

Personalised Learning Literature Review - 2013

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# Introduction

There is growing concern that the present educational system, with its model based on the need to deliver standardised educational experience to large numbers of children is ill-suited to the needs of today’s learners and the growing knowledge society (OECD, 2006).

The interest in personalised learning is derived from the view that the current approach to learning can be modified by shifting from a teacher-centred to a learner-centred activity. Personalised learning is considered to be reflective of a broader move to providing public services that are better tailored to serve the needs of its recipients (Leadbeater, 2003) and reflective of a parallel shift in business from mass production to mass customisation (Hargreaves, 2006). The latter is viewed as a more innovative way to cater to the needs and aspirations of clients and customers.

The personalisation movement has been viewed by others as a method for addressing the feelings of anonymity, irrelevance and disengagement reported by students. In such a context, personalised learning is primarily focused on cultivating positive relationships among adults and youth in classrooms, schools and communities to promote learning by creating competent students that are connected to their world (Yonezawa, McClure & Jones, 2012).

## History of Personalised Learning

Personalised education has its history in Dewey’s (1916) view of learning as a learner-centred activity. Dewey promoted the ideas that educators should stimulate thought in students by providing stimulating environments and knowledge-sharing opportunities among students to guide their own learning.

The current discontent with institutionalised learning has been expressed in the past. Illich (1971) considered the mainstream schooling model as being opposed to producing life-long learners and sympathetic to the pursuit of capitalist ideologies. He proposed dismantling the mainstream institution of education which he considered to be anathema to the aim of providing learning experiences that create educated societies.

Personalised learning today agrees with certain tenets of Illich’s (1971) views, particularly regarding the need to prepare learners with the ability to continue learning throughout life and the adoption of learning technology to support ‘learning webs’. These concepts align with ideas about the use of information and communication technologies (ICT), lifelong learning and communities of learners, which are discussed below.

The individualised learning approach that was developed during the 1970s, focused on developing alternatives to traditional group instructional approaches, yet these approaches continued to be teacher-driven. They emphasised the provision of additional time and resources for students to achieve the educational goals set by the teacher (Kearny, Nicholas, Mahar & Herrick, 2007).

Current approaches to individualised learning continue to focus attention at the needs of the individual student through the use of intervention-based Individualised learning plans (ILPs). ILPs are designed to improve academic achievement by focusing on students’ content knowledge, learning difficulties, opportunities for schooling, or disabilities (Dione-Rodgers, Harriman & Laing, 2012). Achievement is defined by the educational system or school and is intended as a way to identify student’s achievements through comparison against a set of external benchmarks. In comparison, a personalised learning perspective engages students in co-constructing goals that reflect their own motivations. Personalised learning does not assume that the role of education should be to incorporate students into the extant educational system by addressing problematic aspects of the student; it questions how the educational system can be reworked to better serve the student’s goals and aspirations. Such a perspective views all students as having different needs and abilities that contribute to a learning system that is designed to support the intellectual growth of a community of learners.

## Definitions of Personalised Learning

Personalised learning has been framed as existing along a continuum reflecting the aims to address the move towards the provision of tailored educational opportunities for students (Järvelä, 2006). It is described in relation to individualised learning, which focuses on the provision of alternatives for individual learners, and social learning which considers the scope of the social and collaborative processes of learning communities. All such approaches favour an understanding of the complementary nature of individual and social influences in education (Anderson, 2000). Järvelä (2006) suggests that personalised learning encompasses 7 key criteria:

1. *Development of key content-specific skills* to acquire skills which are relied upon to be able to learn and reason about certain content areas, such as the ability to understand information represented in different formats
2. *Development of learning skills* to analyse, critique, judge, compare and contrast, evaluate and assess to support creative and practical thinking
3. *The use of “motivational scaffolding”* that strengthens student’s self-regulation skills that will help them set and achieve learning goals and encourages learning by making school meaningful through the demonstration of its value and potential real-world applications
4. *Collaboration in knowledge-building* by using pedagogies that offer students opportunities to build knowledge in groups such as inquiry, problem-based learning, and project-based learning, and providing tools and processes to enable collaboration
5. *Development of new models of assessment* including assessment for learning, the use of ongoing formative assessments, and different assessment modes such as authentic assessment, performance assessment, and digital portfolios
6. *Models for use of technology as a personal cognitive and social tool* that supports individual and social learning activities by:
	* 1. Increasing authenticity and interest in learning
		2. Building virtual communities among different schools, collaborating teams, and teachers
		3. Helping to share perspectives among students with different expertise to provide peer support and “benchmarking practices” in different fields
		4. Facilitating the use of technology-supported inquiry approaches and problem-based models for increasing learning-to-learn skills
		5. Providing innovative ways (such as mobile tools) of integrating
		“just-in-time” support and interaction in different learning contexts
7. *Teachers’ as key* to successand requiring support for working in open and less-structured learning environments to carry out their roles as mentors guiding the practices of collaborative and life-wide learning.

### Victoria

The Victorian Department of Education and Early Childhood Development identified the following themes as central to the idea of personalised learning (Kearny, Nicholas, Mahar & Herrick, 2007):

* Student-centred learning
* ICT as a key enabler
* Lifelong learning
* Communities of collaboration

The Centre for Strategic Education defines personalised learning as:

Personalising learning is the deliberate and systematic process of focusing all of a school’s resources, to ensure that each learner is able, with support, advice and guidance, to decide what, how, when, where and with whom he or she learns (Otero & West-Burnham, 2009, p.8).

They identify the following nine components of personalised learning, emphasising the importance that such a socially-situated model will vary depending on contextual factors, although mentoring is highlighted a common and powerful strategy throughout which should support all the components. The components include:

* The diagnoses and profiling of learning styles, aptitudes, dispositions and preferences, supported by mentoring and developmental strategies
* A ‘cognitive curriculum’ which emphasises cognitive strategies such as problem solving, analytical thinking (e.g., causality), creativity, reasoning, organising information (e.g., mind mapping), memory, persistence, negotiation and choice
* The development of social learning skills such as listening, cooperation and collaboration, small group learning, team learning, negotiation, mentoring and coaching
* Access to mentoring and coaching
* Extending choice in the curriculum by extending the definition of curriculum
* Use of ICT to communicate, support assessment, allow students to manage their learning, record academic progression, report progress, support mentoring, build professional networks, and manage access to information and learning projects
* Building flexibility into the school day so that there is choice as to what, when, where and how something is learned
* The creation of sophisticated monitoring, consultative and participatory strategies to ensure student engagement in learning through student voice and leadership
* Flexible assessment strategies

### UK

The UK Department for Education Services, now the Department for Education, identified five components of personalised learning (Miliband, 2004). These are:

* Assessment for learning that informs teaching strategies, lesson planning, learning targets, and translates into actions for students
* Effective teaching and learning that is facilitated by ICT to promote individual and group learning and teaching
* Personally-relevant curriculum entitlement and choice
* Organising and structuring the school day and lessons to promote student-centred practices
* Linking to services beyond the classroom to involve the wider community and parents

In their assessment of the strategies that schools might use to implement personalised learning, Duckett, Jones, Hardman & O’Toole (2006) have made an effort to dispel some potential misconceptions about the DfES definition. It is not about expecting learners to learn on their own, abandoning the UK National Curriculum, allowing learners to do “their own thing”, or to coast at their own pace.

The UK perspective has also been informed by the work of Hargreaves (2006), who proposed that personalised learning can be defined through four “deeps”. This includes the idea of *deep learning*, to develop articulate, autonomous and collaborative learners with high meta-cognitive and generic learning skills; *deep support*, from individuals, materials and ICT that are linked to general well-being and focused on learning; *deep experience*, with a focus on curriculum, pedagogy and tools for engaging educational experiences, enriched opportunities and challenges; and *deep leadership*, which addresses all aspects of schooling through a supportive school culture and structure.

More specifically, Hargreaves (2006) argues that personalised learning can be achieved through the use of nine “gateways” that are clustered around these four “deeps”. The nine gateways are:

* Student voice
* Assessment for learning
* Learning to learn
* New technologies
* Curriculum
* Advice and guidance
* Mentoring and coaching
* Workforce reform
* Design and organisation

Particular emphasis is given to the idea of co-construction. He emphasises that unlike traditional approaches of constructivism that teachers are likely to be familiar with, which present the student as a constructor rather than a receiver of knowledge, the co-construction approach sees the student as constructing learning-and-teaching in partnership with the teacher. Personalised learning is best achieved through co-construction between and among students, teachers and other adults in the areas of curriculum, pedagogy, assessment, leadership and most importantly, knowledge.

### US

US discourse on personalised learning is typically framed as a set of solutions to address student academic achievement rates as defined by standardised examination scores, tertiary entrance patterns and employment trends. As such, goals are more narrowly defined and pertain to external benchmarks of academic success rather than the engendering of positive values and practices towards learning as an end in itself.

The use of business language, consumer philosophy and a competitive slant are all evident in the suggested strategies to achieving personalised learning as motivated by the Race to the Top District Competition, whereby different school districts around the US compete to achieve the best student performance. Suggestions include the use of blended-learning models that combine online and traditional classroom environments, the absence of regular school schedules and institutionalised practices such as grade levels and class schedules, and the emphasis on competencies rather than on time spent in the classroom (Evans, 2012). Business-driven suggestions include the use of data-driven decision-making, and performance-based contracts with resource vendors. Such approaches propose leveraging student inputs in the form of assessment data and perceived needs as sources of information that can be used as tools to negotiate outcomes defined by business success and competition success. Despite being presented as learner-centred, these strategies value students for their ability to contribute to the success of their district. This form of personalisation is not true to the philosophy of student-centred education.

The Alliance for Excellent Education (2012) emphasises the need for students to be prepared for the global economy, with its communication, problem-solving, collaboration, analytical and critical-thinking demands. These demands are reflected in new U.S. education standards and are also characteristic of the nature of today’s work.

## Critiques

Criticisms of personalised learning relate to its origins, its misuse in legitimising politically-motivated policy changes, its emphasis on ICT, and its failings in implementation.

Hartley (2007, 2009) sees the personalised learning movement as contextualised and given legitimacy through the culture of contemporary modernity and ‘project of the self’ which focuses on continual personal re-construction as achieved through the principles of consumerism. It is also closely aligned to the concept of marketization which is spreading to the realm of public services; in this setting, the learner is seen as a customer that is choosing the service that is best suited to their interests and needs. The notion of choice is therefore tied to the consumption of goods and services of which education has now been incorporated. The perceived resonance between personalised education and child-centred education blur their significant differences (Hartley, 2009). While child-centred education arose out an egalitarian agenda with implicit connections between consumerism and production (‘needs’, ‘choice’ ‘autonomy’, and ‘creativity’), the rationale of personalised education is explicitly economic with overt references to consumerist culture and its co-production focus. Co-production places the consumer and producer in a relationship in which they work together to find a solution for the consumer’s needs. Such solutions may involve reconfigurations of the structures and processes that define the current organisations. In the context of schooling, this may reflect the idea of reconfiguring the physical and bureaucratic structures and policies, as well as redefining the roles of the individuals in these organisations. Hartley (2007) also notes that despite its affirmation to personalised learning, the DfES uses it to re-brand whole-class teaching and centrally-set standards which typify current practices.

Scott (2010) takes issue with the fact that many of the practices associated with personalised learning promote the use of unproven techniques. She is concerned with the use of personalised learning as a rationale for relying on the diagnoses of children along the lines of multiple intelligences and learning styles that may result in pigeon-holing; such practices might be used in the guise of personalised learning and only lead to what she has observed to be disinterested students.

Concerns relating to the role of ICT in personalised education have also been raised in that it tends towards centralisation, standardisation and outcome-based accountability, all of which are considered to be incommensurate with personalised learning (McRae, 2010). This is due to the affordances in the economy of scale associated with the collection and analysis of student data, and the character and practices related to the delivery, maintenance and use of technology resources. Given the possibility for students to use digital subscription tools that provide precisely targeted content to “hyper-personalise” the content that they work with, McRae suggests that this may lead to poor awareness and engagement with views on important issues that may not be of personal interest to students. He considers that this could have a stifling effect on diversity, serendipitous learning, and critical thinking ability; the latter of which is paradoxically presented as one of the learning areas promoted by personalised learning. McRae also suggests that there is a danger of isolating the student in a digital world devoid of opportunities for social learning and meaningful relationships with peers, teachers and the community. There are also physiological concerns related to increased screen-time as well as a diminution in the value of stillness which the author considers to be critically absent in today’s age of continuous connectedness.

In relation to the use of technology in education Monahan (2002) cautions against the view that technology is value-neutral; it has the ability to create contexts for practice which may not reflect the principles of personalised learning. This relates to the concern over the trend towards the preparation of individuals who are capable of working within the bounds of an increasingly uncertain world of temporary employment, just-in-time production, and labour outsourcing. Particular types of learning environments and correspondingly, pedagogies, enable such forms of institutionalised disempowerment.

## Working definition of personalised learning

Based on the literature reviewed above, personalised learning includes a series of interrelated concepts. They are outlined below.

* Learner-centredness
	+ Choice
	+ Agency
	+ Student voice and engagement
* Pedagogy, practices and tools
	+ Assessment for learning
	+ Pedagogies to cultivate general capabilities
	+ ICT as an enabler
* Networks and communities
	+ Communication
	+ Support and professional development
* Learning for life
	+ Children, teachers and the community as learners
	+ Learning that is relevant for life and responds to it
* Institutional elements and philosophy
	+ The physical learning environment
	+ Accountability and responsibility
	+ Organisation and governance
	+ The role of schools and teachers

The following section reviews case studies of different implementations of personalised learning in schools. The case studies provide examples of how personalised learning has been implemented in different contexts.

# Implementation Case Studies

## Australia

The Victorian Department of Education has conducted a series of case studies at primary and secondary schools throughout the state to evaluate the success of strategies related to different aspects of personalised learning. These strategies are valuable to note because they demonstrate that personalised learning can be accomplished in different ways for different settings – there is no one solution that will work, hence the idea that personalisation occurs at the classroom, school and community levels. In all cases, the common feature is collaboration and engagement at the student, parent and teacher levels alike with a focus on student-centred aims (Office for Education Policy and Innovation, 2007).

The changes described in the case studies were in response to findings that included a lack of parent engagement with the assessment and reporting practices, a low proportion of students continuing on to pursue further study or positive career options, and the desire to connect students, teachers and parents with the broader community to make learning relevant.

The incorporation of reflective assessment practices was achieved through different means that encouraged students to think about their goals and their progress. One way in which these practices were incorporated was through the use of portfolios, both digital and visual diary form. Portfolios were considered to provide a richer and learner-centred mode of assessment that viewed the student holistically; in some cases, they were used as longitudinal histories of student development, intended to be built upon throughout primary and secondary schools, thereby allowing them to chart their development and providing an opportunity for them and their parents and teachers to reflect on their progress as learners. The use of portfolios was often coupled with the student working with their teachers to think about appropriate and meaningful learning goals.

Schools also offered opportunities for student voice. This took the form of three-way conferences that were led by the student and involved their parents and teachers where students presented their goals and achievements. Another strategy was to coordinate student conferences that allowed students to engage with community issues and solve them together, providing students with leadership opportunities as they acted as representatives for their school. ICT was frequently used to carry out some of these activities.

Sloane (2010) describes the process Victorian primary school changed their practices. This account describes a series of iterative cycles whereby changes were attempted, results considered and the process revised in light of effectiveness to improve student learning outcomes. The school implemented individualised learning plans, at first for only the lowest achieving 10 percent of students which was gradually extended to all students. Teachers varied in the degree and nature to which they expected students and parents to be involved with formulating student goals and supervising progress, which resulted in a process which was less successful than anticipated. The school established a Montessori program which emphasised tailored and responsive teaching; children are given choice within a structured program that allows them to exercise choice over their learning, with teacher guidance as required. This program was offered to some students and broadly accepted by teachers. Following a series of different personal computing options, learning programs which incorporate traditional classroom skills such as handwriting and spelling has been extended to half of the classes at the school. This program combines wireless-enabled computers for every child that are equipped with specialised software and web 2.0 resources. Underlying all of these changes has been an alignment to the school’s strategic plan which has emphasised collaboration between parents, teachers and students, teacher awareness of each student’s learning style, a thinking-oriented and inquiry-based approach to teaching. These changes have led to improved learning outcomes, although evaluation results are not provided in detail.

## International

### Kunskapsskolan

The Kunskapsskolan program is a dedicated personalised learning schooling model which started with 33 independent secondary schools in Sweden (Eiken, 2011). Eiken presents the idea of the “equation of education” as a way to compare traditional schooling to the Kunskapsskolan, personalised learning model which begins with an awareness of student needs and then building spaces and structures to support those needs. Traditional schooling starts with a school building limited by the availability and distribution of space for learning, the allocation of teachers to classrooms, learning activities governed by class schedules and predetermined subjects, and ends with the learning capacity of the individual student which occurs as a residual in the equation. In contrast, the Kunskapsskolan model examines the needs of students and designs schools around these needs by considering physical, organisational and pedagogical structure. Fundamentally, Kunskapsskolan seeks to provide a process whereby each student sets and works towards personalised academic goals. The approach involves:

* Assigning each student with a teacher as a personal coach that assists them with setting their own personal goals, designing a learning strategy to achieve these goals
* Teachers having multiple roles as subject teachers and as coaches
* A flexible timetable
* Continuous monitoring and assessment of progress
* A variety of learning formats which include lectures, group-work and individual study which relate to the particular learning task
* A curriculum designed in steps which contains thematic courses that cut across subject areas; these measures circumvent the need to assign students to classes or grades
* A web-based learning portal serving as a central organisational and communication tool. Students can access resources such as curriculum, syllabus, and assignments, provides parents with insights on their child’s progress, and serves as a place for teachers and principals to develop and share planning tools and lessons.

Kunskapsskolan functions more as a university than as a school where students have their personalised goals to achieve, but how they get there is not prescribed (Otero & West-Burnham, 2009). There are accountability measures in place, such as tutors assigned to each student and the ability for parents to monitor progress online, without traditional school structures such as schedules and predefined classes.

The Kunskapsskolan approach draws from Monahan’s (2002, 2004) principle of ‘built pedagogies’ which relates to the way that the built environment enables and constrains certain modes of social action and interaction, meaning that educational structures embody curricula and values by design. This principle relates to equitable pedagogical spaces, which allow students to pursue learning through the range of learning modalities that will best fulfil their education needs (Cleveland, 2009). All rooms in Kunskapsskolan school buildings serve multiple purposes and each has the potential to be used as a learning space.

### UK

Sebba et al (2007) employed the use of survey and case study data to evaluate how personalised learning was being implemented in schools and which strategies were most effective. Schools were evaluated based on the five components of personalised learning that had been identified by the Department for Education Services, outlined above (Miliband, 2004). The authors concluded that the most effective practices seemed to demonstrate the ability to develop practices that could connect the five areas of personalised learning. However, they suggest that the ability to develop a cohesive set of practices is not specific to personalised learning, per se.

Fanning (2012) describes a research study that was carried out in an English school that had adopted the use of ICT through a learning platform. The intent behind the incorporation of ICT had been to support personalised learning through assessment, differentiation, collaboration and flexible learning. Fanning hypothesised that the learning platform would result in a shift from teacher-led to student-centred pedagogy, that the role of the teacher would change from that of being a director to being a facilitator of learning, that assessment would move from being summative to predominantly formative and that learning would start to take place outside the classroom. It was found that assessment tools on the platform were mainly used for summative purposes, learning resources were poorly differentiated, little use was made of the collaboration tools, and support for ‘anytime-anywhere’ learning was primarily through email. Fanning concluded that there was little change in teacher practice and regards his findings as demonstrative that the adoption of technology is not a de facto path to personalised learning. He emphasises that new technology only works when teachers have strong technical skills, teachers are aware of applicable pedagogies, and school structures such as timetabling and teacher contracts should support ICT use.

In response to a school survey that found widespread student disengagement with the schooling system, Wise (2006) proposed that the traditional schooling environment does not create independent learners, his view of the goal of personalised learning. The student-centred philosophy at the English school is based on the development of metacognition strategies to create a responsible, resilient, resourceful, reflective and reasoning learner. Wise presents the changes implemented to achieve these aims, which include:

* time during the week for teachers to collaboratively plan their lessons and share them with the help of a web developer that assists with ensuring all resources are online
* teaching staff devote time to personalising the lessons for their student by using targeted questioning, personalising homework and allowing the format of the presentation of students’ work to be open to their preferred learning style
* a flexible timetable that for six weeks of the year allows staff or departments to teach students for a half-day or full-day at a time, to foster immersion in the subject
* up to 25% of students working off-campus on their personalised learning modules, based on their learning style
* inquiry-based and project work which allows students to have more control over the pace of their learning
* a redesign of the school building to create a series of large rooms, each with room for circle time, and with students in groups of four in their ‘home teams’ for collaborative work
* all rooms equipped with computers including laptops for every student that are kept within easy reach under their desks and were designed in consultation with the students

Brennand (2009) presents a case study of a large school that has been sub-divided into faculty and pastoral groupings. The personalisation strategy was largely based on ICT; there is an expectation that teachers, students, governors and parents communicate and engage with technology. ICT was used for self and peer assessments among students, providing students with access to a broad range of content, the dissemination of professional knowledge, and for administrators to gain a better sense of the day-to-day activities within the school. There was also recognition that students are native users of technology, and the school made an effort to integrate the kind of technology that is already being used by students outside of school. The major issues identified were the access to and integration of resources such as electronic communication, information management systems, learning platforms and web-based community areas.

### US

DiMartino and Miles (2006) present findings from a study of Breakthrough High Schools. Breakthrough schools focus on the improvement of student academic achievement. While each of the Breakthrough schools uses different techniques to address personalised learning outcomes, the common component is that all strategies focus on students and their achievement, rather than on adults. Different strategies have been employed at each school. They include:

* advisory programs focused on creating a positive psychosocial climate through team-building activities, graduation portfolios, college awareness and student-led conferences
* mentor-teachers who meet with students to review their grades and attendance
* character education lessons which focus on respect, responsibility, and study skills
* recognition efforts such as the creation of specialised groups for at-risk students that celebrate their positive qualities
* rearranging larger schools by dividing into smaller learning communities that allow a better ability for all students’ learning needs to be taken into account and for teachers to work together to address individual students’ needs
* school pride activities including T-shirts that the students design each year

Of note is that in many cases, only some personalised learning strategies have been employed, while others do not get implemented. For example, in the case of the schools that get rearranged into learning academies, a core curriculum is carried out across the entire school, rather than it being tailored to each academy or student. Another interesting side-note is that the authors cite the requirements of the United States No Child Left Behind policy as a reason for pursuing personalised learning; this policy requires that every child meet basic literacy and numeracy standards. The decision to pursue personalised learning in response to a policy that relies on standardised testing as a measure of success frames the nature of strategies that can get implemented as those that can be closely tied to student achievement, rather those with more hard-to-measure constructs such as a passion for learning and creative thinking.

Another school which based its decision to implement personalised learning on measures of academic achievement focused its activities on detracking; combining classes that had once been grouped for high-achieving, low-achieving and in-between students. Garrity & Burris (2007) describe an American school that wanted to raise the enrolment rate in its International Baccalaureate (IB) diploma. In particular, few minority students were opting to enrol in the IB diploma. Detracking included the redevelopment of the pre-IB curricula which incorporated room for tailoring to the abilities of students; it was hoped that the pre-IB curricula would provide students with the knowledge and abilities to pursue the IB. The sorts of activities that were introduced include the establishment of writing portfolios, additional accelerated classes for students with advanced abilities, as well as support classes for those struggling with the content were offered. Extension classes that allowed students of all abilities to explore content that was of interest to them were also offered to support the gamut of multiple intelligences. Teachers received professional development during and after school hours to learn how to differentiate by achievement, multiple intelligences and interest; this was an important step towards the shift from a teacher-centred lesson plan to engaging, varied and flexible instructional practices. Teachers worked in groups to practice how to design and teach a differentiated lesson on a topic, received feedback from peers and then submitted the finished product to the shared catalogue. The authors summarise six areas that are critical for success:

* Curriculum; designed, reviewed and monitored by teachers and administrators
* Classes; must be balanced between students of different abilities to avoid tracking
* Data which can be disaggregated should be collected, analysed and disseminated
* Goals should be established to enable measuring progress
* Professional development needs to include time for collaboration and reflection
* Persistence in achievement of personalised learning goals

The results of these changes were very positive, with a marked increase in enrolments in IB courses and sustained levels of achievement, suggesting that students that enrol to take the IB are well prepared academically.

Breunlin et al (2005) present the findings of the personalisation of a large high school of 3700 students in the United States. Several factors prompted this move: the faculty-dominated school culture, the lack of responsiveness to community needs, a punitive discipline system, a divided campus structure that limited communication, and tension among the myriad social and racial groups at the school. Interventions were focused on teacher-student, student-student and whole school relationships. They included:

* Professional development for teachers in the areas of classroom conflict management
* A peer mediation program for students
* Programs designed to promote respect and diversity
* A conflict-skills program involving parents for students receiving repeat suspensions
* The involvement of a large number of teachers, students and parents in a local community advisory council which met monthly to discuss issues of relevance to the community
* A monthly dialogue between faculty members and administrators surrounding issues of school governance and organisation

The authors used a repeat-measure evaluation model to determine whether the changes that were made to the school over a period of six years resulted in a more personalised learning environment. The evaluation measures used were designed to detect changes in attitude in students and staff over time about the quality of the relationships that were the focus of the intervention. This corresponded to the definition of personalised learning that was used which was based on mutual respect, trust, collaboration and support being promoted through the structures, policies and practices at the school.

The authors conclude that student respondents’ attitudes increased positively but there was no statistically significant change for teacher respondents. However, it is noted that response rates on the surveys were overall low, the vast majority of responses reflected noncommittal response options, and that external factors such as large proportion of senior teachers retiring over the course of the intervention may have been a source of change in perceptions. Furthermore, it was found that students with a lower class rank, lower SES, more disciplinary infractions and being of a non-White racial group had statistically lower personalisation ratings, yet these are arguably the students considered to be most in need of the interventions that were implemented.

Yonezawa et al (2012) present findings from three different types of personalised learning interventions that were focused on relationship-building and making education more meaningful for students. It was shown that the use of advisory programs where students and teachers meet one-on-one to discuss academic matters had mixed results; students who enjoyed these programs did not improve academically, while those who did not enjoy them did show improvement. Despite the mixed results, the authors promote the use of advisory programs given their low cost and broad acceptance. Another strategy that was discussed was the use of alternative grade spans to transition students from primary schooling to secondary schooling. It was found that changing schools less often and transitioning students to the US Middle School system in earlier grades produces greater academic gains; the authors consider this to be reflective of the fact that these scenarios allow for greater opportunities between students and teachers since schooling cohorts have more time to stay together. The authors also present a case for reforms towards small-school settings. Small schools foster better relationships between teachers, through professional collaboration and the ability to focus on individual students. Students who attended smaller schools demonstrated higher subject achievement scores and graduation rates. These improvements were particularly pronounced for high-risk students.

# Discussion and conclusion

The examples provided from larger schools are broadly targeted at remedial response measures situated in a behavioural or academic deficiency model. Whether these issues are characteristic of larger schools or whether the schools presented are coincidental in this regard is unclear, although it does suggest that personalised learning, in its proactive form, is most successful in smaller schools. One possibility presented is that large schools can have a sub-levels such as learning academies. Some processes and policies are shared at the broader school level, but the smaller academies function to make the schooling experience more personal, and allow for students to receive the level of attention they need to succeed.

Personalised learning in whichever form it takes has implications for the roles and expectations of teachers. It appears that all personalisation strategies involve a redefinition of a teacher’s availability, the expectation that they will become more personally involved with student’s academic success and in some cases, that their work will take place outside the school, where they might be expected to engage in “anywhere-anytime” learning. These expectations need to be balanced against the cost to teachers’ professional and personal limits.

As the case studies demonstrate, personalised learning is interpreted broadly in different schooling contexts. As such, there is little comparative evidence available for the comprehensive success of personalised learning. One issue contributing to this problem is the difficulty of comparing between each schools that are situated in different schooling contexts and choose to adopt personalised learning practices for different reasons. Another issue is that each instantiation of personalised learning is different in its interpretation of the sorts of activities or changes that personalised learning involves. While some schools placed great emphasis on the physical learning spaces, others focused on the integration of ICT, or fostering better collaboration between teachers, parents and students. While these are all arguably important to the success of personalised learning, the reality is that many schools do not have the resources to implement them all. Although it is shown that personalised learning strategies that reflect a holistic undertaking rather than the implementation of isolated components tend to have more success, personalised learning should not be considered an all-encompassing fix to any ills being experienced by schools.

These caveats are presented to preface the following set of suggestions for implementing personalised learning based on the case studies that have been covered, above. Suggestions are presented in the context of the framework proposed earlier.

* Learner-centredness
	+ Choice
		- The availability of extension classes or projects that allow students to explore content that is of interest to them
	+ Agency
		- The ability for students to work with their teachers in developing academic goals that are suited to their needs and abilities
		- Creating advisory groups that involve students allowed them to feel empowered to have a say in how their learning happens, in relation to whole-school governance as well as the content that is covered in class
		- Avoiding the misuse of the theory of multiple intelligences or tracking which can limit opportunities available to students
	+ Student voice and engagement
		- The use of student-led conferences involving parents and teachers to review achievement
		- Co-construction of teaching, learning curriculum and assessment
		- Smaller schools to encourage closer relationships between students and teachers
* Pedagogy, practices and tools
	+ Assessment for learning
		- A focus on formative assessment
		- Involving students in the assessment process, including the option of peer assessors
		- Closely linking assessment to students’ individual goals
		- Flexibility in the manner in which students demonstrate their knowledge
		- Different assessment modes such as authentic assessment, performance assessment and portfolios
	+ Pedagogies to cultivate general capabilities
		- Inquiry-based learning
		- Project-based learning
		- Problem-based learning
		- Socratic pedagogies
		- Montessori curriculum
		- A selection of learning formats such as lectures, group-work and individually-directed study based on the nature of the work
	+ ICT as an enabler
		- As a central resource location
		- Promotes information sharing by publishing shared lesson plans for teachers, as well as the availability of syllabus, assignments, and student progress data
		- Ensure that teachers have proper training in how to use the system, parents are aware of how the system can be accessed and used by them
		- Meet students at their technological “middle-ground”
* Networks and communities
	+ Communication
		- ICT can be used
		- Structure professional development activities so that smaller groups of teachers work together
	+ Support and professional development
		- Teachers to be given the time and encouragement to work together to plan and share their lessons
		- Technical support for integrating ICT
		- Development of teacher’s understandings of how to identify student’s interest, how to differentiate classes and how to correctly apply theoretical frameworks such as multiple intelligences
* Learning for life
	+ Children, teachers and the community as learners
		- Being able to have a holistic view of students as learners with capabilities that are developed over time can be implemented through the use of portfolios that demonstrate how students have progressed in their accomplishments throughout the year and across grade levels
		- Teachers recognised as learners if expected to be able to implement different pedagogies, use new tools and assessment practices
		- Including the community in school decision-making acknowledges the fact that learning cannot take place out of context
		- Reciprocity between community needs and how students are learning so that their learning is situated in real-world contexts and their community grows as a result
		- Providing students with skills to manage their own learning and to develop and understanding of themselves as learners within a learning community
		- Cognitive curriculum to allow for flexibility throughout life in different learning situations
	+ Learning that is relevant for life and responds to it
		- Keeping learning relevant means that students are provided with tasks that relate to real contemporary issues, whether they be of relevance to their immediate community, their generation, or global issues
		- The ability to develop social learning skills for different situations throughout life such as listening, cooperation and collaboration, small group learning, team learning, and negotiation
* Institutional elements and philosophy
	+ The physical learning environment
		- Organising spaces in ways that are commensurate with the kinds of work that is expected to take place, such as large open rooms that allow groups to meet, or the ubiquitousness of ICT infrastructure such as wifi
		- Organising spaces to promote equity
	+ Accountability and responsibility
		- Use of data to base decisions about school reform
		- Being open with all stakeholders (teachers, administrators, parents and students) about what they are responsible for and having an open discussion to come to agreement
		- Involving students in behaviour-management activities, rather than handing down disciplinary measures
		- Including parents in the accountability process by enlisting them as supporters of their child’s learning plans
	+ Organisation and governance
		- Flexible timetabling
		- Curriculum which is organised thematically and stepped, rather than organised in grade bands
		- Smaller school groupings to foster collaboration and create learning communities of teachers, students and parents
	+ The role of schools and teachers
		- Teachers are facilitators and mentors who are aware of individual students’ needs
		- Teacher equipped with skills to tailor the curriculum to suit their students
		- Teachers as co-constructors of knowledge, rather than as deliverers
		- Negation of expectations that teachers will be available to support learning outside the classroom including the use of ICT.

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