Transforming Research Methods in the Social Sciences

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Introduction

This chapter aims to introduce the reader to Design Research, the embedded principles and the application thereof. Design Research has its root in educational research, particularly curriculum and technology design (Plomp, 2013). As the name implies, the purpose of Design Research is to blend design and research. Design Research ‘seeks to increase the impact, transfer, and translation of . . . research into improved practice’ (Anderson & Shattuck, 2012, p. 16). It is thus an appropriate approach to address problems for which no guidelines to design solutions are available. Design Research results in two distinct outcomes: an intervention or product to address the issue being studied, and a set of design principles to adapt and implement the intervention in other contexts. These principles constitute the contribution to the academic domain and allow for transferability (Herrington, Mckenney, Reeves & Oliver, 2007; Nieveen & Folmer, 2013; Plomp, 2013). This chapter not only delves into Design Research as a method but also illustrates its application with a Design Research project aimed at optimising a feedback system in the South African education context.

Design Research’s cyclical, iterative approach to design, development and implementation, which informs each subsequent cycle of design, is very similar to that employed in action research. Design Research is, however, more structured, with three distinct phases of research: preliminary phase, development phase and assessment phase. Design Research can be aimed at producing or improving products, services or systems, amongst others (Herrington et al., 2007; Plomp, 2013). These phases shift from examining the context and requirements to developing various aspects of the intervention and product and, finally, evaluating the completed intervention or product in its entirety.

Design Research emphasises the importance of evaluation and, in particular, the use of both experts and users in the evaluation of each cycle. The approach also provides guidance on how the focus of the evaluation should shift during the phases by providing quality criteria. These quality criteria (detailed in Table 20.2) are relevance (content validity), consistency (construct
validity), expected and actual practicality, and expected and actual effectiveness (Plomp, 2013). This chapter first explains the Design Research approach and then illustrates its application through an example to operationalise the approach in the South African context.

Research that has an impact?

Nothing is as powerful as an idea whose time has come. (Famous misquote from a translation of the original French by Victor Hugo)

Philosophically, research and practice have often been viewed as separate entities, with research mainly defined by its theoretical exploration. Until recently, the impact of such research received little interest. Research impact was often the elephant in the room that few researchers dared to refer to for fear that they themselves might not be making an impact through their research. In recent years, this approach has shifted with citation indexes, university ratings, research analytics and bibliometrics becoming increasingly important, requiring researchers to be cognisant of how widely their works are read and cited (Abramoa, Cicerob & Andrea D’Angelo, 2013; Jung, 2015; Rice, 2013; Sharma et al., 2013). Encapsulated in the shift was the emergence of a particular type of research – Design Research. The latter is not only aimed at the academic domain but also contributes well-designed and tested interventions or products (the practical domain). This chapter defines Design Research as follows:

[D]esign(ing) and develop(ing) an intervention (such as programs, teaching-learning strategies and materials, products and systems) as a solution to a complex . . . problem as well as to advance our knowledge about the characteristics of these interventions and the processes to design and develop them, or alternatively to design and develop . . . interventions with the purpose to develop or validate theories. (Plomp, 2013, p. 15)

Design Research is thus firmly rooted in what is known as the pragmatic paradigm, foregrounding finding practical solutions and creating value for users in the real world above arguments for paradigmatic loyalty and superiority (Feilzer, 2009; Tashakkori & Teddlie, 2010). This represents a significant shift from paradigmatic decisions being seen as the most critical aspect of research efforts to find the most useful methods to address a problem, without foregrounding purist, paradigmatic loyalty (Feilzer, 2009; Tashakkori & Teddlie, 2010). This does not translate into a methodological free-for-all (in fact, it requires intimate knowledge of multiple paradigms and methodologies), but ensures that the problem and the consequences of the research remain central (Collins, Onwuegbuzie & Sutton, 2006; Feilzer, 2009; Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Leech, 2007; Tashakkori & Teddlie, 2010).
Putting a name to it

What’s in a name? That which we call a rose by any other name would smell just as sweet. (William Shakespeare – *Romeo and Juliet*)

As many authors have noted, research methodology is littered with a proliferation of various impressive-sounding terms, often relating to the same concept (Bazeley, 2013; Vaismoradi, Turunen & Bondas, 2013; Willig, 2014). One can only speculate as to the reasons for this, ranging from limiting critique to reformatting old approaches into new packaging in an attempt to build new empires. Design Research has not been immune to this trend and can be found in many guises, including, but not limited to

- design studies;
- design experiments;
- design-based research;
- development(al) research;
- formative research; and

Learning the rules of the game

In a nutshell, Design Research involves a cyclical, iterative research process of design, implementation and evaluation, similar to that found in action research (Herrington et al., 2007; Plomp, 2013). It functions in a pragmatic paradigm (Tashakkori & Teddlie, 2010) and what differentiates it from action research is its openness to a multitude of methods; its structured approach with various phases; the application of particular evaluative criteria; specific evaluator roles, which include experts and users (practitioners); and the emphasis on utility. It is also highly flexible and contextually sensitive (Archer & Howie, 2013; Collins et al., 2004; Herrington et al., 2007; Nieveen & Folmer, 2013; Plomp, 2013; Plomp & Nieveen, 2009; Van den Akker et al., 2013).

*Building on action research*

Essentially, Design Research combines multiple, iterative cycles of design, development and implementation, with formative evaluations of each completed cycle to inform the subsequent cycles of design (Figure 20.1). Van den Akker (1999, p. 2) sums up this process as the ‘successive approximation of the ideal’. Cole, Purao, Rossi and Sein (2005) highlight four points of similarity between action research and Design Research: importance of the user; cyclical process module; importance of theory; and learning through reflection.
Section Three: Transparadigmatic methods

Upping the game with Design Research

Design Research builds on this solid basis of action research by adding a delineated path (movement through the different phases), evaluative criteria and roles as well as the outcome demands in both the theoretical and application domains. This provides a rigorous framework for designing real-world solutions across a variety of contexts while allowing for creativity and flexibility within the framework. This section discusses the various elements inherent in the framework, including the various phases, evaluative criteria and evaluator roles. Finally, it examines the combination and integrated whole of these aspects.

Phases

Notwithstanding the variety of terms employed for Design Research, there is agreement that Design Research employs three distinct phases: preliminary phase, prototyping phase and assessment phase (Table 20.1).

Table 20.1 Design Research phases

<table>
<thead>
<tr>
<th>Phases</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary phase</td>
<td>This phase is concerned with examining the context and determining the tentative global design elements and principles. It thus includes consultations with practitioners, literature and document reviews (as well as possible exemplary case analyses) to determine the underpinnings for the study and focuses on the relevance to the context.</td>
</tr>
<tr>
<td>Prototyping phase (developmental phase)</td>
<td>This phase focuses on iterative cycles of the intervention approximation, foregrounding development, evaluation and reflection (similar to action research). These cycles usually focus on subcomponents or various elements of the intervention and not necessarily on the complete intervention. The phase should result in a developed intervention or product, along with an implementation plan.</td>
</tr>
</tbody>
</table>
Evaluative criteria
A completed design intervention should fulfil four quality criteria (Table 20.2). The criteria are hierarchical and if the preceding criteria are not fulfilled the following criteria cannot be met (Figure 20.2). For instance, the intervention or product cannot be effective or have catalytic validity unless it is practical in the setting for which it was designed. In the same way, consistency, also referred to as ‘construct validity’, can only be established with reference to relevance (content validity) (Archer, 2011; Archer & Howie, 2013; Nieveen et al., 2012; Nieveen & Folmer, 2013; Plomp, 2013).

Table 20.2 Description of Design Research quality criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance (content validity)</td>
<td>There is a need for the product or intervention and its design is based on state-of-the-art (scientific) knowledge. Also, it must be relevant and appropriate for the context, addressing the contextual needs in both form and purpose.</td>
</tr>
<tr>
<td>Consistency (construct validity)</td>
<td>The product/intervention must be well designed and integrated. The elements/components must be well defined, with explicit connections between the various elements. The final product must be free of any internal contradictions, showing a clear chain of reasoning and consistent approach with regard to design and implementation.</td>
</tr>
<tr>
<td>Practicality</td>
<td>Expected: The product/intervention must be judged as useful and usable in the setting and context for which it was designed. Actual: The product/intervention must be useful and usable once applied in the setting and context for which it was designed.</td>
</tr>
<tr>
<td>Effectiveness (catalytic validity)</td>
<td>Expected: The product/intervention must be judged as being able to achieve the desired outcomes for which it was designed. Actual: The product/intervention must have achieved the desired outcomes once applied in the setting and context for which it was designed.</td>
</tr>
</tbody>
</table>

Sources: Archer (2011); Plomp (2013); Plomp & Nieveen (2009)
In any Design Research project, the emphasis on the evaluative criteria being focused on shifts as the design process progresses from the preliminary phase through to the prototyping phase and into the final assessment phase. Usually each design cycle focuses on one or two criteria at a time. The general shift in the design phase and evaluative focus of the cycles is illustrated in Figure 20.3.

**Evaluator roles**
Evaluators are required during each phase of the Design Research process to determine if the quality criteria have been attained. During the preliminary and prototyping phases, these evaluators focus on more formative evaluation, while the assessment phase is more summative in nature. Design Research also provides guidance on the type of evaluators that can be utilised and their roles, further providing a framework for rigorous design (Table 20.3). A single participant may fulfil multiple roles at once or different roles during various phases of the design process, depending on the elements being evaluated and particular expertise.
Putting it all together

Design Research provides a framework for design and development that guides the attainment of rigour through combining various phases, evaluative criteria and roles as well as the outcome demands in both the theoretical and application domains (Figure 20.4). These tools facilitate quality research but allow for flexibility and emergent design within the framework to be applicable in a variety of complex contexts.

Table 20.3 Evaluator roles utilised during Design Research

<table>
<thead>
<tr>
<th>Evaluator roles</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner</td>
<td>A non-expert in the specific subject matter. This type of evaluator requires some learning before they can provide an informative evaluation. The term ‘learner’ does not refer to the person’s academic level of qualification but may refer to a professor who is unaware of the context for which the intervention is being developed. It may also refer to a user or intended user of the system who has little academic qualification but is intimately familiar with the context, thus requiring some knowledge of the research process and goals to contribute fully.</td>
</tr>
<tr>
<td>Critic</td>
<td>Participants comment on the intervention from their particular fields of expertise.</td>
</tr>
<tr>
<td>Revisor</td>
<td>These participants not only comment on the intervention but also provide recommendations for improvement. Often specific questions aimed at eliciting suggestions for improvement are presented to prompt this type of evaluation.</td>
</tr>
</tbody>
</table>

Sources: Archer (2011); Nieveen & Folmer (2013); Plomp (2013); Plomp & Nieveen (2009)

Figure 20.4 The overall Design Research framework
The next section interrogates the flexibility which this framework allows, focusing on how to choose appropriate techniques to apply as the product or implementation is being developed and matures.

Picking your poison

While Design Research provides a framework to guide researchers to define phases, cycles, evaluative criteria and roles, it also allows freedom of method within this guiding framework. This pragmatic philosophical underpinning allows for flexibility in applying methods to best answer the research question while remaining contextually appropriate (socially, historically, economically, politically, etc.) (Creswell, 2003).

This approach means that an arsenal of data collection and analysis tools are available to researchers, allowing for emergent, dynamic design. Methods may include expert review through questionnaires or focus groups; self-evaluations (checklists); walk-throughs; small group or micro evaluation; field tests; Delphi and nominal group techniques; observations, etc. (Anderson & Shattuck, 2012; Archer, 2011; Nieveen et al., 2012; Plomp, 2013; Wang & Hannafin, 2005). Nieveen and Folmer (2013) suggest employing what is known as the ‘evaluation matchboard’ to help select the most appropriate tools for each phase, the quality criteria and method, while operationalising each into activities (see Figures 20.5a and 20.5b for an education-related example).

Design Research applies a framework to help the researcher maintain the quality of the research process while benefiting from flexibility. However, Design Research comes with its own set of threats to rigour. As a researcher, you must be sensitive to and reflexive about this from the onset. This is discussed in the next section.

A note on rigour

Rigour can be seen as the ‘findings carry[ing] conviction and strength’ (Long & Johnson, 2000, p. 35). The standards employed to establish rigour are influenced by the methodology, with validity, reliability and generalisability as the gold standard in quantitative research, and trustworthiness fulfilling the role in qualitative methodologies (Tashakkori & Teddlie, 2010). Design Research by definition employs a triangulation of method, allowing for induction (or discovery of patterns), deduction (testing of theories and hypotheses) and abduction (uncovering and relying on the best of a set of explanations for understanding one’s results) (Archer, 2011; Plomp, 2013).
### Figure 20.5a Evaluation matchboard A

#### Stage of development
- **Design proposal**
  - General idea of the product.
- **Global design**
  - First elaboration of the product.
- **Partly detailed product**
  - Parts of the product have been specified and could be used by the target group.
- **Completed product**
  - The product is ready for use in practice.

#### Quality aspects
- **Relevance**
  - There is a need for the product and its design is based on state-of-the-art (scientific) knowledge.
- **Consistency**
  - The product is ‘logically’ designed.
- **Expected practicality**
  - The product is expected to be usable in the settings for which it has been designed.
- **Expected effectiveness**
  - Using the product is expected to result in desired outcomes.
- **Actual practicality**
  - The product is usable in the settings for which it has been designed.
- **Actual effectiveness**
  - Using the product results in desired outcomes.

#### Curricular components

#### Evaluation method
- **Screening**
  - Members of the Design Research team check the design with a checklist containing required characteristics of the product.
- **Focus group**
  - A group of respondents reacts to a prototype of the product.
- **Walk-through**
  - The Design Research team and representatives of the target group simulate the use of the product.
- **Micro evaluation**
  - A small group of target users use parts of the product outside its normal user setting.
- **Tryout**
  - The target group uses the product in practice.

#### Activities
- **Using a checklist**
  - Using a checklist with required characteristics of the product.
- **Interviewing**
  - Asking respondents questions verbally.
- **Observing**
  - Noticing what happens in practice and how respondents act.
- **Administering a questionnaire**
  - Respondents answer questions on a paper-based or digital questionnaire.
- **Testing or requesting a report**
  - Respondents make a test or draw up a learning report.
- **Requesting logbooks**
  - Respondents write down their actions and reflections during a certain period.

Source: Nieveen et al. (2012, pp. 1–2); reproduced with permission
Figure 20.5b  Evaluation matchboard B

<table>
<thead>
<tr>
<th>Stage of development</th>
<th>Evaluation method</th>
<th>Activities</th>
<th>Quality aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Screening</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Focus group</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Walk-through</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Micro evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tryout</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Explaination: On one horizontal row, combine a stage of development (1) with a quality aspect (2) and find an evaluation method (4) with relevant activities (5).

Source: Nieveen et al. (2012, pp. 1–2); reproduced with permission
However, Design Research also contributes some challenges to rigour, which must be kept in mind and mediated for. These include the multiple roles of the researcher (researcher, evaluator and implementer), the complexity of the environment and the continually changing nature of the context. These challenges need to be managed continually through strategies such as establishing a robust research design, external expert input, rich descriptions and reflexivity, amongst others (Archer, 2011; Plomp, 2013). The entire Design Research approach is deeply entrenched in ethical considerations.

**Ethics in the field**

Ethics in research is often minimised to guiding rules or tick-boxes (rules based on compliance ethics are based on a *deontological* philosophy) to ensure that research warrants the intrusion and does no harm. These ethics tick-boxes often relate to aspects such as non-harmful procedures, informed consent, parental consent, assent, incentives, deception, anonymity, confidentiality, misconduct, conflict of interest, data quality and storage (British Psychological Society, 2013, 2014; Silverman, 1998; WHO, 2011). Although many of the codes have moved to incorporate research developments such as internet-based research, data mining and social network analysis, many authors have questioned the cultural appropriateness, values, universality and human aspect of ethical guidelines in order to move beyond a compliance-oriented, deontological ethics (Alahmad, Al-Jumah & Dierickx, 2012; British Psychological Society, 2014; Silverman, 1998).

We thus need to enrich deontological ethics (which should be adhered to at all times) with teleological ethics (Archer & Prinsloo, 2017; Marshall, 2014). Deontological approaches to ethics are rule-based and form the foundation of legal and regulatory context within a particular environment, with fair and equitable treatment judged through universal rules.

Teleological ethics does not reject the importance of codes of conduct (deontological ethics) but acknowledges the importance of justice, consultation, partnership, consequentialism and impact. This ethics of care involves the participants as agents and partners in defining consent, potential harm and possible resources (Archer & Prinsloo, 2017; Botes, 2000). It is an acknowledgement of the ever-dynamic research context and shows sensitivity to it, which makes it appropriate for emergent research, such as seen in the Design Research cycles.

This type of consultation, iterative engagement with the field and acknowledging the expertise of participants is synonymous with Design Research. Design Research ethics, therefore, needs to be described not only from a code of practice perspective. The ethical discussion must cover the inclusion, participation and agency experienced by participants (evaluator roles). The evaluative criteria
of appropriateness, consistency, practicality and effectiveness also embody the teleological ethical principle of impact or praxis and should be engaged with appropriately. The next section presents a South African case of the application of Design Research in education.

A South African case

The example in this section is aimed at illustrating the golden thread of reasoning employed during the research process and at operationalising the theoretical aspects of Design Research discussed earlier. A full discussion of the example can be found in other publications (Archer, 2011; Archer & Howie, 2013).

Research questions and context

The aim of this example study was to identify and understand the characteristics of an effective feedback system and the use thereof in the Foundation Phase of schools. The purpose was to design and optimise a system that facilitated the use of learner performance data in the South African school environment.

The research was guided by the following question: What are the characteristics of an effective feedback system and the use thereof for the design of an optimum feedback system to facilitate the appropriate use of learner performance monitoring in primary schools in South Africa?

This question encompassed the following sub-questions (Archer, 2011; Archer & Howie, 2013):

- How can an existing learner performance monitoring system be adapted, contextualised and translated appropriately to the South African context?
- What characteristics of an optimal feedback system for use in school-based monitoring are documented in literature?
- What pre-existing conditions need to be established in the feedback system to facilitate the optimal use of the learner performance feedback system?
- How do schools use feedback?
- How effective is the feedback system in enhancing classroom practices, management and planning activities?
- Which design guidelines can be identified for the development of an effective feedback intervention for school-based monitoring?

Why educational Design Research for this study?

The research question clearly called for a Design Research approach, as the study is application oriented, includes the research participants as collaborators, allows for refinement of the intervention through several iterations, focuses

Design Research was congruent with the aims of this study and provided avenues to optimise the feedback system while it was in use. This is a sometimes neglected purpose of Design Research, as the focus is often on designing a new product or intervention and not on improving an existing system, intervention or product. The system designed and optimised is known as the South African Monitoring System for Primary Schools (SAMP). The particular design employed is illustrated in the following section.

**Research design**

The research design of this study thus focused on optimising an existing feedback system, SAMP. It moved through first the preliminary research phase where the context was analysed, practical problems of the practitioners and literature were reviewed, and a conceptual framework for the study was developed (Herrington et al., 2007; Plomp, 2013). In this particular study, an exemplary case study was also employed during the first phase, examining the application of the successfully implemented and utilised Assessment Tools for Teaching and Learning (asTTLe) from New Zealand (Archer & Brown, 2013). This resulted in the initial global design principles for the study being established.

The development phase incorporated multiple cycles and micro cycles of research (Plomp, 2013). Each cycle resulted in a prototype (see blocks in Figure 20.6), along with an evaluation (see ovals in Figure 20.6), to refine each prototype and approximate the intended outcome (Nieveen & Folmer, 2013). During the final assessment phase, the feedback system (SAMP) was summatively evaluated to establish whether the solution fulfilled the global principles determined in the first phase (Nieveen & Folmer, 2013; Plomp, 2013). Note that in Figure 20.6 this is referred to as a semi-summative evaluation. This terminology may seem to be a contradiction in terms but indicates that while the evaluation is summative, it does not preclude further developments after the particular study.

The global design is illustrated in an alternative manner in Table 20.4. Note the shift through the three phases along with the shift in focus of both the research sub-questions and quality (evaluative criteria) throughout the process. Figure 20.6 also clearly shows the utilisation of various types of evaluators, from users to experts, throughout the process.

**Outcomes**

As is required from any Design Research study, the SAMP study resulted in both a product or intervention and design principles. The product outcomes
Section Three: Transparadigmatic methods

DEVELOPMENT OF PROTOTYPES

Preliminary Phase

Cycle 1

Cycle 2

Cycle 3

Assessment Phase

SEMI-SUMMATIVE EVALUATION

1. 3 observations
   School meetings with reports

2. 3 principals and 7 teachers
   Interviews

3. 3 teachers
   Journal of daily use

Prototype IV
Follow-up 2009
Piloting:
Reading level chart and literacy resource

Prototype III
Baseline 2009
18 teachers and principals
Feedback session questionnaires

Prototype II
Baseline 2008

Prototype I
Baseline 2008

Existing SAMP feedback system

Literature review

Case study aTTle – New Zealand

Delphi technique
15 teachers and principals – feedback sessions, reports and support

Micro cycles for examining use of feedback in schools

Prototype III
Baseline 2009
28 teachers and principals
School report questionnaire

Prototype IV
Follow-up 2009
Piloting:
Reading level chart and literacy resource

Prototype I
Baseline 2008

Prototype II
Baseline 2008

Prototype III
Baseline 2009

Prototype IV
Follow-up 2009
Piloting:
Reading level chart and literacy resource

2 monitoring experts
Evaluation of feedback system

13 management and 14 teacher questionnaires

Possible further development post thesis

Design theory and guidelines for feedback systems

Report guidelines

Feedback guidelines

Report guidelines

Figure 20.6 Overall design

Source: Author
<table>
<thead>
<tr>
<th>Quality criterion</th>
<th>Design specifications and global design of feedback system</th>
<th>Establishing conditions for use</th>
<th>Transforming conditions for use into action</th>
<th>Complete intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research question focus</td>
<td><strong>Research question 2:</strong> What are the characteristics documented in the literature of an optimal feedback system for use in school-based monitoring?</td>
<td><strong>Research question 3:</strong> What pre-existing conditions need to be established in the feedback system to facilitate the use of the learner performance feedback system?</td>
<td><strong>Research question 3 (limited report questionnaire)</strong></td>
<td><strong>Research questions 3–5</strong></td>
</tr>
<tr>
<td>Evaluation cycle</td>
<td><strong>Formative – Cycle 1</strong></td>
<td><strong>Formative – Cycle 2</strong></td>
<td><strong>Formative – Cycle 3</strong></td>
<td><strong>Semi-summative – Cycle 5</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Formative – Cycle 4</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 20.4 Quality emphasis per development stage
<table>
<thead>
<tr>
<th>Quality criterion</th>
<th>Design specifications and global design of feedback system</th>
<th>Establishing conditions for use</th>
<th>Transforming conditions for use into action</th>
<th>Complete intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>Exemplary case study</td>
<td>Questionnaires</td>
<td>Participant observations – planning meetings</td>
<td>Questionnaires</td>
</tr>
<tr>
<td></td>
<td>Literature review</td>
<td>Delphi</td>
<td>Semi-structured reflective journals</td>
<td>Expert appraisal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expert appraisal</td>
<td>Semi-structured interviews</td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td>Exemplary case study</td>
<td>Questionnaires</td>
<td>Participant observations – planning meetings</td>
<td>Questionnaires</td>
</tr>
<tr>
<td></td>
<td>Literature review</td>
<td>Delphi</td>
<td>Structured reflective journals</td>
<td>Expert appraisal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expert appraisal</td>
<td>Semi-structured interviews</td>
<td></td>
</tr>
<tr>
<td>Practicality:</td>
<td>Exemplary case study</td>
<td>Questionnaires</td>
<td>Participant observations – planning meetings</td>
<td>Questionnaires</td>
</tr>
<tr>
<td>Expected</td>
<td>Literature review</td>
<td>Delphi</td>
<td>Semi-structured reflective journals</td>
<td>Expert appraisal</td>
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<td></td>
<td></td>
<td>Expert appraisal</td>
<td>Semi-structured interviews</td>
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<tr>
<td>Actual</td>
<td></td>
<td>Questionnaires</td>
<td>Participant observations – planning meetings</td>
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<td>Semi-structured reflective journals</td>
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<tr>
<td></td>
<td></td>
<td>Semi-structured interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness:</td>
<td>Exemplary case study</td>
<td>Questionnaires</td>
<td>Participant observations – planning meetings</td>
<td>Questionnaires</td>
</tr>
<tr>
<td>Expected</td>
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<td>Expert appraisal</td>
<td>Semi-structured interviews</td>
<td>Expert appraisal</td>
</tr>
<tr>
<td>Actual</td>
<td></td>
<td></td>
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</tbody>
</table>

*Source: Author*
(Table 20.5) were the developed and contextually optimised intervention (feedback system), while the design principles (Figure 20.7) were developed throughout the process to allow for transferability of the design process and products to other contexts.

**Table 20.5** Product- or intervention-optimised SAMP feedback system

<table>
<thead>
<tr>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Suite of assessment instruments</td>
</tr>
<tr>
<td>2. Feedback reports</td>
</tr>
<tr>
<td>3. User and technical manuals</td>
</tr>
<tr>
<td>4. Feedback sessions</td>
</tr>
<tr>
<td>5. Digital resource</td>
</tr>
<tr>
<td>6. Support website</td>
</tr>
<tr>
<td>7. Ad hoc telephonic, email and face-to-face support</td>
</tr>
</tbody>
</table>

*Source: Author*

**Figure 20.7** Design principles

The design principles (Figure 20.7), which encompass the characteristics of an effective feedback system and the use thereof, can be clustered according to guidelines for instruments, reporting, support to understand data, support to use data, school relationship management and support for a paradigm shift. The principles can also be classified as either product-related (related to the intervention itself) or process-related (related to the design process).
Conclusion

This chapter captured the philosophy, roots and application of Design Research. Design Research provides a contextually sensitive, praxis-oriented approach to research, bridging the gap which is often experienced between research and practice. Design Research is often associated with a pragmatic philosophy which eschews paradigmatic loyalty in favour of usefulness. This does not translate into an approach of ‘anything goes’ as it also provides a framework to ensure quality and progression. There is thus the opportunity for eclecticism and innovation in research approach while having clear guidelines for rigour and quality. Design Research therefore provides a productive avenue for research to meet practice in the current dynamic global environment, which is characterised by austerity and demands on academe to be accountable and have an impact through research.

References


Section Three: Transparadigmatic methods


