Skills and Knowledge Competency Checklist for Implementation Scientists Authors: Dr. Bethany Hipple Walters & Kendra Kock Centre for Implementation at the Trimbos Institute bhipplewalters@trimbos.nl

Description of the checklist

In order to conduct research on the implementation of evidence-based programs in practice, researchers need a variety of skills. The skills and knowledge needed to conduct implementation studies were extracted from published academic literature about education and training in implementation science. These needed skills and knowledge competencies are described below.

Use of the checklist

The checklist can be used by students, junior researchers, and researchers new to implementation science to assess their currently skills and to reflect on whether and what sort of training they need in order to successful conduct implementation science studies. The checklist can be used in conjunction with the *Implementation science competency and training matching tool*.

Knowledge and skills needed to conduct implementation science studies

Introduction to Implementation Science

- **D** Basic knowledge and skills related to implementation science (Schultes et al., 2021), such as:
 - □ Knowledge of implementation science theories and frameworks
 - □ Ability to stay up-to-date with new implementation research theories, frameworks, and findings
 - □ Ability to apply implementation science knowledge
- **D** Knowledge of definitions and terms in implementation science (Padek et al., 2015), such as:
 - □ Differentiate between implementation research and other related types of research, such as efficacy research and effectiveness research
 - □ Identify the potential impact of implementing, and sustaining effective evidence-based interventions
 - □ Describe the range of different research skills needed to conduct implementation research, such as skills needed to conduct mixed methods, economic, organizational, and/or policy research
 - Determine which evidence-based interventions are worth disseminating and implementing
 - □ Assess, describe, and quantify, where possible, the context for effective implementation of an intervention, such as setting characteristics, culture, capacity for implementation, and readiness
 - □ Identify the potential impact of scaling down or de-implementing an ineffective but often used intervention
 - □ Formulate methods to address barriers to conducting implementation research studies

Implementation Science Frameworks and Models

- **D** Knowledge of implementation science theories and research approaches (Padek et al., 2015), such as:
 - □ Define, identify, and differentiate between different conceptual models, frameworks, or strategies needed to conduct implementation research
 - □ Identify core elements or the effective ingredients of evidence-based interventions and recognize risks of making modifications to these core elements
 - □ Describe how knowledge from disciplines outside of healthcare that can help inform further transdisciplinary efforts in D&I research.
 - □ Identify and articulate the interplay between policy and organizational processes in implementation research
 - Describe a process for executing an intervention (planning for adoption, implementation, and sustainability during the intervention development stage)





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Designing and Conducting Implementation Science Studies

- **D** Research methods knowledge and skills (Schultes et al., 2021; Padek et al., 2015), such as:
 - □ General research knowledge and skills
 - □ Ability to find and synthesize relevant information
 - □ Knowledge of study designs
 - □ General measurement and data analysis skills
 - □ Qualitative research skills
 - □ Quantitative research skills
 - □ Mixed methods research skills

D Research design and data analysis knowledge and skills (Padek et al., 2015), such as:

- □ Identify and use applicable implementation measures and analytic strategies from a relevant implementation science framework to answer a given research question
- □ Identify and measure outcomes that matter to stakeholders, adopters, and implementers
- Describe the application and integration of mixed-methods approaches in implementation research
- □ List the potential roles of mediators and moderators in an implementation research study
- □ Identify and articulate the trade-offs between a variety of different study designs for implementation research
- □ Effectively explain and incorporate concepts of de-adoption and de-implementation into implementation research study designs
- □ Incorporate methods of economic evaluation into implementation research study designs
- □ Evaluate and refine innovative scale-up and spread methods
- Collaboration knowledge and skills (Schultes et al., 2021), such as:
 - □ General interpersonal skills
 - □ Ability to network and build relationships
 - □ Ability to collaborate and co-design programs and research studies
 - □ Ability to work interdisciplinary and interculturally
 - □ Knowledge and skills in stakeholder management
 - □ Teamwork skills
 - □ Leadership skills
 - □ Ability to motivate and inspire
- Communication knowledge and skills (Schultes et al. 2021), such as:
 - □ General communication skills and strategies
 - □ Ability to listen
 - □ Ability to build shared understandings and agendas
 - □ Visualization skills
- Academic knowledge and skills (Schultes et al., 2021), such as:
 - □ Academic writing skills
 - □ Publishing knowledge and skills
 - □ Funding knowledge and grant writing skills



