How can curriculum design, both systems and intelligent tools, be used to form a basis for the effective development and sustainability of student agency to enhance student achievement in all learning?

Sabbatical Report

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Executive Summary

The New Zealand Curriculum places children at the heart of their learning. By focusing on student agency, we not only give voice to children as current citizens of the world but we also work collaboratively with them to develop understandings and capabilities that will build our future, even in the face of a fast changing and complex global society.

An evaluation framework has been adapted to not only reflect an 'open teacher' which was the focus of the original work but also to capture an 'open student' and how the relationship between these creates a negotiated or third space which results in an emergent curriculum that is both personal and shared.

This framework is used to guide thinking about how some schools have responded with curriculum design both systems and intelligent tools to the implications of student agency.

What do we know about curriculum development?

It is not surprising in today's world of globalization that there exist contradictions, divergent definitions and approaches to curriculum. School curriculum is developed as part of a society influenced by cultural, social and historical factors. In New Zealand, schools have the autonomy and flexibility to create school-level curriculum that is influenced by both our local communities and a wider global society (Jonnaert & Therriault, 2013)(Priestley & Sinnema, 2014).

The development of school-level curriculum has many of the characteristics of a 'wicked problem' (Hipkins et al., 2014). It spans multiple domains that interact with and are embedded within other related problems, such as inequality, globalization and environmental sustainability. All of these impact on how we think about education and what role it should play in our society and yet none present a clear set of solutions. Each possible solution has the potential to create additional problems or to make existing one's worse. Different groups are sure they "know' what the answer to a 'wicked problem' is. These answers conflict with other's answers (Hipkins et al., 2014). Any solution at its best is 'clumsy' and imperfect, the result of different perspectives coming together. Our modern world is full of 'wicked problems' and 'clumsy' solutions (Hipkins et al., 2014).

What theoretical perspectives underpin this work?

In entering any discussion involving complex or 'wicked problems', it is important to clarify the ideological perspective you are coming from and how this might contribute to a 'clumsy solution'. The New Zealand Curriculum (Ministry of Education, 2007) guides us towards constructivist approaches to learning with its emphasis on autonomy, independence and self-direction. Constructivism however is not a homogenous beast with theorists identifying many different approaches. In this discussion, we will focus on radical, social and emergent constructivism as they capture commonly heard views in a New Zealand context (O'Shea & Leary, 2013) (Ministry of Education, 2007).

Radical perspectives understand knowledge to be constructed by individuals as they learn. It cannot be transferred from one individual to another i.e. you have to work it out for yourself. A teacher with these beliefs focuses on the development of individual knowledge rather then accurate representations of the world and provides whatever tools are needed to promote cognitive conflict. Teaching involves the implementation of hands on activities, discovery learning and questioning techniques that probe the beliefs of children (O'Shea & Leary, 2013).

The social constructivist perspective understands knowledge to be determined by the surrounding context and the interactions the learner has i.e. you learn from others within a wider context and internalize this knowledge as you go along. A teacher is responsible for the development of participation structures; aligning children's constructed understandings with culturally accepted meanings; and negotiating with students to mediate between their personal and established cultural meanings. Teaching involves maximizing the social aspect of learning; such as cooperative and collaborative learning situations and ensuring children's real life experiences are integrated into the classroom (O'Shea & Leary, 2013).

Emergent constructivism is a synthesis of radical and social perspectives with the central understanding about the nature of knowledge being that it is personally constructed and socially mediated. A teacher would pay attention to both the psychological and developmental aspects of an individual child's learning while coordinating the social dimensions. They would support children's constructions and evolve classroom practices so that children become more sophisticated in their ability to participate in the accepted practices of the wider society. Teaching would enable children to work collaboratively and support task-orientated dialogue. It would involve easing the pathway of children as they find ways to solutions and coordinating the understanding of groups of children about these solutions (O'Shea & Leary, 2013).

Emergent constructivism is the ideological perspective that best underpins the question that led to this discussion, informs the selection of the tool for thinking about how school curricula supports student agency, the selection of schools visited and the professional reading undertaken.

Why focus on student agency?

If learning is a process of individual and group construction, then a child is an active constructor of knowledge, competencies, skills and autonomies. They are competent, capable researchers of the meaning of life (Rinaldi, 2013).

The New Zealand Curriculum places children at the heart of their learning. Hipkins et al (2014) suggest that all students need opportunities to develop their capabilities, be self-aware, critical, empathetic, creative, curious, resilient, and discover interconnections. This echoes Jiménez Raya, Lamb & Veira's definition of the concept of 'autonomy' as cited in Parnell & Procter (2011);

> 'the competence to develop as a self-determined socially responsible and critically aware participant in (and beyond) educational environments, within a vision of education as (inter) personal empowerment and social transformation.' (p.79).

By focusing on student agency, we not only give voice to children who are current citizens of the world but we also work collaboratively with them to develop understanding and capabilities that will build our future, even in the face of a fast changing and complex global society.

What implications exist for schools designing systems to support student agency?

Third space theory and the experiences of education in Reggio Emilia offer insights for schools on system design when there is a focus on supporting student agency.

Homi Bhabha (Meredith, 1998) developed the notion of the third space when considering how minority groups maintained their identity within societies dominated by one culture; suggesting that a 'space' existed between the minority and dominant culture. He saw the potential of the in-between space as not just a place to move through as in a zone of proximal development but as a place where individuals can make sense of two oppositional ideas by creating a new way of thinking (Flessner, 2014) (Meredith, 1998) (Levy, 2008). In the case of teachers and children this would be new educational practices; collaboration to develop a hybrid response to meet the demands of teaching and learning; a way of operating to develop 'clumsy' solutions to 'wicked' problems.

Researchers and practitioners have used third space theory to inform educational design in a number of settings already – re-designing teacher training to close the gap between training and practice and to develop responsiveness to diversity; and in literacy, re-designing transitions from home literacy to school literacy for new entrants (Flessner, 2014) (Jōnsdóttir, 2015) (Klein et al, 2013) (Levy, 2008).

So if we imagine teachers and children as agents within a third space creating a hybrid response, what can we learn from other education initiatives that have used third-space approaches?

For collaboration to be successful both parties must be motivated, engaged and share a collective goal. They must be agents for change (Engeström & Sannino, 2010).

- Equity of voice is essential and is maintained through the use of explicit negotiated processes for goal setting, assessment and evaluation.

- Motivation and input from collaboration is kept high by setting goals that work for the third-space as well as for the child and teacher spaces. Everyone wins.

- There is a danger that innovation in practice declines over time as the group becomes insular. This can be addressed by providing opportunities for knowledge from other sources to feed into the group.

- Collective goals need to be ambitious and not watered down by the group 'playing nice with each other (Engeström & Sannino, 2010) (Flessner, 2014) (Klein et al, 2013).

The educators in Reggio Emilia have an image of children as human beings that are citizens of their world from the moment they are born i.e. agents for change. For them both the teacher and the child are researchers of equal rights contributing to their society – the teacher a researcher of learning and the child a researcher of the meaning of life (Rinaldi, 2013).

So if we imagine as the educators in Reggio Emilia have that learning is a process of individual and group construction between teachers, children and communities, then what can we learn from the experiences in Reggio Emilia?

Reggio Emilia educators are guided by a set of principles in their curriculum design (Rinaldi, 2013).

- The hundred languages as a metaphor for the potential that human beings offer and the responsibility therefore to give dignity and respect to them within the education setting.

- A pedagogy of listening, which is central to dialogue and change. This is listening with a mindfulness of there being a hundred languages.

- Learning as a process of individual and group construction.

- Educational research as essential to both children and adults.

- Educational documentation as a practice that makes visible and assessable the nature of individual and group learning through observation.

- Progettazione, a responsive curriculum process of planning and designing teaching and learning, the environment, opportunities for participation, and professional development rather then a predefined curricula.

- A focus on organisation as a means to create a network of choices with particular attention given to choices that provide working conditions that foster stability, continuity and a sense of belonging.

- There is constant dialogue between human beings the environment and spaces they inhabit and their relationships with others.

- Professional development is both a right and responsibility of individuals and groups. It is given priority within the daily activity through reflective practices of observation and documentation, with the

weekly staff meeting being the primary occasion for in-depth study and sharing.

- Assessment is understood as an action that gives continuous meaning and value. It embodies the total aspects of the educational experience.

It would seem that a system designed for teacher and student agency would capture a collaborative working space where learning was the common goal. Protocols would be explicit and visible to protect the voice of both child and adult. For motivation and engagement to remain high, this third space would need to provide rich opportunities for teachers to learn about children and how they learn and for children to learn about the world. There would need to be opportunities for reflection, play and personal growth, as teachers and children construct an image of themselves as learners.
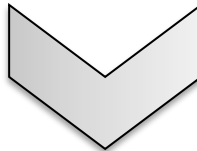
What tool can be used to provide a framework for analyzing curricula that supports student agency?

Wiggins and McTigue (2006) suggest that a good template serves as an intelligent tool, which focuses and guides thinking to make high quality work more likely. It enhances performance on cognitive tasks and supports the development of mental maps of the key ideas, which in turn supports application.

An evaluation framework has been developed from Bussi & Chittenden's chart on the teacher's role as cited by Siegel (1974). This has been adapted to not only reflect an 'open teacher' which was the focus of Siegel's work but also to capture an 'open student' and how the relationship between these creates a negotiated or third space resulting in an emergent curriculum that is both personal and shared.

Suggested framework for 3rd Space/ Agentic Learning

TEACHER		AGENTIC LEARNING 3rd SPACE	CHILD	
Internal Frame of Reference	**Activities When Child Is Not Present**	**Interactive/ Negotiated Behaviours**	**Activities When Teacher Is Not Present**	**Internal Frame of Reference**
Learning about children and how they learn ←		**AKO** LEARNING/TEACHING	→ **Learning about the world**	

Ideas relating to children & process of learning;
  a. *Knowledge, beliefs, & attitudes*
  b. *Trust in ideas*
  c. *Valuing process*
	Provisioning for learning	*Diagnostic of learning events*	*Provisioning for learning*	*Ideas relating to school & process of learning;*
				  a. *Knowledge, beliefs & attitudes*
				  b. *Trust in ideas*
				  c. *Valuing process*

	Reflective evaluation of diagnostic information *Seeking activity to promote personal growth*	*Guidance & extension of learning* *Honesty of encounter*	*Reflective evaluation of diagnostic information* *Seeking activity to promote personal growth*	
		Respect for persons Warmth		

EMERGENT CURRICULUM
Personally constructed & Socially Mediated

Adapted from Bussi & Chittenden's chart on the teacher's role as cited by Sigel (1974)

This framework is used to guide thinking about how some schools have responded with curriculum design both systems and intelligent tools to the implications of student agency.

It would be outside the bounds of this sabbatical to ask this question of the primary schools throughout New Zealand. Instead five primary schools were visited and information from another school gathered from a seminar they presented about their curriculum design.

The schools were identified based on their willingness to engage with curriculum design in innovative ways to support student agency. Five schools were either currently working or had worked with an educational consultant on curriculum design in the last ten years. One school is designing its curriculum in response to the Reggio Emilia principles. The schools were at varying stages of their curriculum development, with one school in its first year and others involved for over a decade. Most schools had had the same principal for the entire time of the development but some had had multiple changes in their leadership team.

Notes were taken during the visits, which were later coded against the various components of the framework.

SYSTEMS & INTELLIGENT TOOLS

TEACHER		AGENTIC LEARNING 3rd SPACE	CHILD	
Internal Frame of Reference	Activities When Child Is Not Present	Interactive/ Negotiated Behaviours	Activities When Teacher Is Not Present	Internal Frame of Reference
Systems				
Coaching & mentoring Appreciative inquiry, focus on growth mindset, relational trust & autonomy to make choices Re-visioning	Time prioritized on the learning of the children and the teachers Planning & assessment based on deep understandings, key competencies & backward design principles Collaborating with colleagues and targeted outside expertise through observation and dialogue	Inquiry Creating flexible learning spaces Not all teaching and learning involved inquiry Reporting to families Documentation as a public place	Discovery & play based opportunities Environment as the third teacher Self & peer assessment	Environment as the third teacher
Intelligent Tools				
Co-constructed teacher matrices Staff survey of PLD	School plan for introducing thinking tools Templates for collective and individual teacher inquiry Google Docs used for administration and organization Inquiry plan templates Rubric for agentic learner Cyclical long term plans for covering deep understandings	Modeling books Thinking tool templates Rubrics Progressions for agentic learners	Using digital devices at home and school for learning Rubrics, examples & models	Survey of children on beliefs about themselves as learners

Observations of system design to support a collaborative working space where learning was the common goal, the voice of the child and adult are protected by explicit, visible protocols and motivation and engagement are sustained through rich opportunities for teachers and children research.
All the schools used an inquiry process that was adapted to their integrated curriculum design. The most common influence cited was Kath Murdoch (2010)'s integrated planning model. Inquiries were planned around deep understandings and key competencies, which was seen as allowing teachers and children to focus their efforts on aspects of learning which are critical to their respective research.

There were variations in the identification of deep understandings and direction for inquiries. For some schools coverage of deep understandings had been agreed outside of the teaching and learning space, with a requirement to cover a set number on a regular cycle. Children guided context choices based on their curiosities and interests i.e. teachers controlled the coverage. Schools who had designed their integrated curriculums in this manner saw strength in the predictable spiraling back over deep understandings throughout a child's time at school. In other schools, the curiosities and wonderings of children led to an exploration by teachers about the deep understandings hidden within children's thinking i.e. children controlled the coverage. Coverage of deep understandings was tracked retrospectively. Schools who designed their integrated curriculum in this manner saw strength in working with what was most important at the time to children's developing meaning of life.

Planning and assessment included understandings, competencies, knowledge and skills. Documentation included formative assessments and student voice as the inquiry was negotiated between children and teachers. These were supported by intelligent tools such as templates for planning, modeling books, rubrics or simple assessment structures as my first thoughts, my second thoughts and my final thoughts as a way of capturing shifts.

For some schools documentation regarding inquiry learning was considered public and collated into collective 'books'. These included planning, formative assessment, learning experiences, artifacts of learning and evaluations. These were available in classrooms for children and adults (teachers and families) to use as a resource.

Schools were selective in their choices about what was taught through inquiry. Programmes and units of work such as philosophy for children, religious studies, and first aid training courses were delivered outside of the inquiry process. It appeared that inquiry was used where high levels of negotiation in design between adult and child were anticipated. In some cases, units of

inquiry were taught in specific terms while other schools ran them throughout the year.

All schools were open to the flexible use of space to support autonomy for teachers and children. The physical solutions to flexibility were often simple; an archway between classrooms and cloakrooms used as withdrawal spaces with bags outside on verandas. There were variations in implementation of collaborative teaching both within and between schools. There were various reasons given for this; from physical barriers, it being a new way of working so 'quick up take' teachers were trying it first to some teachers preferring not to work in this way. Some schools saw this as a transitional state with the goal that all teachers and children would experience collaborative teaching environments, whereas others saw flexibility in approach as essential to meeting their children's and teachers' needs. In some schools, there was debate about the effectiveness of flexible learning spaces and discussion about what can be learnt from how different children respond.

All schools ran student led conferences when reporting to families. Some schools were exploring how these would look in collaborative learning spaces where a number of teachers may hold understandings about the child as a learner.

Observations of system design to support reflection, play, personal growth as children research the meaning of life and take pleasure in learning.
A number of schools were explicitly incorporating opportunities for children to play as part of the classroom. Selected resources were deliberately placed within the environment to activate thinking, curiosity, imagination, sensory awareness, co-participation and pleasure in learning. There were variations in approach with some schools adopting this throughout the year levels and others using this only in the junior school. One school expanded this approach into their playground deliberately introducing different resources such as tractor tires and plastic piping.

The schools were deliberate in their creation of physical environments. The children, their interests, thinking, culture and heritage were visible in classrooms. At varying times children had choices about where and how they would physically use the space to learn. In some schools there was a focus on merging the boundaries between inside and outside and the natural and man-made worlds. Consideration was given to the aesthetics as well as the practicality of access when considering resource storage. Some of the schools offered opportunities for children to use one-to-one digital devices at school and home as part of their learning.

Metaphors or allegory were used to support children with self and peer assessment. Examples included the use of a hand shape with the fingers representing different aspects of the key competencies and using the metaphor of a journalist from cub reporter through to international correspondent to define the growing sophistication in understandings. Children demonstrated their self-assessment by placing avatars of themselves against the appropriate criteria. In some schools, the particular goal a child was working on as a result of self or peer assessments was displayed next to their avatar.

Rubrics, learning progressions and exemplars were used in many schools. There were some exceptions with one school deliberately not using them, as they believed that they constrained the direction a child might choose to take their learning in.

One school had developed a set of progressions for agentic learning to use with children. Children did not find this tool useful and it is being revised to better meet their needs. It has proved useful to teachers in understanding agentic learning competencies and to inform the development of a survey tool, which has provided information on children's beliefs about themselves as learners.

Observations of systems designed to support reflection, play, personal growth as teachers' research about children and learning

All schools saw collaboration as essential to enabling teachers to be effective researchers of children and how they learn. They deliberately structured teams of teachers in ways to maximize the potential for collaboration. This included the placement of team members in physical spaces next to each other. Senior leaders prioritized resourcing to enable varied opportunities for collaboration. They sought relationships with researchers, consultants and other schools to build collaborative networks that supported the teaching and learning in their schools.

One school based collective inquiry on the principles of appreciative inquiry, an approach that calls for oganisational inquiry to be about what "What gives life to the system when it is most alive?" rather then "What is wrong here to be fixed?" (Godwin, 2016 p.27). School leaders talked about the need to create cultures where teachers believed they were 'agents for change' with the type of autonomy described by Parnell & Procter (2011).

All had well prescribed systems of observation of teaching practice. For most there was a focus on team members observing each other to inform discussions about how children learn, how particular children are learning and how this would inform teaching. Observation approaches included 'triples', Japanese lesson study process (Groves et al., 2013) and observations by individual team members collecting evidence against a practicing teacher criteria or aspect of the teacher matrix.

Careful consideration is given to how teacher time is used throughout the working week. Meeting times are prioritized to focus discussions on the learning children and teachers are doing i.e. collective and individual teacher inquiry, patterns in student achievement and progress, targeted students, evidence for practicing teacher criteria and professional learning and development. Organisation and administration is dealt with through other avenues such as Google documents and additional short morning meetings if requested.

All schools based their planning for learning on deep understandings and key competencies. Many of them used the backward design principles outlined by Wiggins and McTigue (2006). They assessed a range of skills, competencies and understandings to build a picture of the whole child as a learner.

The importance of leadership was acknowledged and schools appeared to be flexible in providing leadership opportunities for staff that showed initiative. Some schools talked about induction and mentoring processes for new staff. No schools identified mentoring and coaching as systems to support reflection, personal growth and research by teachers.

So what does this all mean?

At times sabbatical research seems a little like the genie in the lamp – phenomenal powers, itty-bitty living space. There is an infinite wealth of ideas out there and a term's release seems like an eternity to explore them. The reality is only a few things can be understood well in such a short time frame. Phenomenal research tied down by one or two understandings.

Here are my answers to the question, based on understandings I have developed from professional reading, and dialogue with other teachers during this sabbatical.

How can curriculum design, both systems and intelligent tools, be used to form a basis for the effective development and sustainability of student agency to enhance student achievement in all learning?

By focusing on deep understandings, key competencies and opportunities to find pleasure in learning curriculum design can empower children's research into the meaning of life;

By creating 'third spaces' between children and teachers, teachers and teachers i.e. collaboration, value is placed on autonomy, the essence of a culture of agency;

By providing time through resource allocation for teachers to observe, dialogue and research children and learning;

By being flexible and responsive to the need to develop intelligent tools that allow teachers and children to focus on their respective learning.

To stretch the genie in the lamp metaphor a little further, the question proposed for the sabbatical was just the 'first wish'. It's granting has led to many more 'wishes' or questions to be answered.

What would a third space between a school and a community look like?
What implications are there for professional learning and development when considering teacher agency?
What role does coaching and mentoring play in teacher agency?
What intelligent tools exist for coaching, mentoring, observation and teacher inquiry?
How could we re-design or design intelligent tools to better focus on deep understandings and key competencies in the school?
How can assessment be different so it empowers teacher and child agency?
How as teachers could we refine our pedagogy of listening to hear the 100 languages of children, so we can use this to inform our research into children and their learning?

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