BUILDING EVALUATIVE CAPABILITY IN SCHOOLING IMPROVEMENT

POSITION PAPER 2

Building Evaluative Capability through Theories for Improvement and Sustainability

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The primary purpose of this paper is to explain how a theory for improvement can be used as part of a school's 'core business' to examine, evaluate and improve its practices to achieve those outcomes valued by the schools and its community. In other words, how a theory for improvement can build a school's evaluative capability. The second purpose is to illustrate what a process for examining a theory for improvement might look like in current Schooling Improvement Initiatives.

What is a theory for improvement and why do we need one?

In essence, a theory is just a set of linked ideas to explain something. A theory for improvement is therefore a set of linked ideas about how to improve valued outcomes. Our definition of theory here includes both 'formal' theories (e.g. research theories about how to improve reading comprehension) and less formal and tacit theories (e.g., a teacher's ideas during a lesson about how to improve students' meta-cognitive skills). Everyone is a 'theorist' in the sense that s/he has tacit understandings of how to act in particular situations.

A theory for improvement is a set of linked ideas about how to improve valued outcomes.

It is important to evaluate theories because not all theories will contribute equally to desired outcomes.

A theory for improvement is a powerful way of explaining, evaluating and improving practice. An individual's or a group's theories will guide its practices in that its theories will result in the individual or group members choosing some practices over others (e.g. choosing an intervention which focuses on student engagement rather than classroom instruction because a particular school or cluster considers that improving

engagement will result in better student achievement). So, by examining these theories and therefore making any theory explicit, we uncover the reasons (and assumptions) why the individual or group has chosen some practices over others (Robinson & Lai, 2006). This allows those involved to evaluate collectively the adequacy of these theories (including the reasons and assumptions underpinning these theories) using agreed evaluation criteria. Evaluating theories for the purpose of improvement is fundamental to effectiveness because not all theories will contribute equally to desired outcomes.

What is the evaluation team's theory for improvement?

Below is a summary of the evaluation team's current assumptions about the components of a theory for improvement i.e. what we think would lead to improved valued student outcomes (Figure 1). The components of the theory need to be based on on-the-ground evidence (e.g. student achievement data) and research evidence.

Figure 1. Components of a theory for improvement

Linked Together ↴ ↵	• Definition of the problem the theory is designed to address; ○ Current understandings of the causes of the problem and how they might interrelate; • Proposed solutions to address the causes which directly relate to the problem and causes, and which are understood by all involved; • Rationale for the solutions, including evidence of likely effectiveness to address the particular problem; • Interim and long term targets against which progress can be judged including what counts as success in meeting the targets; • Ways to monitor progress towards the targets.

Developing and refining a theory for improvement involves continually identifying and solving problems (including checking whether the nature of the problem has changed) to achieve the desired student outcomes. The timeframe can occur over a year such as an

annual review, but could be shorter or longer depending on the nature of the identified problem and the difficulties experienced in solving it.

A theory for improvement should include a theory for sustainability.

The process for developing and refining a theory for improvement is essentially the same across all contexts. However, the specifics of how a theory for improvement is developed could vary in different contexts. For example a community with a history of working together is likely to engage a different (and perhaps faster) process to identify problems compared with a community working together for the first time. The solution to the problem would also be specific to the context as it would have been designed to meet the identified needs. In other words, the theory for improvement should lead to a solution that is tailored to meet the needs of the local context.

Sustainability is a process of organisational learning to improve outcome already achieved.

A theory for improvement should include a theory for sustainability of valued outcomes. Sustainability is a process of organisational learning to improve outcomes already achieved (Lai, McNaughton, Timperley, & Hsiao, 2009). As such, our theory for sustainability is an on-going process that follows on from initial improvements made. For this reason, sustainability is not something that is planned for after an intervention, but needs to be planned for from the beginning. By this we mean that the school or cluster would develop the components of the theory for improvement described in Figure 1 and over time pinpoint the specific practices that led to the intended outcomes. Some things that need to be in place before considering sustainability are identified below:

- Verified improvements in student achievement at the desired rate and/or to the desired level over time (at least two years in a row).
- The practices known to address the problems are identified including any modifications to the practices (e.g., how teachers might have adapted the practices to their classrooms).

- The processes used to identify and solve problems, and monitor solutions are known.

The components for on-going sustainability are:

- Identifying the teaching and leadership practices and processes that were essential to maintaining and creating ongoing improvement.
- Embedding these practices and processes in schools' 'core business' as part of a coherent instructional programme. Coherence in this context means that schools develop a set of interrelated programmes for students and staff that are guided by a common framework for curriculum, instruction, assessment and learning climate and that are pursued over a sustained period (Newmann, Smith, Allensworth, & Bryk, 2001).
- Having in place systems and processes to identify new challenges and how they will be acted on. It is important to remember that engaging in the same practices may not raise achievement if the problem has changed (e.g., if the original problem was decoding and students can now decode, then continuing a focus on decoding and not comprehension may not lift achievement any higher).
- Having a vehicle to systematically access and test knowledge that the school or cluster needs in order to continue improving outcomes. A possible vehicle is professional learning communities (Seashore-Louis, 2006).

How do we evaluate a theory for improvement?

Once a theory for improvement has been developed and made explicit, we can evaluate and adjust the theory through checking and monitoring (Robinson & Lai, 2006):

- whether the factual claims underpinning the theories are accurate (e.g., is it true that children speak only Samoan at home?)
- whether the knowledge base for choosing particular theories is adequate (e.g. Should we really be following the practices recommended by a milestone report that looks only at teacher satisfaction with the professional development (PD) rather than whether achievement improved)

- whether the school or cluster reasoning and subsequent actions result in the school or cluster's desired outcomes (e.g., did the PD raise achievement?)
- whether the theory for improvement unintentionally creates problems elsewhere (e.g., did the PD raise achievement in literacy but reduce achievement in numeracy because of reduced class time in numeracy)
- whether the theory for improvement is aligned with what we know to be good practice (e.g., is the theory for improvement based on poor practices like teaching to the test or cheating)

If after several cycles of implementing and evaluating the theory for improvement, the problem remains unsolved (e.g., student achievement does not increase as planned) it is important to do something different, rather than repeat what has not worked. It is likely that external expertise to conduct a detailed problem analysis and/ or design, implement and monitor the solution will be required.

The capabilities needed for a robust theory for improvement

An effective process for developing and monitoring a theory for improvement needs to be both relevant and rigorous (Robinson & Lai, 2006). The process needs to be relevant to key stakeholders to help them solve the problems that they are facing, and sufficiently rigorous to provide a trustworthy basis for making decisions about how to improve student outcomes.

Theories for improvement need to be both relevant and rigorous.

Designing and monitoring a theory for improvement is the 'highest level' in the developmental progression for building evaluative capability, i.e. it would fall within the developmental progression of "Integrated evaluative capability in schooling improvement" (Refer to the position paper "Towards an Optimal Model for Schooling Improvement" on the three developmental progressions – basic, middle/ mixed and integrated). Designing a theory for improvement requires, for example, the capacity to examine multiple sources of data to identify the specific problems facing the school or cluster (including the capacity to link achievement patterns to instructional patterns), strong content and pedagogical knowledge to know how best to address identified problems and the capacity to collect and analyse evidence to monitor effectiveness.

The following scenario sums up some of the many difficulties schools or clusters face when developing a theory for improvement when evaluative capability is still in the basic or middle/ mixed stages of the developmental progressions.

Cluster A is enthusiastic about participating in schooling improvement to raise the achievement of its students. In a cluster meeting, they are told by the Ministry of Education official that they need to develop a theory for improvement. The cluster members think that this is a great idea to clarify their thinking but there are different understandings of what a theory is. So the cluster uses the Ministry of Education guidelines as a 'checklist' for what they might need to do. A few principals complain about jumping through hoops to get funding when they just want to get on with it. Two months pass.

Three months is spent trying to hire someone to collect achievement data across the cluster, and then a further four months is spent collecting and analysing achievement data. At this stage, no one systematically examines what is happening in classrooms across the cluster, so little is known about the cluster teaching practices and how they might relate (or not) to the achievement patterns. A few interviews with school leaders takes place, but in these interviews everyone gets to voice their opinion based on their experience but no evidence is required about whether the suggestions are more likely to be successful than what they are doing now. The cluster is beginning to feel frustrated with delays.

The achievement data are shared and the analysis shows that achievement is low in reading comprehension. "So what do we do next to improve reading comprehension?" asks a principal. The cluster brainstorms who they might bring in to help them. The principals and lead teachers start debating what they should focus on. One principal believes that they should focus on student engagement; another thinks the problem is due to poor teaching; yet another feels parent-school relationships are the key. The cluster reaches an impasse so the Ministry of Education official and one principal offer to collate the ideas, write the theory for improvement for funding and submit the document. The document lists five 'effective teaching practices' and four strategies for increasing student engagement which would accomplish the goal of raising student achievement in reading comprehension.

The Ministry approves the theory for improvement, but does not comment on its quality. The cluster gets on with the work programme; the theory for improvement documents sits in a filing cabinet and is not referred to again when planning the clusters' activities.

We can look more closely at the evaluative capabilities evident in the scenario by using the development progressions of evaluative capability. Tables 1 and 2 show the basic and middle/ mixed levels of evaluative capability for developing and monitoring a theory for improvement.

Developing evaluative capability should be a priority for schools so they can move towards sustainability.

We would expect most schools or clusters beginning schooling improvement to be at the basic level of evaluative capability with uncritical dependence on internal or external sources. Developing capability towards a more integrated level should be a priority for schools and clusters involved in schooling improvement so that they can move towards sustainability. If a school or cluster is still operating at the basic level of evaluative capability after many years, it is unlikely that the school or cluster will be successful in a "sustainability phase" because the capability to identify what worked and why, what should be retained and what should be discarded would not be well developed.

Table 5.1. Basic evaluative capability (Theory for Improvement)

Components of the Theory for Improvement (TFI)	School / Cluster	Ministry of Education	Capabilities and Inter-dependence
Definition of the problem the theory is designed to address ***Current understandings of the problem and how they might inter-relate***	Achievement problem is defined in a generic way (e.g., raise student achievement) Achievement data are collected primarily by an external agent (using nationally benchmarked assessments) and analysed by the external to show the achievement trends Little discussion on the nature of the achievement problem beyond generalities (e.g., results show we are two years behind) Other relevant data to determine the cause of the problem (especially classroom and school data to identify teaching and leadership needs) not collected or if collected not used in conjunction with achievement data to determine what might have caused the achievement problem. Causes of the problem, if identified, primarily external to the school/ cluster and beyond the school/ cluster's control Current understandings of what might have caused the achievement problem remain largely untested or assumed (e.g., assume that the cause of the problem is student engagement, but no data collected on student engagement). Inter-relationships between components of the problems are non-existent Some discussion to understand the achievement problem and its possible causes with key stakeholders	Ensure that school/ cluster defines a problem in student achievement Ensure achievement data are collected.	Weak capability because internal expertise is limited and schools are uncritically accepting of opinions expressed internally or reliant on external expertise. Reliant on external expert to drive school /cluster

Components of the TFI	School / Cluster	Ministry of Education	Capabilities and Inter-dependence
Proposed solutions to address the causes directly relate to the problem and are understood by all involved ***- Rationale for the solution including evidence of likely effectiveness to solve the problem***	Proposed solutions are generic (e.g., improve teaching in reading comprehension) Proposed solutions implicitly related to the problem Little to no testing of whether there is general agreement on the proposed solutions by key stakeholders. Rationale for selecting the solution is implicit and/or untested Rationale is not linked explicitly to outcomes (e.g., the rationale for undertaking the particular PD is because it was free rather than because it was more likely to fit the teaching and learning needs')	Ensure that there is a proposed work plan to address the achievement problem. Ensure appropriate contracts are in place for teacher PD to happen. No particular leadership intervention.	Weak capability because a) solution may or may not relate to actual needs, b) internally limited and c) uncritically reliant on internal or external resources.
Interim and long term targets and what counts as success	Generic student achievement targets and/or generic notions of success (e.g., student achievement improves). Implicit or no rationale for targets Implicit or no rationale for targets around classroom and school practices	As long as some form of target is present, no further assessment required.	Weak capability because is unclear what the counts as improvement making it harder to determine whether the targets have been achieved
Ways to monitor progress towards targets	Data collected to monitor progress in student achievement usually by an external agent Data collected for monitoring does not include data to check the implementation of the solution (e.g. classroom practice data) or data on the perceived causes of the problem No other data systematically monitored to identify possible causes of impact or lack of it although informal observations such as walkthroughs may be used to assess implementation	Provided that school / cluster assesses impact at student level, no further assessment required.	Weak capability because there is insufficient monitoring of the success of the solution nor of the factors that contributed to the success

At the middle/ mixed level of evaluative capability (Table 2), problem analysis is likely to be undertaken to check that the nature of the problem is the same. For example, it may be that there were substantial losses in achievement over the summer holidays (unlike previous years) and that teachers may need to plan their programmes to help students accelerate faster to compensate for the loss over summer or to involve the community in relevant programmes. The continuing problem analysis acknowledges that theories for improvement change over time, as new information is uncovered to refine the theory or as problems change. So a theory for improvement needs to be continuously monitored and updated if it is to be effective as a tool to achieve the desired outcomes.

Theories for improvement change over time as new information is uncovered or problems change.

In the middle / mixed level of evaluative capability, dependence on external agents and the Ministry is being slowly reduced. For example, the creation of tools and systems for monitoring outcomes should be in the process of being established as schools' core business. Schools leaders will need to develop school systems and processes which integrate the practices which have worked to improve achievement into the culture of the school (Newmann et al., 2001). Examples of systems include induction, developing appropriate documentation (e.g., a document on how to moderate asTTle writing), establishing regular school meetings to carry out tasks (e.g., regular syndicate meetings to discuss data) and the like.

School leaders need to develop school systems and processes to integrate the practices that worked to raise achievement into the culture of the school.

Table 5.2. Middle/Mixed evaluative capability (Theory for Improvement)

Components of the Theory for Improvement (TFI)	School / Cluster	Ministry of Education	Capabilities and Inter-dependence
Definition of the problem the theory is designed to address ***- Current understandings of the problem and how they might inter-relate***	Achievement problem is generic but is beginning to be differentiated (e.g., raise student achievement for Maori students). Achievement data are collected primarily by external agents and schools (using nationally benchmarked assessments) and analysed by both parties to show the achievement trends. Some discussion on the nature of the achievement problem beyond generalities but still not differentiated sufficiently to relate to specific classroom practice Other relevant data to determine the nature of the problem (especially classroom and school data to identify teaching and leadership needs) collected albeit mainly informally and may be used in conjunction with achievement data to determine what might have caused the achievement problem. Acknowledgment of causes external to the school and beyond the school's control, but school takes responsibility for the practices it can control Some testing of the current understandings of what might have caused the achievement problem but this testing is not systematic Inter-relationships between components of the problems are identified but the relationships may not be linked in a coherent way Greater discussion to understand the achievement problem and its possible causes with key stakeholders with some critique of the theory, but sometimes not evidence-based. A process is established to resolve the disagreements but may not be based on evidence for different views (e.g., consensus vote)	Support the school/ cluster develop their understanding of the achievement problem but any critique is primarily generic and may not include a systematic critique of the problem analysis and quality assurance processes. Ensures that there is support to engage in critique but support not explicitly or systematically linked to identified needs. Links, and the reasoning underpinning them, remain implicit. through a) critique of problem analysis including ensuring that appropriate quality assurance processes are being undertaken at school and cluster level, and/ or b) brokering appropriate expertise to engage in this critique	Mixed evaluative capability – some emerging skills and resources to collect and use appropriate sources of evidence Some emerging skills and resources to discuss evidence with key stakeholders Still dependent primarily on external parties to gather and analyse evidence

Components of the TFI	School / Cluster	Ministry of Education	Capabilities and Inter-dependence
Proposed solutions to address the causes directly relate to the problem and are understood by all involved ***- Rationale for the solution including evidence of likely effectiveness to solve the problem***	Proposed solutions are beginning to be differentiated and includes examining leadership as well as teaching practices Proposed solutions more explicitly related to the problem Some testing of whether there is general agreement on the proposed solutions by key stakeholders. Rationale for selecting the solution is more explicit but may not be based on evidence Rationale is more explicitly linked to intended outcomes although the link between the rationale and the outcomes may be tenuous (e.g., based on untested assumptions)	Support the school/ cluster develop the proposed solution of the achievement problem through a) critique of solution and/ or b) brokering appropriate expertise to engage in this critique. But any critique of the school/ cluster is primarily generic, sources of evidence for the proposed solution are not systematically checked and not systematically linked to the problem. Support brokered may be implicitly linked to school/ cluster's needs.	Mixed evaluative capability – some emerging skills and resources to collect and use appropriate sources of evidence, but solutions not systematically linked to the problem nor based on evidence. Still dependent primarily on external parties to provide solutions
Interim and long term targets and what counts as success	Student achievement targets and success criteria are beginning to be differentiated Some rationale provided for targets but may not be based on evidence Some targets around classroom and school practices but may not be based on evidence	Support the school/ cluster develop appropriate targets through critique of targets using evidence and/ or brokering appropriate expertise to engage in this critique. But any critique of the school/ cluster is primarily generic, and support brokered may be implicitly linked to school/ cluster's needs.	Mixed capability – better evidence on which to determine whether the targets have been achieved
Ways to monitor progress towards targets	Data collected to monitor progress in student achievement usually by both external agent and schools Some additional school and classroom data collected for monitoring (including monitoring implementation) but this is informal. Data collected for monitoring purposes implicitly related to perceived cause of the problem	Support the school/ cluster develop appropriate monitoring processes through critique of monitoring processes using evidence and/ or brokering appropriate expertise to engage in this critique. But any critique of the school/ cluster is primarily generic and support brokered may be implicitly linked to	Mixed capability – some monitoring but not systematically collated or linked to the possible causes of the success of the solution

	Some data collected to identify possible causes of impact or lack of it. Informal observations such as walkthroughs may be used to assess implementation	school/ cluster's needs	

The following scenario illustrates what developing and monitoring a theory for improvement might look like in a schooling improvement initiative with an 'integrated' level of evaluative capability. Table 3 shows the details of tasks and capabilities at the integrated level of the evaluative capability for developing and monitoring a theory for improvement.

Cluster B has been in Schooling Improvement for a while and wants to improve what it is doing to accelerate student achievement in reading comprehension further. They decide to collect data on students' reading comprehension abilities using achievement data, observations of students' during normal classroom practices and observations of leaders facilitating staff meetings to identify the teaching and learning needs and develop ways of solving them. The cluster has some emerging theories about the specific classroom and leadership practices that are associated with the achievement patterns. The cluster knows that it has some capacity to draw the links between the practices and the achievement patterns, but that through partnership with external experts, the links could be made more precisely. So they engage the services of a research-development team to support them make those links.

The achievement data suggests several specific problems to be solved such as the acceleration of students at the average reading levels who appear to be making little gain yearly and addressing the issue of extremely low vocabulary scores of male students. The process of linking the achievement patterns to the classroom and leadership practices pinpoints specific teaching and leadership practices that could be contributing to the achievement problems listed.

Separate solutions to address the different student learning needs are developed based on previous interventions which have successfully addressed those problems. Separate targets for each problem are developed and the evidence collected to date is used to create specific yet achievable targets.

The cluster develops plans to systematically monitor the improvements in achievement and teaching and leadership practices through a series of recorded observations of classroom and management practices. The plans are integrated into school's core business so that they are not seen as an "add on".

Discussions are held with key stakeholders (e.g., teachers, community) about the problems and their solutions and how to monitor them. Where there are disagreements, there is a process established to resolve the disagreements by examining the evidence for the differing views. The process is used to finalise the cluster's plan of how to solve the achievement problem.

At the integrated evaluative capability level, schools are responsible for creating continued improvements, although this may mean they seek the resources (including time and external expertise) from a variety of sources (e.g., involvement in university courses, identifying experts in the field for specific professional development). In other words, assuming responsibility can mean inter-dependence with external experts and/or Ministry. For example, monitoring the ongoing improvement is primarily undertaken by school leaders, who may choose to bring in external expertise to help re-establish the monitoring process as key school leaders have left the school. One aspect that is likely to involve continued inter-dependence is collating and managing cluster databases, and developing analyses at a cluster level over an extended period of time. This includes comparing the achievements of students who have participated fully in the intervention and those that have been absent or transient over time. Schools, however, still assume responsibility for collating, managing and analysing their own school's data. A further aspect of inter-dependence is the need to continually develop and refine hypotheses to become more effective in achieving valued outcomes. External agents can bring new research-based knowledge to this process but also gain new directions from the schools' knowledge and practices to better link research and practice for greater effectiveness.

Even at the integrated evaluative capability level, inter-dependence with external experts might be necessary for continued improvement.

At the integrated evaluative capability level, the processes and tasks that were essential to maintaining and creating ongoing improvement are now fully embedded in schools' 'core business' as part of a coherent instructional programme. A cycle of refining and developing the theory for improvement is in place to identify new challenges and how they will be acted on, and the school/ cluster has established the vehicle to systematically access and test knowledge that the school / cluster needs in order to continue improving outcomes. As such, the school / cluster have developed a process for on-going sustainability.

Table 5.3. Integrated evaluative capability (Theory for Improvement)

Components of the Theory for Improvement (TFI)	School/ Cluster	Ministry of Education	Capabilities and Inter-dependence
Definition of the problem the theory is designed to address ***- Current understandings of the problem and how they might inter-relate***	Achievement problem is differentiated to identify specific student learning problems to address Achievement data are collected primarily by school/ cluster (using nationally benchmarked assessments) and analysed to show the achievement trends, or if inter-dependent with external partners, the process of collecting and analysing achievement data led by school/ cluster Discussion on the nature of the achievement problem sufficient to relate to specific classroom practice (e.g., Tier 2 vocabulary) is identified as the issue Other relevant data to determine the nature of the problem (especially classroom and school data to identify teaching and leadership needs) systematically collected and mapped onto the achievement data to determine what might have caused the achievement problem. Acknowledgment of causes external to the school / cluster and beyond the school /cluster's control, but school/ cluster actively tries to find creative ways of solving aspects of the problem that are within its control (e.g., 'induction' programme for new students) Systematic testing of the current understandings of what might have caused the achievement problem Inter-relationships between components of the problems are identified and linked in a coherent way Discussion to understand the achievement problem and its possible causes with key stakeholders critiquing the emerging theory using evidence. A process established to resolve the disagreements by examining the evidence for the differing views	Support the school/ cluster critique their understanding of the achievement problem through a) critique of problem analysis including ensuring that appropriate quality assurance processes are being undertaken at school and cluster level, and/ or b) brokering appropriate expertise to engage in this critique If there is disagreement on the nature of the problem, provide support and critique to resolve the disagreement using evidence.	High capability and well managed inter-dependence

Components of TFI	School/ Cluster	Ministry of Education	Capabilities and Inter-dependence
Proposed solutions to address the causes directly relate to the problem and are understood by all involved ***- Rationale for the solution including evidence of likely effectiveness to solve the problem***	Proposed solutions is differentiated and includes examining leadership as well as teaching practices Proposed solutions explicitly related to the problem Systematic testing of whether there is general agreement on the proposed solutions by key stakeholders Rationale for selecting the solution is explicit and based on evidence Rationale is more explicitly linked to intended outcomes and the link between the rationale and the outcomes are evidence-informed	Support the school/ cluster critique the proposed solution of the achievement problem through a) critique of solution and/ or b) brokering appropriate expertise to engage in this critique	High capability and well managed inter-dependence
Interim and long term targets and what counts as success	Student achievement targets are differentiated Rationale provided for targets and based on evidence Targets around classroom and school / cluster practices are based on evidence	Support the school/ cluster check the appropriateness of their targets through a) critique of targets using evidence and/ or b) brokering appropriate expertise to engage in this critique	High capability and well managed inter-dependence
Ways to monitor progress towards targets	Data collected to monitor progress in student achievement primarily by school/ cluster and/or the process of collecting and analysing achievement data led by school/ clusters if inter-dependent with external partners Systematic school and classroom data collected for monitoring Data collected for monitoring purposes explicitly related to perceived cause of the problem Systematic data collected to identify possible causes of impact or lack of it Monitoring processes are embedded into schools' core business and can be used to identify new challenges and problems when they arise	Support the school/ cluster check the appropriateness of their monitoring processes through a) critique of monitoring processes using evidence and/ or b) brokering appropriate expertise to engage in this critique	High capability and well managed inter-dependence

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