggregated answers to each question was reported and discussed. Members reflected on questions such as what do you think the results mean? Are there any surprises? Later the results were presented visually in bar charts and pie graphs, the committee worked together to produce a report that was accessible and visually appealing for the community. Later, academic members of the team conducted correlation analyses and regression analyses to address the steering committee's major research questions. These findings were presented back to the steering committee who reviewed and provided contextual interpretation of those results. Information on the statistical methods and how to read the data was presented as needed by the academic members. Through a series of meetings and based on these findings and interpretations the committee was able to identify priorities and strategies for addressing the challenges that had been identified in the survey. **There were multiple benefits to involving community in the data analysis including in-depth understanding of the context and meaning of the findings; capacity building of the community partners in understanding the research methods;** and creating meaningful strategies to address the identified and prioritized issues.

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Resources

1   Dabbling in the Data: A hands on guide to participatory data analysis
     publicprofit.net/Dabbling-In-The-Data-A-Hands-On-Guide-To-Participatory-Data-Analysis

2   Why is collaborative analysis so important?
     organizingengagement.org/models/participatory-action-research-and-evaluation

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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**

Notes and reflections

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