Looking Back, Looking Forward: Re-Searching the Conditions for Curriculum Integration in the Middle Years of Schooling

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Abstract

In Australia, and internationally, integration is a widely promoted middle school curriculum reform strategy. Integration is claimed to engage students by providing opportunities to work on a few cross-disciplinary objectives, to apply knowledge across the subject boundaries and to work on tasks with meaning and relevance. While these curriculum goals enjoy a certain popularity among middle school reformers and curriculum integration adherents, in practice, the prevalence of integration is patchy and provisional. In this article, we (re) examine two of our studies of middle school integration over the past decade to explore the reasons for this apparent disparity between the rhetoric and the reality. In our re-search for integration, we look back at our data to identify enabling and inhibiting conditions for curriculum reform and develop a list of key program characteristics. Finally, we look forward, drawing on the notion of institutional resilience to speculate on the reasons why some middle school programs seem to flourish while others wither.

Introduction

Integrated approaches to teaching and learning are not new. A century ago, John Dewey (1902, 1915/1900, 1916) and his contemporaries suggested that by applying ideas from one discipline to another, students would come to appreciate the interconnection of ideas and the relevance of their schooling. An early advocate of the notion of teaching for understanding, Dewey also understood the importance of students working in communities of learners. Another proponent of integration was Thomas Hopkins who, in 1932, advocated a curriculum 'organized around the immediate, abiding interests and assured future needs of the learner, utilizing materials selected from all areas of the social heritage regardless of subject division' (1932, p. viii). Five years later, in a major treatise on the subject, Hopkins (1937) laid out his theoretical and practical arguments for integration as an organising principle for schools. In essence, these proposals – taken up recently by campaigners such as Beane (1997) and Drake (1998) – for a more unified, experiential, democratic and relevant school curriculum still form the cornerstone for many contemporary middle school curriculum reform efforts.

Over the past fifteen years, the integration movement has fuelled a considerable amount of activity, particularly at the middle school level, in Australia and internationally (Council of Atlantic Ministers of Education and Training 2005, National Council of Teachers of Mathematics 2000, National Research Council 1996, Schools Council 1993). In Australia, several state curriculum documents advocate an integrated approach to teaching and learning (Curriculum Council of Western Australia 1998, New South Wales Board of Studies 1996, Queensland Department of Education, Training and the Arts 2004) and middle schools around the country are being organised to facilitate integrated and interdisciplinary approaches to curriculum delivery.

Alongside the literature on integration and middle schooling there is an extensive 40-year literature on curriculum reform that has amply demonstrated the difficulty of changing schools and classrooms. Centrally imposed reforms rarely have an impact on classrooms. When reform does make a difference in individual classrooms, the impact erodes over time (Sarason 1993). People, not the nature of the innovation, determine the success or failure of the innovation (Hargreaves 1994). Against this gloomy account of the possibility of curriculum reform, there is encouraging evidence that some reforms take hold in some schools (Darling-Hammond 1997). In at least some cases, these schools have been able to maintain the lessons of their reform experiences and apply them to other schools. Overall, however, it appears that the energy and goodwill of the participants in the reform process, and their capacity to translate reforms into positive classroom experiences, make the difference in changing classrooms.

It is these two curriculum realities that form the backdrop for this article. The first reality sees the pressing need for classroom changes at the middle school level in the form of more integrated curriculum practice, with good evidence that some of these practices have been successfully introduced in some schools (Lingard, Ladwig, Luke, Mills, Hayes & Gore 2001). The second reality concerns the idiosyncratic nature of curriculum change. Reform efforts are patchy, difficult to sustain over time, with participants often reverting to traditional teaching ways when energy flags, support lessens and things get difficult. In this article we look closely at these realities in the context of our extensive research into curriculum integration in Australian middle schools. We examine two studies, spaced a decade apart, to ask 'what are the enabling and inhibiting conditions for integration?' and, 'why, over time, do some integrated programs survive while others wither?'

Methods

This re-search examines data from two separate studies. The first study, conducted in 1996, generated detailed case study data from nine Western Australian middle schools[1] (Venville, Wallace, Rennie & Malone 1999). The study, conducted over several months, involved extensive teacher, student and administrator interviews as well as classroom observations in each school. For the purpose of this article, we conducted a secondary analysis, scanning the data to provide summaries of the 1996 integration practices, and the conditions identified by case study participants as enabling or inhibiting integration. We also contacted each of the nine schools again in 2006, and summarised information about the current status of integrated practice in each school. The summaries of data from the 1996 case study research are provided in Table 1 (all names used in this article are pseudonyms).

For the second study we approached six practicing Western Australian middle school teachers – three female and three male, from metropolitan and rural locations – each with current and/or previous experience in integrated teaching. Hour long interviews were conducted with each teacher, five face-to-face (four in the teachers' workplace and one at the university) and one by telephone. The interviews were recorded and subsequently transcribed. The interviews focussed on the history of the teachers' involvement with integrated projects. The six teachers were asked to describe their recent work with integrated curricula, to identify factors that impeded and facilitated their attempts to teach in an integrated fashion, and to describe the current state of their integrated teaching. The interviews were used to develop teacher portraits, using a method outlined by Lawrence-Lightfoot and Davis (1997). A portrait draws directly on the interview data to provide a detailed sketch or picture of each teacher, incorporating the teacher's history of involvement with integration, and her or his views on various implementation issues. Summaries of these portraits – including

integration practices (previous and/or current) and enabling and inhibiting conditions – are provided in Table 2.

Analysis of the two studies involved a systematic examination of the data to synthesise themes relating to the enabling and inhibiting conditions for integration, to identify a set of common key program characteristics or attributes, and speculate on the reasons for the longevity of some programs. These analyses drew from the tabular summaries and – for the purpose of elaboration and confirmation – directly from the portraits, case study and interview data.

Study 1: Case Studies of Middle School Integration (1996)

In 1996 we conducted a detailed examination of middle years integrated curriculum practices in science, mathematics and technology in nine metropolitan and rural Western Australian schools – Redwood Senior High School, Seaview Community School, Greenbelt Community College, Florabunda District High School, Sandbanks Community High School, Riverview Ladies College, Eagleton Senior High School, Oceanside Senior High School and Hillsdale Christian School . In this earlier research, we identified and described several forms of middle years integration including synchronised, cross-curricular, project-based, whole school specialisations and community-focused (Venville, Wallace, Rennie & Malone 1998, 1999, Wallace, Venville & Rennie 2005). A brief overview of these schools and their middle years integrated programs is shown in Table 1.

At Redwood, the program involved the teaching of similar content and processes in separate subjects across the middle years academic extension program in what we called a synchronised program. A cross-curricular approach to integration, observed at Seaview, involved the incorporation or harmonisation of broad skills, concepts or attitudes across separately taught elements of the middle school curriculum. The thematic programs at Greenbelt, Florabunda, Sandbanks and Riverview were taught across the middle school and involved linking various middle school subjects into a particular theme or common point of focus. The classes were sometimes taught together, and sometimes in the separate discipline areas typically brought together for a culminating thematic event, such as an excursion. At Eagleton, the project-based approach involved the deliberate organisation of the middle years curriculum around a project or series of projects within which the subjects were embedded and the subject boundaries blurred. Under the whole school-specialised approach to integration, seen at Oceanside, the middle school (sometimes in concert with the primary and senior school) adopted a long-term curriculum commitment to a marine studies specialisation. At Hillsdale, we observed an example of a community-focused program, to help students understand and appreciate notions of community in developed and developing countries.

School	Form of Integration	Previous Integration Practices	Enabling Conditions	Inhibiting Conditions	Current Practices (2006)
Redwood Senior High School	Synchronised	In the Year 8-10 academic extension program, the science and mathematics teachers identified areas of curriculum overlap and taught integrated investigations twice a term.	• planning time • committed teachers • team approach	• staff turnover • teaching out of field • perception of forced or contrived integration • planning time	The academic extension program continues with limited synchronised links across subjects.
Seaview Community School	Cross-curricular	In Years 8-10, the school instituted a number of integrated programs (e.g., horticulture, wood working) with a school-wide language focus.	• administrative support • flexible structures • small school size • community support	• staff turnover • transient student population	Unknown
Greenbelt Community College	Thematic	The Year 7, 8 and 9 teachers worked collaboratively in learning teams to design, implement and assess interdisciplinary modules (e.g., my heritage, patterns in life).	• teaching teams • flexible timetable • administrative support • collective vision	• teacher workload • community wariness • teaching out of field • teaching materials	The school continues to use teaching teams and themes for Years 7-9, although Years 9 & 10 have become more discipline based.
Florabunda District High School	Thematic	The curriculum in Years 8, 9 and 10 was organised around term themes (e.g. relationships, the Olympics) incorporating aspects from each learning area.	• collective vision • dedicated teaching space • planning time • outcomes approach	• staff turnover • community wariness	This program ceased because of changes to administrative and teaching staff, and community pressure.
Sandbanks Community High School	Thematic	Teachers and students in Years 8-10 were organised into learning communities, with each community selecting and studying its own cross-curricular theme (e.g., decision making, environment).	• administrative support • teaching teams • collective vision • flexible timetable	• teaching out of field • teacher workload	The school continues to use learning communities and cross-curricular themes for Years 8 and 9, although staff are teaching across fewer disciplines.
Riverview Ladies College	Thematic	The five Year 8 teachers worked as a team to run integrated projects (e.g., environmental theme day) incorporating aspects of all learning areas.	• flexible timetable • dedicated teaching space • committed teachers • team approach • planning time	• finding committed middle school teachers	The program has now become embedded across the middle school, with teaching teams in Years 7-9.
Eagleton Senior High School	Project-based	The science, mathematics and technology teachers worked as a team to teach the Years 8-10 academic extension program through integrated technology-based projects (e.g., design of a solar powered boat).	• teaching teams • collective vision • dedicated teaching space • meeting time • flexible timetable	• teacher workload • planning time	This program ceased when the school was closed in 2002 (due to declining enrolments).
Oceanside Senior High School	School-specialised	This coastal high school developed a marine studies specialisation. Each of the 'core' subject areas taught one specified unit of marine studies in each of Years 8-10.	• marine studies coordinator • administrative support • teaching resources • committed teachers	• coordinator dependant • communication time • timetable restrictions	The school maintains its marine studies specialisation.
Hillsdale Christian School	Community-focussed	The middle school mathematics and social studies teachers initiated a joint community-based project on the world's north-south inequities.	• administrative support • planning time • committed teachers	• teaching materials • teaching out of field • time	Unknown

Table 1. Summary of Study 1: Case Studies of Middle School Integration (1996)

While the middle school examples we observed in this earlier work could be sequenced from subjects taught 'separately' to subjects taught 'together', we do not intend any particular hierarchy in this ordering. Neither do we claim that these forms and examples exhaust the possibilities for integration. Our aim in this earlier research was to describe the broad sweep of middle school integrated practice and to provide some concrete examples of different forms. We found that in each of the schools observed, the choice of the central integrated concept, the means of jigsawing subjects into the central idea, the degree of 'separateness' or 'togetherness' of the subjects, and the teaching strategies selected were derived from the needs of the individuals involved, the purpose of the curriculum and the nature of the school setting (Wallace et al. 2005). In each school, the participants identified those conditions that enabled and/or inhibited integrated practice – described in detail in Venville et al. (1999) and summarised in Table 1.

As an addendum to our 1996 study, we contacted the nine schools again in 2006 to survey the current state of the integrated practices we observed a decade ago (see Table 1). We found that in two schools (Greenbelt and Sandbanks) the thematic programs were continuing, though with modifications. At Riverview the thematic approach had been extended to include the entire middle school and Oceanside maintains its marine studies specialization. The academic talent program continues at Redwood, with limited synchronised links across subjects. One school (Eagleton) is now closed due to declining enrolments. In another school (Florabunda) the program ceased several years ago due to staff transfers and flagging community support. We were not able to obtain information on the current state of integrated practice at Seaview or Hillsdale.

Study 2: Portraits of Integrated Practice (2004)

Here we present portraits of six additional teachers – Max, Jon, Ruth, Peter, Helen and Kay – based on interviews conducted during 2004. The portraits depict the teachers' current and/or previous experience with integration and their perceptions of the conditions that enabled or inhibited their attempts to integrate. Summaries of each portrait are presented in Table 2.

Max

Max is a veteran science-trained teacher currently working in a small rural district high school (Years K-10). During the interview Max reflected on his experiences with integration several years previously. When teaching in another district high school, he was involved in implementing a large-scale integration project extending throughout the middle school (Years 8-9) and into the primary school. As the then deputy principal he encouraged teachers to teach in multiple areas according to their interest.

Teacher	Form of Integration	Previous Integration Practices	Enabling Conditions	Inhibiting Conditions	Current Practices (2006)
Max	Cross-curricula	Max coordinated a whole middle school (Years 8-9) approach to integration where students of similar ability but different ages were grouped together. Teachers chose integrated topics that complemented their skills and students' interests.	• administrative support • community support • committed teachers • flexible timetable	• staff turnover • isolated staff	Max transferred from his previous school, and is currently teaching design and technology with minimal cross-curricular links.
Kay	Cross-curricula	Kay coordinated the introduction of a new integrated learning environment across the school, with teams in each of Years 7-9 and links to the junior and senior schools.	• committed teachers • planning time • teacher professional development • co-teaching • restructured timetable • flexible teaching space • teacher modelling	• teachers' subject identity • dominance of senior school	Kay's program is being embedded across the middle school.
Jon	Thematic	Jon coordinated an academic extension program in Years 8-9 that drew together different subject areas to focus on cross-curricular themes or topics.	• planning time • committed teachers • flexible teachers • flexible timetable • teaching resources	• dominance of the disciplines • contrived themes	Jon reported that recently the program had become less integrated with teachers focussed more on their own subjects.
Peter	Thematic	Peter taught in two learning areas (science and English) in Years 7-9 and worked collaboratively with the mathematics teacher to develop learning themes.	• flexible timetable • team approach • student feedback	• staff ideological differences • planning time	Peter continues to work in an integrated fashion.
Helen	Thematic	Helen's science option units in Years 9 (food science) and 10 (forensic science) incorporated aspects of science with other learning areas.	• flexible structures • small school size		Helen continues to teach her science option units.
Ruth	Project-based	With her Year 8 academic extension students, Ruth ran an integrated project, 'the dolls' house', incorporating science, mathematics and computing.	• collegial support • administrative • support • planning time		Ruth's program continues and will be expanded to include other integrated projects during 2006

Table 2. Summary of Study 2: Portraits of Integrated Practice (2004)

One teacher, for example, who had a love of nature and drawing, incorporated nature walks with physical education, and bush art in art and design, and often included facets of science. Another teacher combined languages with cooking and provided opportunities for students to prepare dishes and experience different ways of using language from other cultures to talk about food. This extensive integrated program incorporated different year levels and subject areas, so students were working at their level of understanding and were not bounded by traditional age groupings.

Max attributed the success of the project to the hard work and passion of the teaching staff. He noted that staff 'really enjoyed extending their knowledge base and they were prepared to put in the necessary effort.' The importance of teacher enthusiasm and willingness to collaborate was a key to the program's success. Max also emphasised the role of a supportive administration who were prepared to free up blocks of teaching time in order to break down the subject barriers. A further enabling factor was the interaction with and interest of the parents in their students' learning. Max said that initially parents had concerns that the curriculum was being diluted, that students could not be enjoying themselves and learning at the same time. Parents were kept informed through community meetings and invited to sit in on school lessons to build support for the program. One of the problems, however, was that students often compartmentalized their learning and did not extend it beyond the subject classroom door.

Max noted that after he and some of the other teachers moved on, the integration program in his previous school was discontinued. Once the original impetus was removed, he said, teachers reverted to teaching in their separate subjects. Max transferred to his current school four years previously. Due to the limitations in the timetable he was required to teach design and technology rather than science. Consequently, he was unable to integrate as much as before. Max explained that he was conscious of the overlap between subject areas and was keen to help his current design and technology students understand, where possible, the relationship between aspects of this subject and areas of science. Max conceded, however, that his was a very limited form of integration. He noted, that in the absence of a collaborative effort across the school, it was difficult to reproduce the kind of integrated curriculum he had previously experienced.

Jon

Jon is the academic extension coordinator in a large metropolitan high school. The academic extension group is a single class in Years 8 and 9, separated from the mainstream classes for the four core subjects of science, mathematics, English and social studies. Jon said that the academic extension program had a strong integrated focus. As program coordinator he facilitated the collaboration of the core subject

teachers and in previous years had helped them prepare the syllabus around themes (e.g., food, garden, bikes). The teachers met regularly to discuss the themes and monitor students' progress.

In more recent years, Jon and the core teachers have adopted a more pastoral care focus to their role. However they continue to have some common outcomes. For example during a recent Year 9 student camp on Rottnest Island, the teachers integrated marine science with the history of the island and extended this into other learning areas. Jon is still committed to the idea of integration and is currently looking at introducing a series of rich tasks (a project that requires students to use a range of skills and knowledge from different subject disciplines in order to complete an interdisciplinary task) into the program.

Jon noted how a flexible timetable, not linked to the mainstream program, assisted the academic extension teachers in implementing an integrated program. This separation enabled excursions and other activities to be arranged without disturbing other classes. Teachers' energy and enthusiasm and commitment were vital to the success of the project, as was time available to collaborate during school hours. Jon also reflected that teachers needed to be flexible, be prepared to move outside their curriculum speciality and examine ideas from a number of perspectives whilst working to constantly refine their practices. He also felt that the availability of sound teaching resources was important to the process.

Jon reflected that there were many difficulties with incorporating an integrated component into the curriculum of a large mainstream high school. He reported that the heads of many of the subject departments specified curriculum content for all students to learn. Moreover, having to administer common subject-based assessment tasks across the entire year group was an impeding factor. Jon also referred to the growing criticisms of the thematic approach to integrated teaching. Some staff found it difficult to match the themes – seen as contrived and too specific – with the core subject area syllabus requirements. These criticisms had caused the program to become more compartmentalised in the past two years.

Ruth

Ruth is a young, newly qualified teacher working at a small metropolitan Muslim school. The school's religious focus is very strong; it permeates the curriculum and results in segregation between the sexes for much of the teaching time. Ruth's integration occurs within the mixed-sex academic extension group, where she taught the science component and her sister (a fellow teacher) taught mathematics and computer studies.

Ruth's Year 8 integration project involved students in designing and constructing a model of a doll's house over a school term. The project incorporated computer and design skills in creating the model schema, and a mathematics component where the students were required to measure and calculate the dimensions of the house and draw suitable scale drawings. To light the house, students needed a basic understanding of the concepts of energy, current and circuit, including series and parallel circuits. At the end of the project, students exhibited their houses at a science open day where parents and the principal were able to talk to students about their work and vote on the best design. Students were also required to write a report illustrating the mechanisms in their houses and discuss all the features.

Ruth reported on the importance of her collaborative relationship with her sister and the support of the administration in helping her plan and implement this project. She noted that the project was being extended into other academic extension groups in other years and that the teachers of these groups were being given the necessary time to plan and coordinate the learning activities.

Peter

Peter is an experienced teacher working in a middle school (Years 7-9) with a strong pastoral care philosophy. Students have continuity across subjects and across year levels with teachers being assigned to teach in multiple learning areas to the same group of students for three years. When he started at the school he taught across four subjects, however, this was subsequently reduced to two, science and English. These subjects were closely linked and when he collaborated with a mathematics teacher, the students' learning became seamless across science, English and mathematics. It was, as he said, like 'an overarching ideology and then the topic and the assessments would come through this. They weren't discrete subjects, it was just one, big learning area, and it made everything far more relevant to the students'.

Peter used an example of rocketry, and described how students calculated the trajectory of the rockets and employed historical methods to make measurements of the rocket's performance. Then students designed and constructed the rockets and launched them from the oval. Peter reported that the entire middle school came out to watch and a betting syndicate started within the student cohort in order to predict which rockets would reach the highest altitude. Peter said that he often used different teaching strategies, such as role-plays, to encourage the students to think critically about environmental and technological issues. The students considered different solutions to the water crisis and Peter felt that they enjoyed addressing real life environmental issues.

The flexible timetable in Peter's school enabled him to teach in more than one learning area, which, in turn enabled him to integrate the subjects. Peter reflected on the value

of working and sharing ideas in groups with other teachers, and the need for collaborative planning time structured into the school day. He found that spending several years with the same students allowed him to develop a strong relationship based on mutual respect. Peter emphasised the importance of obtaining feedback on the lessons from the students, including what was learned and the degree of student enjoyment. 'If we are really providing a service,' Peter said, 'the service has to be tailored to the needs of the community and the needs of the individual students.'

Notwithstanding his commitment to integration, Peter reported on conflicting opinions among the staff about the desirability and success of integration. Different ideologies – for example, disciplinary versus generalist – sometimes created tension in the teaching teams, which impacted on the program.

Helen

Helen is currently teaching at a small rural district high school (Years K-10) where she teaches all the science in Years 8 to 10 as well as science options in Year 9 and 10. The options – conducted over one semester for two hours per week – are additional to the three hours of compulsory science completed in science class. Helen designed the options to be practical and related to students' real life experiences.

The Year 9 option is food science, concerned with various aspects of food preparation and cooking and the integration of chemistry with technology and other curriculum areas. In the Year 10 option she offers forensic science, an integrated topic combining science, technology, social studies and law. For this option, Helen builds connections to the world outside school with expert guest speakers (such as police officers), web searches, law court simulations and analysis of television programs. She felt that these options were often more difficult than alternative offerings, providing students with a challenging learning opportunity. For the future, Helen was planning to introduce a sports science unit (integrating science with technology, mathematics and physical education) in Year 10 in her mainstream science classes.

Helen said that she was fortunate to work in a small district high school with the timetabling flexibility to run split Year 10 classes as well as offer the science options in Years 8 and 9. One of the reasons that Helen was reluctant to teach in a senior high school was that she felt that the timetabling would be too constricting to enable her to offer these optional integrated units. A further enabling factor was the school's emphasis on information technology, which helped provide ready access to computers when she wanted to use them in class. Being the only science teacher in the school also gave her considerable freedom to select her own content and teaching methods.

Kay

Kay is middle school coordinator in a large single-sex independent, church-sponsored school in the Perth metropolitan area. The middle school (Years 7-9) aims to provide students with a sense of belonging and acknowledges the complex relationships among students of this age group. The school is currently constructing a separate middle school building with dedicated preparation, teaching and learning space for students and teaching teams.

At weekly professional development sessions, the core subject teachers in each year level examine links between learning areas and develop common themes. The teachers are trying to teach inter-related concepts at the same time in different areas and embed constructivist pedagogical strategies into the middle school. Units are sequenced in order to enhance interdisciplinary links and encourage students to consider a more related view of their learning. Teachers in the same team are encouraged to co-teach, and thus model cooperative learning strategies for students. Bloom's taxonomy and strategies for multiple intelligences are also embedded or 'threaded' through the learning areas.

In terms of enabling conditions, Kay emphasised the importance of reconstructing the timetable: 'unless you have a fundamental blow up of your timetable and rebuild it again, you tinker around the edges'. She felt that timetabling was one of those 'invisible boundaries' preventing change. Kay also mentioned the importance of flexible physical spaces as learning areas, facilitating more integrated teaching practices. Here, the teachers also could model aspects of cooperative learning, demonstrating how they learned from each other and with students. An outcomes focus to teaching, learning and assessment also assisted teachers to focus more deliberately on learning.

In examining this process Kay reflected on the difficulty of instigating changes in teachers' beliefs and practices. Many teachers were closely linked to their subjects and by removing the boundaries of the subject areas some teachers felt that their identity was being eroded. Kay also noted that in many respects the school structure was hierarchical, still dominated by the academic subject orientation of the senior school. Teachers' preparedness to teach in the middle school was affected by the perception that it was more prestigious to teach in the senior school. Kay claimed that only by making major systemic changes to the timetable, the content and the physical classroom, could a truly integrated program be installed in the school.

Looking Back: Program Conditions and Key Characteristics

In a decade of research into curriculum integration in middle school settings, we have reported on the different forms of integrated practice (Venville, Wallace, Rennie & Malone 1998, 1999, Wallace, Venville & Rennie 2005), the nature of student learning in integrated settings (Venville, Rennie & Wallace 2003, 2004, Venville, Wallace, Rennie & Malone 2000) and have theorised about the need for a new worldly perspective on integration (Venville, Wallace, Rennie & Malone 2002). In this re-search for integration, we have a different purpose; focussing on those conditions that are likely to maintain and sustain integrated practice over the long term. We look back at data from our earlier work and more recent teacher portraits, and look forward to speculate on the prospects for enduring middle school curriculum reform based on integrated practice.

For both studies, the enabling conditions fell under four broad categories – shared purpose, collegial relations, norms of improvement and structure. Shared purpose refers to shared ideas about the purposeful educational direction of the school and, in the schools described, included such things as administrative and community support. Collegial relations refers to the ways in which mutual sharing, assistance, and joint effort among teachers was valued and honored in the school, exemplified by how the teaching teams worked together. Norms of improvement refers to the way in which teachers were seeking to improve their practices, exemplified by teacher commitment. The fourth category, structure, refers to those organizational arrangements and policies that worked in support of the other three conditions. Structures identified included a flexible timetable, planning time, dedicated teaching space and teaching resources.

Inhibiting conditions worked, in many respects, in matching opposition to the enabling conditions. Factors working against shared purpose, for example, included community wariness that integrated teaching approaches might be 'watering down' the curriculum, teachers with different disciplinary traditions and the arrival of new staff with different ideas. Working against sound collegial relations was the problem of teachers having to teach out of field, a perception by some teachers that integration was being forced and high rates of staff (and student) turnover. Heavy teacher workloads worked against norms of improvement and structural problems identified included a lack of planning time, timetabling restrictions and a lack of sound teaching resources to support integrated practices.

Here, we focus on those common (mainly structural), key program characteristics or attributes which appear to be present across most of the schools we have studied. The six characteristics are small and stable learning environments, leadership, team activities linked to the classroom, in-school planning time, flexible timetable and community links.

Small and stable learning environments for teachers and students

One of the most striking characteristics of the integrated programs we have studied is that the teachers and students were members of small and stable learning environments. Sometimes called teams or learning communities, small learning environments typically involved a small interdisciplinary team of teachers (usually 4 or less) with shared responsibility for a small (usually less than 90) group of students. Such configurations were observed at most of the schools in the 1996 study (with the exception of Oceanside) and described by all but two of the interviewed teachers. An additional key factor is stability – of programs, of staff, and of relationships. Stable programs were those where teaming practices had been in place over a number of years (notably Greenbelt, Sandbanks, and Riverview); stable staff meant that programs retained key personnel (Kay, Jon and Peter, for example), and stable relationships were assisted when teaching teams followed groups of students through the middle years (a feature of most programs). Small and stable learning environments led to a tight reciprocity of teaching and learning as illustrated in this quote from a teacher at Sandbanks, 'if [the students] know that we are talking among each other and we are making sure that we are keeping up with the kids and what we are doing in each subject, well they can't slack off in one subject and keep up on the other. It's a two way street' (Venville et al. 1999, p. 33). Finally, we note that small and stable learning environments were sometimes located in large schools (notably Greenbelt and Riverview), where students and teachers belonged to small learning communities situated within larger school communities.

Leadership

Leadership is often cited as an important precondition for curriculum reform. This was also the case in the schools in our two studies, where leadership was evident in a variety of forms. In almost every case, participants mentioned the importance of a supportive administration. For example, at Sandbanks, one teacher said 'as far as the administration is concerned, they are right behind us because whatever we want to try, we have their support' (Venville et al. 1999, p. 33). We took this to mean a number of things, ranging from hands-on transformative leadership of the principal (as was observed in Greenbelt and Sandbanks) to enabling support in the form of resource provision and encouragement (mentioned by Max and Ruth). A further form of leadership was program coordination, with most of the interview teachers in such a role. However, perhaps the most pervasive form was the kind of distributed leadership exercised across teaching teams. Commonly referred to by participants in terms of teacher commitment or enthusiasm, distributed leadership involved members taking shared responsibility for the team and contributing jointly to the development and implementation of ideas.

Team activities linked to the classroom

We found that team activities were strongly connected to classroom instructional practices. Such activities included coordinating curriculum, classroom-level integration and interdisciplinary practices. At Greenbelt, for example, one teacher said that team members 'share 80 to 90 percent of their curriculum materials with each other' (Venville et al. 1999, p. 12). The teachers in the interview study referred specifically to team time being used to develop themes, identify links across learning areas, develop common outcomes, coordinate assessments, organise to teach inter-related concepts and discuss how to embed constructivist pedagogical strategies. We suggest that classroom-focussed team activities serve to build teaching capacity, but also, as Kay mentioned, to model cooperative learning to students.

In-school planning time

The call for quality planning time was a common refrain in both of our studies. The availability of dedicated in-school planning time was a feature of several schools in the 1996 study and the more recent study. At Greenbelt, for example, planning time was prioritised by the deputy principal 'as an essential prerequisite for the development of an integrated curriculum' (Venville, et al. 1999, p. 12). At Florabunda, three half-hour, shared planning sessions were incorporated into the timetable and a separate staff planning area established (Venville, et al. 1999). At Kay's school, weekly professional development sessions were scheduled for the core subject teachers in each year level to examine links between learning areas and develop common themes. In-school planning time, we suggest, serves to provide teachers with time to collaborate and innovate, and signals to all that such work is important and central.

Flexible timetable

Another common feature of the study schools was the enabling role of a flexible timetable. In those schools where teaming was a feature, the central timetable established only the broad structure while pedagogical decisions about student grouping, teaching time and space allocation were typically devolved to the teaching team. As one teacher at Sandbanks said, 'we can shuffle it around; I will take science at this time if I can put my kids into maths and swap it around like that. It's just negotiating… It is really good not to be stuck to a timetable' (Venville et al. 1999, p. 34). What the flexible models had in common was the goal of lengthening blocks of learning time and reducing the number of transitions students needed to make between teachers, classes, subjects and experiences. One advantage, as Kay pointed out, was that teachers could work with different groups of students at different times depending on the needs of the students. Three of the large schools (Greenbelt, Sandbanks and Riverview) used block timetabling across the entire middle school. The dedicated academic extension programs at Redwood and Eagleton (and Jon's school) effectively operated independently from the constraints of the larger school

timetable. In the smaller rural schools (Seaview, Florabunda and those described by Max and Helen) flexibility is (potentially) inbuilt.

Community Links

The final characteristic of the integrated programs described in these two studies is community links. Our observation is that this characteristic operates at two levels. The first level – the level of information – concerns the importance of bringing the community 'onside' with middle school policy and practice. Teachers at Greenbelt, Sandbanks and Florabunda spoke specifically of the need to routinely inform the community about integrated teaching practices, and of the dangers of not doing so (Venville et al. 1999). Max and Ruth described programs where parents were invited to the school to observe and participate in classroom activities. At a second (and arguably more significant) level – the level of action – the teaching program reached out to involve, and contribute to, the community in a more 'integrated' fashion. This level of community linkage is illustration by the program at Seaview, a remote area school, with an explicit cross-curricular focus on language (both the local indigenous language and English) and where the students were involved in community horticulture programs. Helen, from the interview study, extended her teaching into the community by inviting outside experts into the classroom. At Hillsdale, we offer another example of students informing themselves and considering ways of taking action on the topic of north-south inequities. Over the course of our work with middle schools, we have come to view community links (particularly at the level of action) as a most important characteristic of integrated practice (see also Rennie, Sheffield, Venville & Wallace 2005).

Our intention here has been to offer a few key program attributes rather than an exhaustive list of all of those factors likely to impact on program success. The list is mainly structural and does not include other conditions such as norms of improvement and collegiality. In many respects, these attributes are similar to those identified in other empirical studies. For example, in a major study of Australian middle school reform, Pendergast and colleagues (2005) found that teacher teaming, innovative leadership and connections between student learning and the outside world were important early structural features of most schools. In the USA, a major review by Visher, Emanual and Teitelbaum (1999) highlighted the importance of small learning environments, flexible, relevant scheduling, and links to the outside community. Summarising their findings from a decade of middle grades research in the USA, Flowers, Mertens and Mulhall (2003) emphasised several reform conditions, including small interdisciplinary teams, common planning time and teacher development linked to classroom practice. In a major Canadian study, Hargreaves, Earl, Moore and Manning (2001) found that middle schools worked best when they embraced relevant and integrated curricula, were configured in small flexible learning teams, and connected teacher development directly to classroom practice.

While the findings from these studies are closely aligned with our own, we caution against the tendency to see middle school reform in terms of identifying and implementing individual structural characteristics. While it is instructive to isolate certain key attributes, we propose that it is the *combination of characteristics that matters*. For example, leadership alone is unlikely to make a difference if teaching teams are unstable, and team activities are likely to be more effective when common planning time is provided. Another important finding is that schools exhibited these characteristics in different ways. The organisation of small learning environments and flexible school days, for example, differed from team to team and school to school. Finally, we caution that the six characteristics were not present in all of the integrated programs we observed. Middle school integration appeared in many forms, not always conforming to the six attributes described above.

Looking Forward: Towards a Resilient School Community

Thus far, in our re-search for integration, we have looked back over our work with middle schools and teachers over the past decade, to describe some different forms of curriculum integration, to identify those conditions which appear to enable and inhibit integration, and to detail several key structural characteristics of the programs we have studied. Now, in looking forward, we wish to speculate on why some of the programs we studied seemed to be more longstanding than others. Why, for example, did the programs at Greenbelt, Sandbanks, Riverview and Oceanside continue for 10 years, while the programs at Florabunda (and that described by Max) ceased after a short time? In some cases, the reason seems simple enough (the closure of Eagleton, for example), but the underlying causes of program growth, maintenance or termination are often deep seated.

In attempting to answer this complex question, we draw on the notion of 'resilience' as it applies to organisations, particularly schools. Originally employed by behavioural scientists to describe how individuals summon resources to respond positively to adversity, in education it has been extended to the study of how schools can promote resilience in students (Henderson & Milstein 2003), and how schools themselves can become more resilient as communities (Benard 2004) and institutions. It is this later notion of institutional resilience (Hamel & Valikangas 2003) to which we shall briefly turn our attention.

Schools, like all institutions, are buffeted by the vagaries of external and internal pressures. The challenge for innovative middle schools, such as those described in this research, is to find embedded ways of *both* strengthening programs *and* responding to these pressures. Resilient middle schools, those able to sustain innovative programs over the long term, manage to hold the enabling and inhibiting

conditions in a kind of productive tension – shared against individual purposes, collegial against isolated practices, improvement against maintenance norms and enabling against inhibiting structures. This tension is also an uneasy and delicate one. For example, a number of the interviewed teachers highlighted the constant tussle between the forces for a more subject discipline-based approach and the forces for a more integrated approach (see also Wineburg & Grossman 2000). Other teachers mentioned the battle to establish collaborative in-school planning time or the struggle to win community support. When this tension becomes less than productive, we suggest that schools will likely revert to less integrated forms of teaching.

Embedding integrated practice by building middle school institutional resilience involves developing leadership capacity across the breadth of the school, providing learning teams with stability and flexibility within a broad and consistent policy framework, building in job-embedded professional development, making a long-term commitment to resource provision, and establishing strong and enduring links to the community. Unsurprisingly, these ideas about building school resilience align with the key program characteristics described earlier in this article – and similar prescriptions are to be found in other significant studies of middle schooling. According to Pendergast and colleagues (2005), for example, middle schools in the consolidation phase of reform (after 5-10 years) are firmly focussed on lifelong learning, providing a safe and stable place for such learning to take place, and strengthening capacity to respond to the challenges brought about by changing social and economic conditions. As Hamel and Valikangas (2003, p. 57) put it, 'the best way of honouring an institutional legacy is to extend it, and the best way to extend it is to improve the organization's capacity for continual renewal.'

In this article we did not set out to extol the virtues of integrated curriculum practice for middle schooling. For such arguments, the reader will need to look elsewhere (Beane 1997, Drake & Burns 2004, Venville et al. 2002). Rather, we have taken teachers' enthusiastic accounts at face value, and, in this re-search, focused our attention on the conditions under which middle school integration seems to take place. We found surprising convergence in our two studies, conducted a decade apart, about enabling and inhibiting conditions, about key program attributes and about the importance of institutional resilience. We conclude with the observation that embedding curriculum reform through school institutional resilience is also about building resilience among the individuals and groups of individuals belonging to the school – school community resilience if you like. Middle schools need to find ways of providing a safe and stable teaching and learning community to enable teachers and students to make adventurous forays in the integrated world within which they live.

Notes

[1] In Western Australia, the traditional school configuration is primary (K-7) and secondary (8-12). For our purposes, we use the term middle school to refer to the boundary years, 7 to 10, although most of the programs studied were from Years 8 and 9.

Acknowledgement

An earlier version of this paper was presented at the 2005 annual conference of the Australasian Science Education Research Association, Hamilton, July.

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