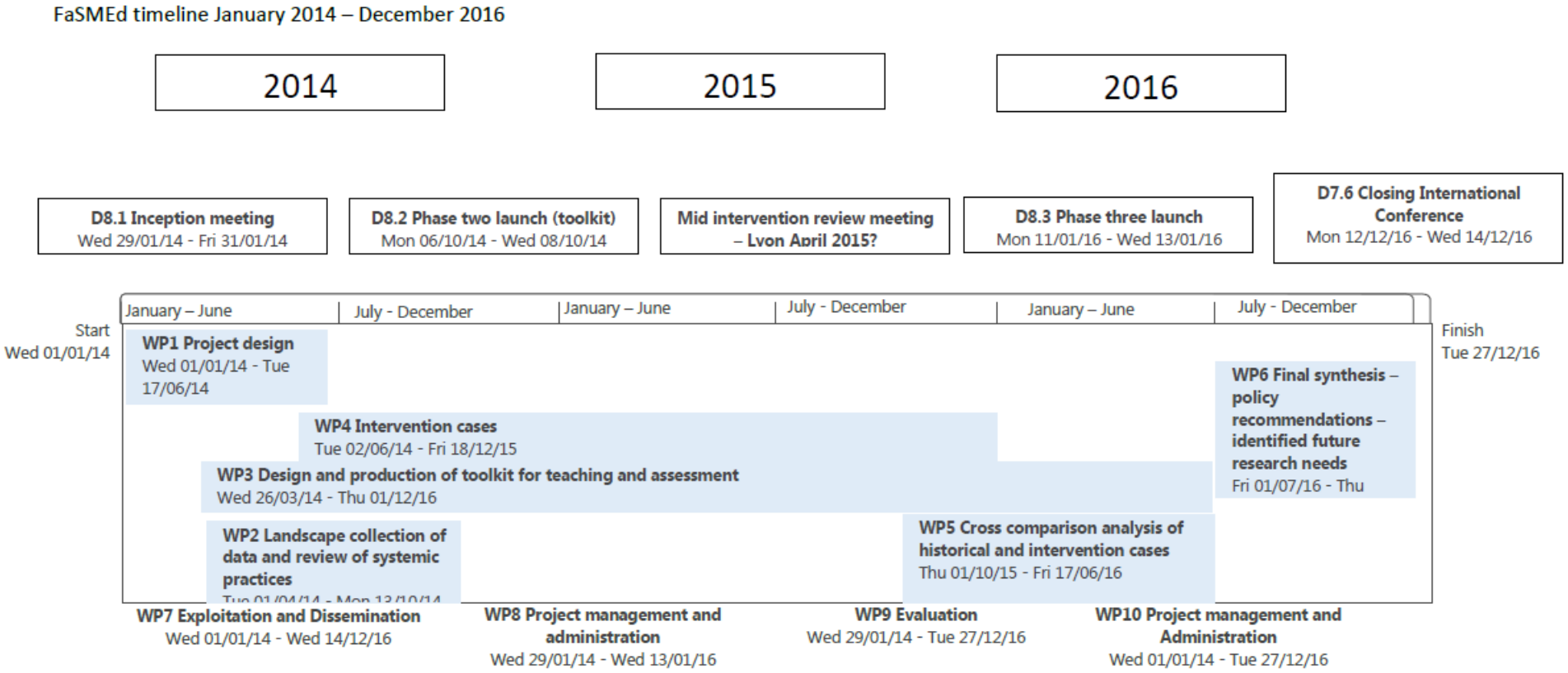
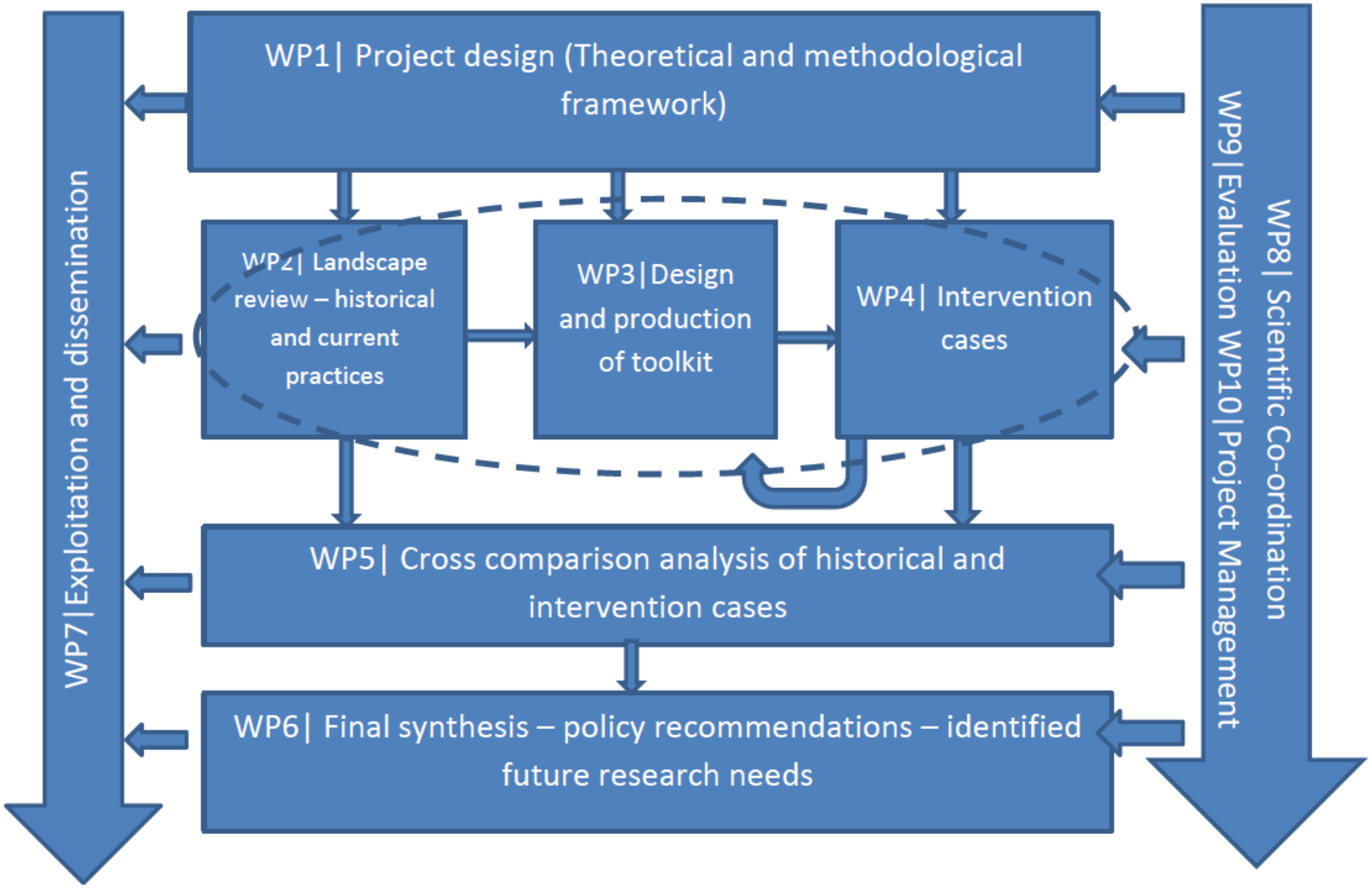
FaSMEd Project Deliverable: WP1 - D1.1 Map: Map out the stages of the design study & evaluation process July 14



FaSMEd Project Deliverable: WP1 - D1.1 Map: Map out the stages of the design study & evaluation process July 14

Activity	Year 1												Year 2												Year 3											
	Month																																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
WP1 Project design	■	■	■	■	■	■																														
D1.1 An agreed map of the design study/theoretical and methodological framework						x																														
D1.2 A glossary of terminology used within the project, translated into the required languages						x																														
D1.3 A set of research protocols to support the collection of data at each stage of the study						x																														
D1.4 School selection criteria – schools, teachers, students						x																														
D1.5 An agreed approach to professional development						x																														
WP2 Landscape collection of data and review of systemic practices				■	■	■	■	■	■	■																										
D2.1 Report on comparative data on the landscape for low achievers in mathematics and science in the partner countries										x																										
D2.2 Survey of EU systemic practices in respect of low achievers in mathematics and science										x																										
D2.3 Report on the use of tools and technology to support teaching and assessment										x																										
WP3 Design and production of toolkit for teaching and assessment				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
D 3.1 Prototype toolkit for launch event										x																										
D 3.2 Evaluation of toolkit										x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x											
D 3.3 Final version																																				x
D3.4 Professional development package for teachers										x																										
D3.5 Evaluate professional development package										x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x											
D3.6 Final version of professional development package																																				x
WP4 Intervention cases									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■											
D4.1 Cluster meetings									x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x												
D4.2 Classroom visits												x	x	x	x	x	x	x	x	x	x	x	x	x												
D4.3 Case studies																									x											
WP5 Cross comparison analysis of historical and intervention cases																						■	■	■	■	■	■	■	■	■						
D5.1 Agreed methodology																								x												
D5.2 Cross- comparative study of case studies																														x						
D5.3 Cross comparative analysis of country studies.																														x						
WP6 Final synthesis – policy recommendations – identified future research needs																															■	■	■	■	■	■
D6.1 Socio-technical approaches to the raising of achievement in mathematics, science and technology education																																				x
D6.2 National, regional and EU policy guidelines for the provision of approaches to the raising of achievement in mathematics, science and technology education																																				x
D6.3 Recommendations for future research.																																				x
WP7 Exploitation and Dissemination	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
D7.1 Setting up and maintaining website	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
D7.2 Regular electronic newsletter to participants			x			x			x			x			x			x			x			x			x			x			x			x
D7.3 Dissemination through briefing documents					x							x																			x			x		
D7.4 Documentary programme in target languages																														x						
D7.5 Postcards, posters, booklets										x																				x						
D7.8 International conference																																				x
D7.9 Stakeholder meetings in y1, y2 and y3													x												x									x		
WP8 Project management and administration	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
D8.1 Inception meeting			x																																	
D8.2 Phase two launch (toolkit)										x																										
D8.3 Phase three launch																								x												
WP9 Evaluation			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
WP10 Project management and Administration	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Graphical presentation of components showing their interdependencies



DESIGN RESEARCH AND FASMED

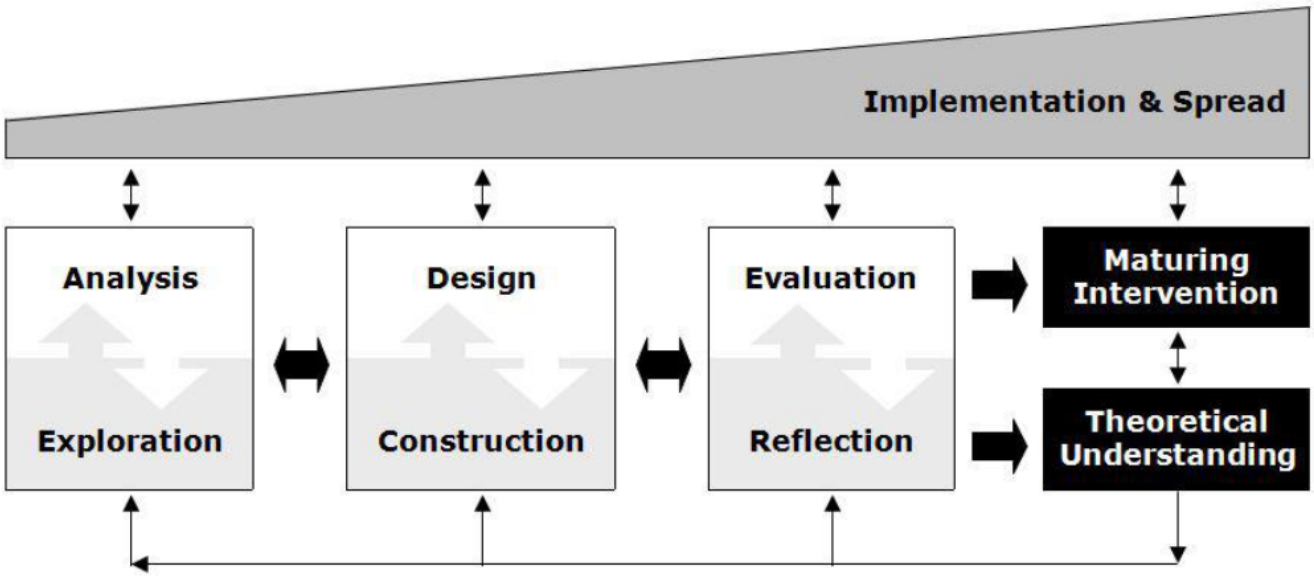
ADAPTED FROM PRESENTATION BY MALCOLM SWAN AT STEERING GROUP MEETING APRIL 2014 AT:

CENTRE FOR RESEARCH IN MATHEMATICS EDUCATION UNIVERSITY OF NOTTINGHAM

DESIGN OR "ENGINEERING" RESEARCH

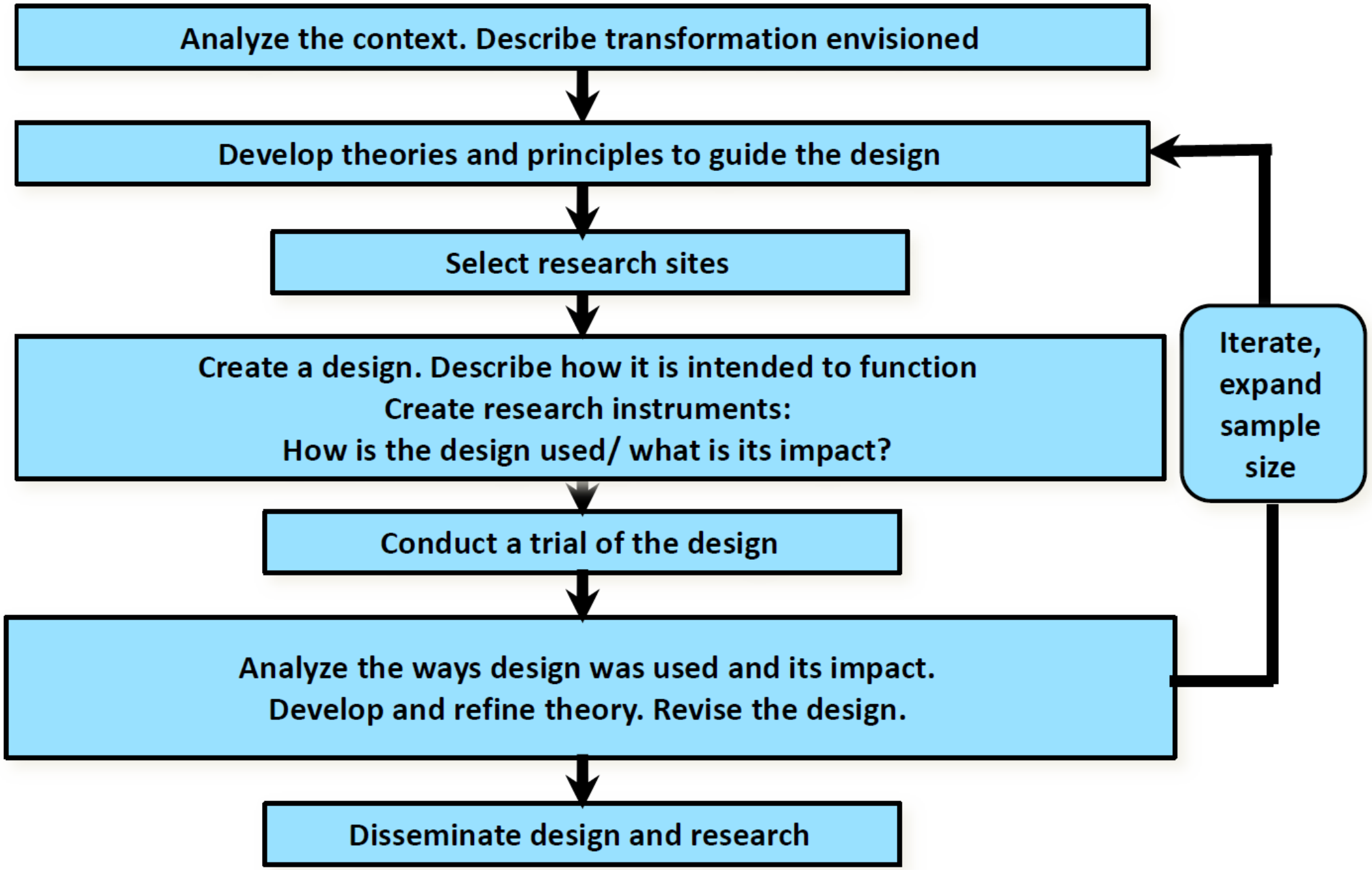
- Design-based research is a formative approach in which a product or process (or 'tool') is envisaged, designed, developed and refined through cycles of enactment, observation, analysis and redesign, with systematic feedback from end-users.
- Educational theory is used to inform the design and refinement of the tools, and is itself refined during the research process.
- Its goals are to create innovative tools for others to use, to describe and explain how these tools function, account for the range of implementations that occur and develop principles and theories that may guide future designs.
- Ultimately, the goal is transformative; we seek to create new teaching and learning possibilities and study their impact on end-users.

THE GENERIC PROCESS



McKenney and Reeves (2012)

Stages of Design Research



Successive Trials

Level	Variables	Typical research and development foci
Learning studies	Student Task	R: Conceptual difficulties, Practical IT issues D: Classroom activities, data capture
Enthusiastic teachers	Instruction Student Task	R: Teaching tactics and strategies, student learning D: Classroom materials OK for some.
Representative teachers	Teacher Instruction Student Task	R: Performance of typical teachers with realistic support. Basic studies of teacher knowledge and competency D: Classroom materials that work for most teachers
System change	System School Teacher Instruction Student Task	R: System and cultural variables D: Tools for change - materials for assessment, professional development, community relations.

THE TOOLKIT

"The expression 'toolkit' refers to a set of curriculum materials and methods for pedagogical intervention" (proposal)

- Curriculum materials:
  - Assessment tasks that make teachers more aware of learning obstacles.
  - Sample lesson plans that show how FA may be embedded to help overcome these obstacles. (e.g. MAP lessons)
- Processes for pedagogical intervention:
  - PD modules
  - Ways of using the PD modules

PROPOSAL IMPLIES TWO ITERATIONS:

PROTOTYPE & FINAL (WP3)

By Month 10:

- 3.1 Develop a prototype toolkit for teachers to support their use of formative assessment in the classroom including advice and support in using technology
- 3.4 Develop prototype PD package for teachers

By Month 25

- 3.2 Evaluation of toolkit
- 3.5 Evaluation of PD package

By Month 36

- 3.3 Develop final toolkit
- 3.6 Develop final PD package

WHAT ARE WE SEEKING TO LEARN?

- Summative
  - Better motivation among students? (e.g. Teacher/student questionnaires & interviews, lesson observations)
  - Higher quality interactions among students? (e.g. Lesson observations, sample video analysis)
- Formative (for further development of toolkit)
  - What are the easier/ more difficult formative assessment principles to adopt?
  - What are the affordances / obstacles with technology?

And - What are the most effective models for FA; for PD?

CASE STUDIES PRODUCED IN SECOND ITERATION

- Clusters
  "All partners will have a cluster of about three schools to implement each of the approaches"
- What is the grain size of a "case study"?
  - Student experience
  - Teacher experience
  - Whole school issues
  - Cluster of schools