

# Working to improve: seven approaches to improvement science in education

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## Introduction

This volume brings a comparative focus on seven improvement approaches that are now in increasing use in both USA and international education settings. We explore both the commonalities that exist among these different strategies and also highlight features that are distinctive to each. The seven approaches are:

- (1) Networked Improvement Communities;
- (2) Design-Based Implementation Research;
- (3) Deliverology;
- (4) Implementation Science;
- (5) Lean for Education;
- (6) Six Sigma; and
- (7) Positive Deviance.

Some of these have been around for a long time (e.g. Lean, Six Sigma), whereas others are either more recent addition to the scene (networked improvement, design-based implementation research and Deliverology) or just recently adapted for application in education (Positive Deviance and implementation science).

Whether long established or newly arrived, it is clear that an appetite within the education sector for these quality improvement approaches and tools is growing rapidly. For practicing educators to make wise choices among these alternatives, given the particulars of some specific situation, they need to understand better both the commonalities among these approaches and also the distinctive purposes and strengths of each. There is a need for an understanding of each individually and all of them collectively. This is what this volume seeks to provide.

All seven of the approaches described in this volume share a strong “common core”. All are in a fundamental sense “scientific” in their orientation. All involve explicating hypotheses about change and testing these improvement hypotheses against empirical evidence. Each subsumes a specific set of inquiry methods and each aspires transparency through the application of carefully articulated and commonly understood methods – allowing others to examine, critique and even replicate these inquiry processes and improvement learning. In the best of cases, these improvement approaches are genuinely scientific undertakings.

Most significant, all seven approaches also share a common and distinctive inquiry goal. Most educational research taxonomies (Kerlinger, 1973; Tuckman, 1974; Lewis, 1975) focus



on one of three general purposes: creating new theory, developing new tools and materials or rigorously evaluating existing programs, policies and demonstration projects. Improvement research, in contrast, is rooted in a very different purpose. It is about making social systems work better. Improvement research closely inspects what is already in place in social organizations – how people, roles, materials, norms and processes interact. It looks for places where performance is less than desired and brings tools of empirical inquiry to bear and to produce new knowledge about how to remediate the undesirable performance. Put simply, improvement research is not principally about developing more “new parts” such as add-on programs, innovative instructional artifacts or technology; rather, it about making the many different parts that comprise an educational organization mesh better to produce quality outcomes more reliably, day in and day out, for every child and across the diverse contexts in which they are educated.

In conjunction with noting the commonalities among these improvement science approaches, this volume also illuminates significant differences that exist among the seven. This comparative analysis focuses on three broad questions that are taken to serve as a major part of the content of the articles that follow:

- Q1. How are problems identified, understood and specified in the approach/model?
- Q2. How are solutions determined, tested and warranted as improvements in the approach/model?
- Q3. What, if any, provision does the approach/model make for the spread of improvement knowledge?

Each of the approaches treated in this volume addresses the three questions listed above in its own fashion. Certainly, each approach emphasizes one or another of them to a greater or lesser degree than others. Regardless, all have systems improvement as a fundamental, driving purpose.

While these elements (and more, as we hope the reader will observe) bind these approaches as being of common purpose, there are also features that differentiate them. One of the most obvious differences among the seven approaches is in the nature of the specific problems that each is most readily suited to address. Some of the approaches seem particularly well suited for organizational authorities seeking to manage more effective implementation and scaling of well-specified planned interventions (e.g. Deliverology and implementation science). Others focus on problems of improvement that are more organic and dynamic in nature, where front-line workers (e.g. teachers and school-based leaders) exercise greater responsibility for “making improvement work”. Networked Improvement Communities, Positive Deviance and Design-Based Implementation Research are rooted here. Still, others (e.g. Lean for Education and Six Sigma) focus specifically on optimizing particular processes that operate within larger organizational systems. We hope that the commonalities in this family of improvement approaches will convey a sense of that which is fundamental to improvement science, whereas the differences will provide a sense of the individual richness and potential of each of its various expressions.

Each of the seven articles is written as a stand-alone piece with value also derived from the collective. Each is also situated within a larger landscape of educational improvement broadly understood. This juxtaposition aims to assist the reader to understand better the distinctive character and utility of each approach for the education field.

To maximize the contribution of the set as a reference to the field, each article follows a common outline consisting of (in order) a general history of the ideas and approach; how it has been adapted to educational settings; a case study or example of its use in education; and

a description of its distinctive responses to the three questions listed above. Each article then concludes with a general summary.

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