THE GENERATION OF KNOWLEDGE · KNOWLEDGE PRODUCTION

The Lifecycle of Knowledge from Collection to Use

The stages through which research knowledge passes, from planning and collection to analysis, sharing, use, preservation and eventual revision, and the points in that lifecycle where value is most often lost.

ModQu research article · 918 words · 10 references (APA 7th edition)

Knowledge produced by research has a life. It begins with a question, is gathered as data, is processed and analysed, is shared with those who need it, is used in decisions, is stored for future reference and, eventually, is revised or retired. Each stage adds value, and each is a point at which value can be lost. Thinking of knowledge as passing through a **lifecycle** helps organisations see where their efforts produce lasting results and where they are wasted.

Stages of the lifecycle

Models of the lifecycle come from several fields. In data management, Higgins (2008) described a curation lifecycle in which digital data are conceived, created, appraised, preserved, accessed, reused and transformed. In knowledge management, Alavi and Leidner (2001) identified four processes through which organisations handle knowledge: creating it, storing and retrieving it, transferring it and applying it. In survey research, Groves et al. (2009) described the stages of a survey from defining the population and questions through data collection, processing and analysis. Combining these models gives a lifecycle of seven stages.

1. Plan. The cycle begins by defining the question, the decision it should inform and the evidence required. Choices made here limit everything that follows.

2. Collect. Data are gathered through surveys, experiments, observation, interviews or the reuse of existing sources.

3. Process. Raw responses are checked, cleaned, coded, weighted and documented, so that they can be analysed reliably.

4. Analyse. Data are summarised, modelled and interpreted, turning them into findings.

5. Share. Findings are communicated through reports, presentations, dashboards and conversations, in forms suited to their users.

6. Use. Findings inform decisions, actions and further questions.

7. Preserve and review. Data, methods and findings are stored so that they can be found, checked and reused, and they are reviewed as circumstances change.

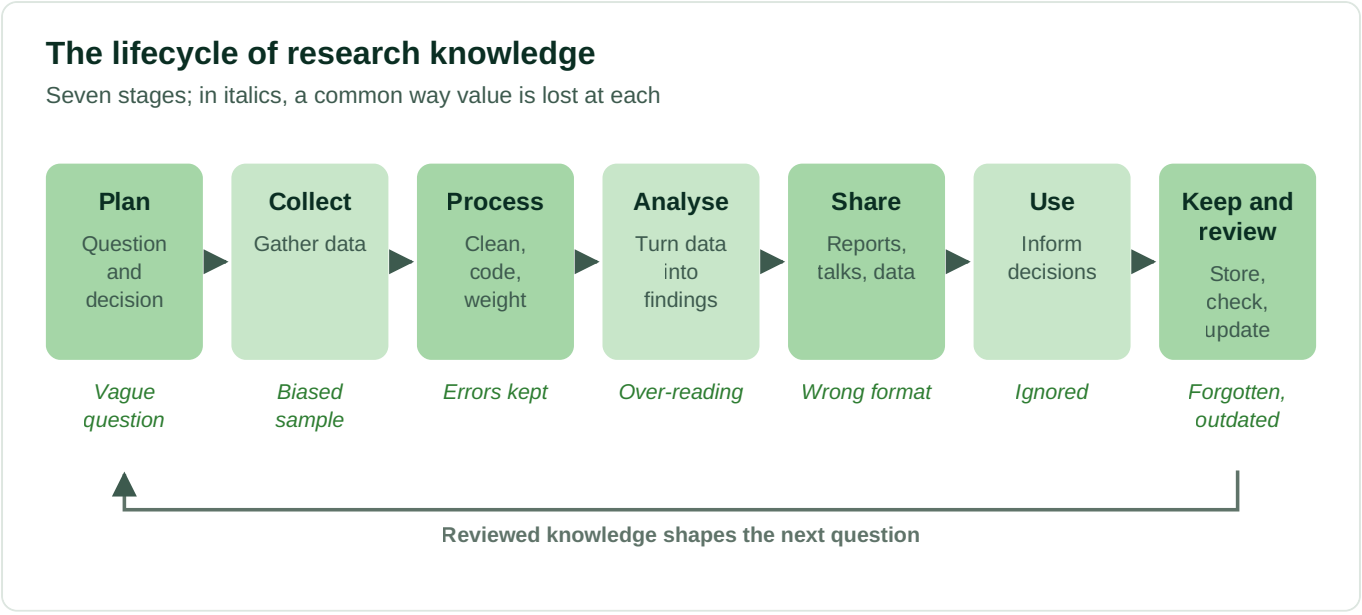


Figure 1. The lifecycle of research knowledge, with a common point of loss at each stage. Based on Higgins (2008), Alavi and Leidner (2001) and Groves et al. (2009); diagram by ModQu.

Where value is lost

The early stages have their own familiar failures. A vague question leads to data that answer nothing in particular. A sample that misses part of the population produces findings that do not apply to it. Errors left in the data during processing pass silently into every later analysis, and an analyst eager for a clear story may read more into a pattern than the evidence supports. These failures are well understood and are guarded against by sound research methods. Yet even when they are avoided, much knowledge is lost after the analysis is complete. Three later stages deserve particular attention.

From findings to use

Research is often produced but not used. Weiss (1979) showed that research influences decisions in several different ways. Sometimes it solves a specific problem directly, but more often it shapes how decision-makers think about issues over time, or is used selectively to support positions already taken. Nutley et al. (2007) reviewed how research is used in public services and concluded that use depends heavily on relationships, timing and the format in which findings arrive, not only on their quality.

Delays can be long. In health research, Morris et al. (2011) reviewed estimates of how long it takes for research findings to reach practice, and found that the frequently quoted figure of about seventeen years is an average around which delays vary greatly. Graham et al. (2006) proposed a "knowledge-to-action" framework to help close the gap, in which knowledge is tailored to the local context, barriers to its use are assessed and its uptake is monitored.

From use to memory

Organisations forget. Walsh and Ungson (1991) described **organisational memory** as stored information that can be brought to bear on present decisions, held in individuals, culture, procedures, structures and records. When reports are not filed where they can be found, or when the people who understood a study leave, the organisation loses the ability to use what it has learned. Davenport and Prusak (1998) emphasised that knowledge is held largely in people and moves through conversation, so that documentation alone is rarely enough.

From memory to revision

Knowledge also ages. Arbesman (2012) described how findings in many fields are steadily revised, giving facts something like a half-life. Market conditions, attitudes and technologies change, so that a finding that was true three years ago may no longer hold. A healthy lifecycle includes periodic review, in which old findings are checked, updated or marked as superseded.

Managing the lifecycle

Organisations that generate knowledge can strengthen each stage.

- **Plan for use from the start.** Identify who will use the findings and how, and design the study and its outputs accordingly.
- **Document as you go.** Record decisions about sampling, questions, cleaning and weighting while they are fresh.
- **Communicate in layers.** Provide short summaries for decision-makers, fuller reports for specialists and data for analysts.
- **Follow up.** Ask users what they did with the findings and what they still need to know.
- **Store for retrieval.** Keep data, questionnaires and reports in a system where colleagues can find them.
- **Review regularly.** Revisit important findings and update them when new evidence arrives.

Conclusion

Research knowledge does not end with a report. It passes through a lifecycle in which it is planned, collected, processed, analysed, shared, used, preserved and revised. Much of its value is created or lost in the later stages, when findings must reach decision-makers, enter organisational memory and stay up to date. Managing the whole lifecycle, rather than only the collection of data, is what turns research into lasting knowledge.

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