

**Aligning curriculum materials with the Australian Curriculum:
What is happening in the field and what needs to be done?**

Michael Watt

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Author: Michael G. Watt

Address: 316 Churchill Avenue, Sandy Bay, Tasmania 7005, Australia

Phone: 61 3 6225 1335

E-mail: michaelgwatt@internode.on.net

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Preface

In the early 1980s, I was involved in evaluating bilingual and bicultural resource materials used in Tasmanian schools. This work extended to identifying methods used in the USA to analyse materials. In 1986, I communicated with Kenneth Komoski, the executive director of the Educational Products Information Exchange Institute, an organisation based in New York City, about procedures it used to collect, analyse and disseminate evaluative information about curriculum materials, audiovisual equipment, and computer software and hardware. I also communicated with staff of the Social Science Education Consortium, an organisation founded in 1963 in the University of Colorado at Boulder, about the *Curriculum Materials Analysis System* it published in 1971 for evaluating social studies materials.

In 1987, I initiated a project to develop a plan for establishing a clearinghouse for exchanging information about curriculum materials used in Australian schools. It led to a proposal being presented to the board of the Australian Schools Catalogue Information Service in October 1987 that the Curriculum Development Centre be asked to approach the Educational Products Information Exchange Institute to conduct a workshop for Australian educators with a view to improving practice in evaluating curriculum resources. After presentation of this proposal to the Curriculum Development Centre in April 1988, I met with Brent Corish, director of Curriculum Development Centre in August 1988, to discuss the implications of the proposal. Action pending from the proposal, however, was deferred, because the functions of the Australian Schools Catalogue Information Service and the Curriculum Development Centre were merged to form a new organisation, the Curriculum Corporation.

In July 1988, the Australian Education Council initiated a process of national collaboration in curriculum development, which led to the publication of national statements and profiles in eight learning areas. During the course of the work to develop the national statements and profiles, I began a project in 1992 to review current procedures used to select and use curriculum materials in a nationwide sample of 200 schools with reference to the potential impact that the national statements and profiles would have on these procedures in schools. The findings of this study showed that a close relationship exists between the process of curriculum development and the selection and use of curriculum materials, but there was little evidence that innovative methods, techniques and practices were being introduced into Australian schools to improve selection and use of materials.

In 2015, I published a report that examined and compared state-level implementation of the Common Core State Standards in the USA and Phase One of the Australian Curriculum. An important finding of this study was that few states, in which materials are selected locally in schools, have delivery plans for selecting, procuring and distributing materials to schools. Typically, state education agencies in these states provide relatively few resources to assist teachers align materials to Common Core State Standards or the Australian Curriculum. The present study was initiated to provide a rationale for national organisations, involved in supporting implementation of the Australian Curriculum, to develop a delivery plan to build the capacity of schools in

selecting, procuring and using materials that are aligned to the Australian Curriculum.

The demands of this task required assistance and advice from experts working in the field. In particular, I wish to acknowledge the insights offered by Michael Horsley following a review of the draft. Currently professor of education at Central Queensland University's Noosa campus and president of the International Association for Research on Textbooks and Educational Media, Dr Horsley's extensive knowledge of the publishing industry and the role of materials in schools was a valuable asset in revising the paper. Sarah Runcie, manager for strategy and policy at the Australian Publishers Association, is thanked for general assistance with information about the Australian Publishers Association and for advice in selecting the sample of publishing companies. John Boustead, project director of the Curriculum into the Classroom project, is thanked for reviewing and commenting on the section of paper about the Curriculum into the Classroom project. Morgan Polikoff, assistant professor of education at the University of Southern California, is thanked for providing information about the Surveys of Enacted Curriculum. Lauren Weisskirk, director of partnerships and strategy at EdReports.org, is thanked for reviewing the draft, and offering insights about the work of EdReports in reviewing materials for alignment with the Common Core State Standards.

Biographical Note

Michael Watt taught in several secondary schools in Tasmania, and worked as an education officer in the Tasmania Department of Education. He holds masters' degrees in educational studies and education from the University of Tasmania, and a doctorate in education from the University of Canberra. He currently works as an education consultant.

Abstract

The purpose of this study was to inform the deliberations of a policymakers' working group by investigating what key actors in the materials' marketplace are doing to align digital and print-based materials with the Australian Curriculum and what steps need to be taken to deliver aligned materials to schools. Content analysis method was used to review research literature about the materials' marketplace, the publishing industry, and the procurement, selection and use of materials. Survey method was used to investigate the experiences of a sample of publishers in aligning their products with the Australian Curriculum. Case study method was used to study the backgrounds, current status and environmental interactions of the Australian Curriculum Connect and the Curriculum into the Classroom projects. The results of the study showed that four key attributes characterise the materials' marketplace. The marketplace is dominated by a small number of foreign companies, but small publishing companies play an important role as niche publishers. The adequate supply of materials is dependent on whether individual schools use book-list, book-hire or class-set systems as a basis for procuring new materials. Selection procedures are decentralised, highly differentiated, unsystematic and dependent on demographic characteristics affecting individual schools. Teachers depend in their instructional practice on using teacher-developed resources derived from photocopying print-based materials. Within the interactions of publishers' production and marketing strategies, the Awards for Excellence in Educational Publishing, established by the Australian Publishers Association, have enhanced publishers' role in developing high quality materials, and publishers are using a range of techniques to align materials with the Australian Curriculum. The Australian Government has invested funds in developing a repository of digital materials, delivering the materials by means of an online platform and conducting an extensive series of studies to evaluate students' use of learning objects. The Queensland Department of Education, Training and Employment has developed and implemented various digital materials in the Curriculum into the Classroom project as the principal means for implementing the Australian Curriculum in Queensland schools. The delivery chain, however, is impeded by the lack of a comprehensive and effective means of providing evaluative information about the alignment of digital and print-based materials with the Australian Curriculum to help teachers make informed decisions in selecting materials. The conclusion sets out recommendations referring to the roles of key actors in a plan to improve delivery of materials as they proceed through a complex set of interactions between publishers' production and marketing strategies, selectors' decision-making processes, and consumers' patterns of use.

Aligning curriculum materials with the Australian Curriculum: What is happening in the field and what needs to be done?

Australian Curriculum

In October 2006, the Council for the Australian Federation established a committee of education officials to review cooperative federalism since the Adelaide Declaration on Schooling was adopted in April 1999. The report of the Council for the Australian Federation (2007) discussed major accomplishments of national collaboration, cited results in international studies of educational achievement, examined key challenges and priorities for developing a new statement on the future of schooling, outlined commitments to be incorporated into a new statement, and proposed an action plan. The fourteen-point action plan focused on eight areas of activity. The states and territories should collaborate to set content and achievement standards in the core disciplines, provide flexibility for states, territories and local systems to implement the standards, and broaden options in emerging areas of knowledge. The states and territories should develop a plan to assist schools assess students' performances and diagnose students' strengths and weaknesses in relation to national standards, ensure high quality national tests and sample-based surveys are administered, and apply targeted intervention strategies for schools, in which students are not meeting benchmarks. The states and territories should develop a plan to assist schools report clearly students' performances on national standards, establish three benchmark levels for national tests, and develop a schedule for public reporting of school performance. The states and territories should review school leadership programs across Australia and overseas to develop guidelines to promote best practices, and develop policies for rewarding high performing principals and teachers. The states and territories should cooperate in aligning teacher registration requirements with national professional standards, and develop a national approach for accrediting pre-service teacher education courses. The states and territories should identify impediments caused to schools by regulations, and shift funding agreements towards a performance focus. The states and territories should convene a biennial national forum to showcase innovative and excellent practices at the local level, and feature reforms recognised internationally.

The action plan provided the basis for the Australian Government to appoint a National Curriculum Board in April 2008, charged with developing a national curriculum for kindergarten to year 12. In June 2008, the National Curriculum Board convened a forum in Melbourne to consult stakeholders about directions to be taken in developing a national curriculum. In response to discussions at the forum, the National Curriculum Board released a discussion paper outlining the scope and structure for the proposed national curriculum. Following review of the discussion paper by stakeholders, the National Curriculum Board released a set of key documents to guide development of the Australian Curriculum.

In October 2008, the Council of Australian Governments agreed to establish the Australian Curriculum, Assessment and Reporting Authority to manage curriculum, assessment and reporting of student performance. Following this

decision, the Australian Government introduced legislation into the Australian Parliament, which was enacted as the Australian Curriculum, Assessment and Reporting Authority Act in December 2008. The Act set up the Australian Curriculum, Assessment and Reporting Authority by providing governance through a thirteen-member board. In October 2008, the Ministerial Council for Education, Early Childhood Development and Youth Affairs appointed a subcommittee to develop a charter for the Australian Curriculum, Assessment and Reporting Authority, and provided advice on its budget, transition arrangements, and a nomination and appointment process. Based in Sydney, the Australian Curriculum, Assessment and Reporting Authority subsumed the National Curriculum Board's work in May 2009.

Consisting of eight learning areas specified in the *Melbourne Declaration on Educational Goals for Young Australians*, the Australian Curriculum is organised into discipline-based learning areas, general capabilities that can be developed across the curriculum, and cross-curriculum priorities structured into five bands: foundation to year 2; years 3 and 4; years 5 and 6; years 7 and 8; and years 9 and 10. The process for developing the Australian Curriculum consisted of four phases. Curriculum shaping in each learning area involved identifying key issues and producing a position paper, using the position paper in a consultation with stakeholders to prepare an initial shape paper, conducting a field review to revise the initial shape paper, and producing and adopting the shape paper. Curriculum writing involved writing teams developing a draft in each learning area according to directions outlined in the shape paper. First, the scope and sequence of what students are taught was developed by the writing teams, and reviewed by advisory panels, representatives of professional associations and curriculum experts. Second, the detail of what students are taught together with achievement standards were developed by the writing teams, and reviewed by the education community. Following revision based on feedback, each draft was reviewed by the Curriculum Committee prior to submission to the Board for approval. Implementation involved diffusing and demonstrating the Australian Curriculum to representatives of state and territory education agencies, and Catholic and independent schools. Then, each of these sectors determined the schedule for implementation, and provided teachers with support documents and professional development. Curriculum evaluation and review involves determining the need for revision of the Australian Curriculum by consulting the education community, reviewing practices in other places, and considering alternative options for addressing relevant issues.

In 2014, the Minister for Education, Christopher Pyne appointed Professor Kenneth Wiltshire and Dr Kevin Donnelly to review the Australian Curriculum. The reviewers commissioned 15 individuals and groups to analyse the subject matter of ten subjects, conducted meetings with organisations and individuals, and reviewed a range of documents, data and projects derived from national and international sources. Almost 1,600 public submissions were lodged on the Australian Government Department of Education's Students First web site. The reviewers contended that the Australian Curriculum emphasises utilitarian ends, 21st century learning, personalised learning, and equity and social justice. These intentions are reflected in the prominence of cross-curriculum priorities and general capabilities at the expense of subject disciplines. The perceptions of stakeholders varied about the concept of a national curriculum, and the

extent to which it would be mandatory. Furthermore, the developmental process was unclear to many stakeholders, the quality of the shaping documents varied, the general capabilities were developed separately from the content of the learning areas, the debate about a rationale for the Australian Curriculum was inadequate, and an iterative process was followed in each learning area. The introduction of discipline-based content into the early years, and incorporation of the cross-curriculum priorities across the whole curriculum were seen as major design faults by many stakeholders. The results of the analysis of the Australian Curriculum in terms of its robustness, independence and balance were mixed. The benchmarking studies undertaken by the subject matter specialists for the review showed that English, History, the Arts, and Economics and Business were lacking rigour, independence and balance in many aspects. Based on an analysis of the submissions, feedback from the meetings and the reports of the subject matter specialists, the reviewers presented recommendations for revising each learning area. The reviewers believed that a different governance structure was needed for the Australian Curriculum, Assessment and Reporting Authority to ensure that decision-making is based on educational expertise instead of policy considerations. The reviewers concluded that the Australian Curriculum, Assessment and Reporting Authority should be established as a company to ensure that board members are not acting as representatives. In the final report, the Australian Government Department of Education (2014) presented 30 recommendations for reducing the subject matter, cross-curriculum priorities and general capabilities, informing parental engagement with the Australian Curriculum, improving accessibility for students with disabilities, rebalancing the emphasis placed on specific subject matter, and reforming the Australian Curriculum, Assessment and Reporting Authority's governance and functions.

At a teleconference of education ministers held in March 2015, the Australian Curriculum, Assessment and Reporting Authority agreed to address the recommendations relating to an overcrowded curriculum, parental engagement, students with disabilities, and rebalancing the curriculum. In May 2015, the Curriculum, Assessment and Reporting Authority consulted key stakeholders and conducted workshops for primary teachers to refine and reduce the number of content descriptions and achievement standards, redesign Humanities and Social Sciences to incorporate history, geography, civics and citizenship, and economics and business, and ensure the general capabilities and cross-curriculum priorities were tagged appropriately. A forum was held with experts in phonics and phonemic awareness to provide advice for strengthening these aspects in English, and changes were drafted to the English curriculum. Key stakeholders were consulted to determine the best approaches to improve accessibility for students with disabilities, and proposals were developed for improving accessibility. Representatives of parents and organisations, which had completed work on improving parental engagement, were consulted, and proposals were developed to improve parental engagement with the Australian Curriculum. Work on changes to reduce content in the Australian Curriculum, strengthen phonics and phonemic awareness in English, proposals to improve accessibility for students with disabilities, and proposals to improve parental engagement were approved by the board in June 2015.

The Australian Curriculum for foundation to year 10 was developed over three phases. English, Mathematics, Science and History, a subject of Humanities

and Social Sciences, comprising Phase One, were adopted by the Ministerial Council for Education, Early Childhood Development and Youth Affairs in December 2010. Of the Arts, Languages and Geography, a subject of Humanities and Social Sciences, comprising Phase Two, the Ministerial Council for Education, Early Childhood Development and Youth Affairs adopted Geography in May 2013 and Drama, a subject of the Arts, in July 2013. In September 2015, the Education Council adopted the revised Australian Curriculum for English, Mathematics, Science, History, Geography and the Arts as well as Languages. In addition, the Education Council adopted Health and Physical Education, Technologies, and Economics and Business, and Civics and Citizenship, both subjects of Humanities and Social Sciences, comprising Phase Three of the Australian Curriculum. In December 2015, new materials to improve parental engagement with the Australian Curriculum were published for each band.

In December 2014, the Australian Government Department of Education and Training commenced a six-year review of the Australian Curriculum, Assessment and Reporting Authority as required by the Australian Curriculum, Assessment and Reporting Authority Act. In January 2015, Grahame Cook Consulting was commissioned to interview 45 stakeholders, analyse the feedback in terms of issues, review a set of relevant documents, and prepare a report presenting the findings of the consultation. Examining the issues of the Australian Curriculum, Assessment and Reporting Authority's purpose, role and functions, curriculum, assessment, reporting, national architecture, and governance and structure in its report, Grahame Cook Consulting presented 15 recommendations for consideration in the review. Referring to the findings in the consultation report as well as a review of the My School website, the Review of the Australian Curriculum and a review of national architecture, the Australian Government Department of Education and Training (2015) analysed the context, delivery, future role and priorities, and presented recommendations for five aspects: curriculum; assessment; data collection and reporting; co-location of curriculum, assessment and reporting activities; and organisation and governance. The review presented 15 recommendations referring to four aspects examined in the review. The Australian Curriculum, Assessment and Reporting Authority should fulfil four curriculum priorities: complete development of the Australian Curriculum in all learning areas; institute a six-year cycle of review for the Australian Curriculum; collect information about implementation and international evidence to lead development of the next generation of the Australian Curriculum; and scope options for further development of a curriculum for years 11 and 12. The Australian Curriculum, Assessment and Reporting Authority should fulfil two assessment priorities: shift the balance of resources to assessment; and provide online assessments aligned to the Australian Curriculum. The Australian Curriculum, Assessment and Reporting Authority should effect two data collection and reporting priorities: investigate ways to strengthen its role in national performance reporting by making the *National Report on Schooling in Australia* more useful and timely; and assess data needs to enable new performance indicators to be incorporated into the *Measurement Framework for Schooling in Australia*. The Education Council should address five organisational and governance priorities: revise the charter with reference to the next four-year work plan; remove the letter of expectation; delegate authority to the Australian Education, Early Childhood Development and Youth Affairs Senior Officials Committee to

monitor progress of the Australian Curriculum, Assessment and Reporting Authority's work against the charter; review the Australian Curriculum, Assessment and Reporting Authority's role, function and governance every six years; and retain the current representational basis for board appointments, but include a more collaborative assessment of members' skills. The Australian Education, Early Childhood Development and Youth Affairs Senior Officials Committee should address the organisational and governance priority of maximising alignment between the Australian Curriculum, Assessment and Reporting Authority's planning documents. The Australian Curriculum, Assessment and Reporting Authority should address the organisational and governance priority of simplifying its advisory and consultative mechanisms.

Implementing the Australian Curriculum and Aligned Materials

Transitioning schools to the Australian Curriculum involves states and territories undertaking six implementation actions: align curriculum materials to the Australian Curriculum; train teachers in the Australian Curriculum and related assessments; transition the technology and assessment system; transition accountability and data reporting system; align teacher preparation, evaluation and licensing; and inform student transitions to higher education. Placing aligned curriculum materials in the hands of teachers represents an initial challenge in transitioning to the Australian Curriculum, since teachers need to have the materials, in which they will be trained, before intensive professional development for implementing the Australian Curriculum begins.

The Australian Government's policy of restoring the focus on science, technology, engineering and mathematics has initiated two projects to provide teachers with materials aligned to the Australian Curriculum. The Australian Government's policy funds conducting the Mathematics by Inquiry project, the Coding across the Curriculum program, adapting and piloting the P-Tech model developed by IBM in New York City by establishing pilot sites at Geelong and Ballarat in Victoria, and offering summer schools for high-achieving students in science, technology, engineering and mathematics.

The Mathematics by Inquiry project is intended to provide innovative materials for mathematics for foundation to year 10 incorporating contemporary mathematics pedagogies. The Australian Academy of Science and the Australian Association of Mathematics Teachers were commissioned to review gaps in pedagogical approaches and materials for instruction in mathematics. The reviews were guided by a set of 14 research questions referring to pedagogy, resources and a gap analysis of existing materials. In its report, the Australian Academy of Science (2015) found that instruction in mathematics is quite well supported by materials aligned to the Australian Curriculum, but through a combination of different resources, inappropriate pedagogy, and the way in which resources are used in schools, the depth of the Australian Curriculum is missed, particularly in relation to problem-solving and reasoning proficiencies. Three major issues pertaining to materials were identified in the review. Novice and out-of-field teachers, in particular, lack the knowledge and time to identify high quality materials. It is a major effort for teachers to screen and review materials available in the marketplace. Many open educational resources are of poor quality. The Australian Academy of Science

recommended that a coordinated initiative should be conducted in resource development and evaluation, research and professional learning for system-wide improvement in mathematics education. Three major projects and eight minor projects were proposed for the initiative. In addition, three recommendations were presented referring to the Australian Curriculum. In its report, the Australian Association of Mathematics Teachers (2015) concluded that high quality materials developed through a process of verifying new materials with learners and revising them, need to be used by teachers committed to exploring new approaches to instruction in mathematics. In May 2015, the Australian Government Department of Education convened a roundtable of mathematics education stakeholders in Adelaide to discuss the findings of the two reviews and provide advice on the priorities to be addressed in the Mathematics by Inquiry project. Recommendations from the roundtable participants led the Australian Government Department of Education to commission two projects. Education Services Australia is curating and annotating materials for mathematics available on the Schools Online Teaching and Learning Environment (Scootle) to describe them more specifically and identify which materials can support teachers' needs. The Australian Curriculum, Assessment and Reporting Authority is developing work samples for mathematics focusing on problem-solving and reasoning.

The Coding across the Curriculum program is intended to introduce computer coding into Australian schools and supports implementation of the Australian Curriculum for Technologies in developing students' algorithmic thinking. As an initial step, the Computer Science Education Research Group in the University of South Australia was engaged to identify available materials and gaps in materials for Technologies. In February 2015, a quality assessment framework containing criteria for context, integrity, alignment and sustainability was developed to evaluate the materials. Then, computer science materials were identified, and mapped against the content descriptions of the Australian Curriculum for Technologies using a survey tool. From a total of 79 websites reviewed, 65 computer science materials were identified as relevant to the Australian Curriculum for Technologies. Of these materials, 52 related to Digital Technologies, two related to Design and Technologies and 12 related to both subjects. In the report on the review, Falkner and Vivian (2015) found that these materials focused on developing programming skills with an emphasis on developing content knowledge, and sharing lesson and activity ideas. When mapped to the content descriptions, there were significant areas of the Australian Curriculum for Technologies that were either not addressed or addressed only implicitly. Analysis using the quality assessment framework identified deficiencies in explicit techniques and advice in assessment and guidance in appropriate pedagogy. The review concluded that gaps in some of these materials could be best bridged by developing supplementary materials, such as, assessment frameworks, guiding pedagogy and lesson plan exemplars. A set of 13 recommendations were presented in the report to provide a basis for developing new materials. Following completion of this project in March 2015, the Australian Government Department of Education and Training commissioned Education Services Australia to develop a Digital Technologies Hub, a portal to be launched in mid-2016 containing over 250 materials aligned to the Australian Curriculum for Technologies, case studies on school practice, resources for students, parents and school communities, and a searchable repository.

Publishers' production and marketing strategies for developing new materials aligned to the Australian Curriculum, however, are influenced by factors that affect market size, the need for publishing companies to market their products to a large population of purchasers in order to survive economically in the marketplace. Variations in implementation plans for the Australian Curriculum released by states and territories, and modifications to the structure and content of the Australian Curriculum made by states and territories limit publishing companies' attempts to produce products that can be marketed nationally, necessary for them to increase sales and restrict competition. These variations may lead publishing companies to produce special editions to meet state requirements, thereby adding to their production costs.

The Ministerial Council for Education, Early Childhood Development and Youth Affairs agreement in December 2010 that each state and territory should be responsible for implementing Phase One of the Australian Curriculum in accordance with its requirements for curriculum review, adoption and implementation, led the states and territories to release different implementation plans. In the Australian Capital Territory, Phase One subjects were implemented across different years in 2012 and 2013. In New South Wales, the Board of Studies, Teaching and Educational Standards developed syllabuses for the Australian Curriculum in the Phase One subjects, which were implemented in 2015. In the Northern Territory, English and Mathematics were implemented in 2012, and History and Science were implemented in 2013. In Queensland, English, Mathematics and Science were implemented in 2012, and History was implemented in 2013. In South Australia, Mathematics and Science were implemented in 2012 and English and History were implemented in 2013 for reception to year 7, and the Phase One subjects were implemented in year 8 in 2013, year 9 in 2014 and year 10 in 2015. In Tasmania, English, Mathematics and Science were implemented in 2012, and History was implemented in 2013. In Victoria, the Victorian Curriculum and Assessment Authority developed a composite framework, AusVELS, which was implemented in 2013. In Western Australia, the School Curriculum and Standards Authority developed the Western Australian Curriculum and Assessment Outline to provide a set of resources to support implementation of the Phase One subjects in 2015.

Three states have modified the structure and content of the Australian Curriculum to meet state needs. In 2011, the Board of Studies, Teaching and Educational Standards developed syllabuses for the Australian Curriculum in English, Mathematics, Science and History containing additional content that clarifies and describes the intended learning. The structure of the syllabuses for the Australian Curriculum retains objectives and outcomes, and content organised by stages of learning, familiar features of the New South Wales syllabuses. In 2010, the Victorian Curriculum and Assessment Authority integrated elements of the Australian Curriculum for English, Mathematics, Science and History into the Victorian Essential Learning Standards. The new curriculum framework, AusVELS, provided a single framework for Victoria's schools, accommodated links from the Victorian Early Years Learning and Development Framework, permitted the addition of learning areas in Phases Two and Three of the Australian Curriculum, and included links to curriculum resources to support its implementation. In September 2015, the Victorian

Curriculum and Assessment Authority released the Victorian Curriculum as a second iteration incorporating the Australian Curriculum, but differing in important respects. The most notable difference is the representation of the curriculum as a continuum of learning represented as levels of learning and the structural design includes both learning areas and four capabilities. In 2012 and 2013, the School Curriculum and Standards Authority developed the Western Australian Curriculum and Assessment Outline setting out the knowledge, understanding, skills, values and attitudes students are expected to acquire. In 2014, the School Curriculum and Standards Authority worked with teachers to review the subjects of History, Geography, Civics and Citizenship, and Economics and Business to ensure a complete Humanities and Social Sciences learning area. The School Curriculum and Standards Authority consulted stakeholders to refine the content of the Arts, Technologies, and Health and Physical Education. During 2014, the School Curriculum and Standards Authority developed 99 year-level syllabuses for the learning areas and subjects of Phases Two and Three of the Australian Curriculum identifying the core to be taught to all students. The School Curriculum and Standards Authority released the syllabuses as the Western Australian Curriculum in July 2015.

Delivery Plan for Aligned Materials

Policymakers should establish a working group, representing key actors in the materials' marketplace, charged with developing a national strategy for aligning curriculum materials to the Australian Curriculum. Initially, the working group needs to consider how curriculum materials are developed, selected and used in the materials' marketplace at present. The analysis needs to take into account that the materials' marketplace involves a complex set of interactions between publishers' production and marketing strategies, selectors' decision-making processes, and consumers' patterns of use. The findings of this analysis will help identify where necessary changes need to be made to inaugurate a balanced and coordinated set of activities that will credibly align curriculum materials to the Australian Curriculum.

Then, the working group should develop a delivery plan to identify how aligned materials are distributed across the country. The degree of state authority over the adoption of materials, the level of content expertise in schools and economies of scale will influence the application of various activities in the plan. The working group could call on national organisations with responsibility for developing curriculum materials and supporting their implementation in schools to convene a committee to compare materials to the Australian Curriculum. These organisations could release a list of model materials that have been determined to be aligned, develop a list of recommended materials that schools could examine when determining alignment, share comparisons that leading schools have completed with other schools, or develop a rubric to aid in the selection process. A policy for selecting and adopting open educational resources could be created, prototype model lesson plans, curricula and pacing guides could be developed, supplemental materials could be acquired, or a mechanism for developing open educational resources designed by these organisations. Once a vision for aligned materials has been determined, the national organisations could initiate contacts with states and territories to create efficiencies and influence publishing companies about the materials they

produce. The working group needs to articulate success measures for monitoring teachers' use of aligned materials, user satisfaction with the materials, and the impact on student outcomes.

Finally, the working group needs to identify a delivery chain to disseminate new curriculum materials to teachers and students. The delivery chain consists of a set of actors and interactions among them that allows for curriculum materials to be disseminated to teachers and students. Delivery chains can be formed in a number of ways. Determining the correct dissemination mechanisms for curriculum materials may be affected by the extent of the state's legal authority to mandate the use of curriculum materials, how the state interacts with high- or low-capacity schools, and the gap between the old and new curriculum. Once the delivery chain has been determined, it is important to identify areas of potential weaknesses. Strengths and weaknesses in the personal relationships among key actors need to be determined. The ease or difficulty in coordinating the actors needs to be assessed. The sources and flow of funds and resources required to maintain the delivery chain need to be regulated. Mechanisms for monitoring the performance of the actors and identifying encumbrances need to be put in place, which ensure that desired changes occur in the delivery chain. Weaknesses identified in the delivery chain need to be addressed by strengthening relationships or redesigning the delivery chain by removing unnecessary actors or easing the pressure on overburdened actors.

The purpose of this study is to inform the deliberations of the working group by investigating what key actors in the materials' marketplace are doing at present to align curriculum materials to the Australian Curriculum and what steps need to be taken in the future. From the assumptions and goals of this rationale statement, the study investigates whether different types of materials promoted by policymakers lead to an imbalance within the materials' marketplace, how different systems that schools use to procure materials influence the availability and currency of materials they use, and whether school-based selection of materials warrants providing teachers with greater training, support and time. The study that ensued from this rationale statement is accomplished by five objectives intended to examine key elements of Australia's materials' marketplace. The first objective is to examine the paradigm of the 'materials' marketplace' to show how producers, selectors and consumers interact within political, economic, social and legal contexts. The second objective is to review research literature referring to the production of curriculum materials by the publishing industry, and the procurement, selection and use of materials in the education systems of the Australian states and territories. The third objective is to survey a sample of publishing companies to ascertain the extent to which they align new materials with the Australian Curriculum. The fourth objective is to report a case study on the Australian Curriculum Connect project to examine whether policymakers place priority on aligning digital materials with the Australian Curriculum. The fifth objective is to report a case study on Queensland's Curriculum into the Classroom project to illustrate a state-level initiative to develop and implement units aligned with the Australian Curriculum. The paper concludes by presenting recommendations for the working group to expand participation in policymaking, increase publishers' roles in developing aligned materials, increase selectors' role in screening and reviewing aligned materials, increasing teachers' role in selecting, procuring and implementing

aligned materials, and increasing learners' role in developing and accessing aligned materials.

Methodology

Three research methods were used to accomplish the five objectives of this study. Content analysis method was applied to describe and analyse systematically either verbal or written communications factually and accurately. Survey method was applied to describe systematically a situation or area of interest factually and accurately. Case study method was applied to study intensively the backgrounds, current status and environmental interactions of a given social unit.

Materials' Marketplace

Content analysis method was used to examine subject matter about the materials' marketplace. The first step in identifying research literature on the materials' marketplace was to consult a bibliography published by Woodward et al. (1988), which provided an annotated list of references on this topic referring to the USA. In addition, a search on the website of the International Association for Research on Textbooks and Educational Media identified a report about aspects of the materials' marketplace in Australia. The relevant documents were read, and summaries prepared to provide a commentary on the materials' marketplace.

Research Studies on the Publishing Industry and Procuring, Selecting and Using Materials

Content analysis method was used to examine subject matter about the publishing industry and procuring, selecting and using materials. The first step in identifying research literature on the publishing industry and procuring, selecting and using materials was to consult a bibliography compiled by Watt (1991), which provides an annotated list of references on these topics. In addition, searches of the Educational Resources Information Center (ERIC) database and the Australian Education Index were conducted to update the references provided in the bibliography. Information obtained from citations, identified from these searches, covering books, collected works, reports, and journal articles, was read to determine whether each reference related to research in these fields. Once copies of relevant documents were obtained from library collections, they were read and summaries prepared. These summaries were then organised chronologically according to theme, and incorporated into commentaries on the publishing industry or the procurement, selection and use of curriculum materials.

Survey of Publishing Companies

Survey method was used to describe the actions of publishing companies in aligning curriculum materials with the Australian Curriculum. It was found to be

impossible to determine the impact that the Australian Curriculum was having on the content and design of new materials being developed by publishing companies by examining documented sources of information. Therefore, the author concluded that information should be obtained from people working in the publishing industry about their opinions concerning the impact of the Australian Curriculum on the development of new materials. It was recognised that opinions needed to be collected from as wide a range of publishing companies as possible to permit a confident generalisation to these groups in the publishing industry. Therefore, collection of this information was sought by questionnaire, because it represented the only feasible way for an independent researcher to collect these data from a sample of publishing companies.

While it would have been desirable to survey a sample derived from the population of all publishers of curriculum materials, it was recognised that it would be difficult, if not impossible, to identify the population by referring to available sources for this information. Therefore, the alternative approach of including in the sample only those publishing companies of materials, which were current members of the Australian Publishers Association, was chosen as offering a practical solution to the problem of sample selection. The sampling procedure consisted of two steps. First, the membership of the Australian Publishers Association involved in educational publishing was identified from the association's website. Second, the author referred to each publishing company's website to determine whether each member was involved in publishing curriculum materials or some other facet of educational publishing. The final sample of 16 publishing companies is reproduced in Appendix A.

The questionnaire was adapted from one that the author used in a survey of publishing companies conducted in 1999. The original questionnaire was designed by the author in 1997, reviewed by staff of the Curriculum Corporation and the convenor of the Australian Publishers Association's Schools Educational Publishing Committee. Finally, the questionnaire was revised early in 1999 by taking into account criticisms raised by the reviewers. In July 2015, the original questionnaire was revised to establish specific relevance to the Australian Curriculum. The questionnaire consists of four parts, with the first part intended to identify differences between groups within the sample. The purpose of the second part was to determine the influence of the Australian Curriculum on the development of materials. The intent of the third part was to determine the influence of the Australian Curriculum on the instructional design of their new materials. The purpose of the fourth part was to identify the professional roles of the respondents to the survey. The questionnaire used in the survey, which is reproduced as Appendix B, consists of 61 items comprising two types: 57 multiple-choice items; and four open-ended items.

The method employed for collecting data from the sample involved dispatching questionnaires to the publishing companies by Australia Post in July 2015. The survey materials consisted of a copy of the questionnaire and a cover letter, which requested the publisher to choose three employees to complete the questionnaire. An employee with expertise in sales should be designated to complete the first part. An employee familiar with the process used by the company to develop and align materials to the Australian Curriculum should be designated to complete the second and third parts. The company's director of educational publishing should be designated to complete the fourth part.

Subjects were required to spend approximately 30 minutes in completing responses on the questionnaire, and were provided with the option of contacting the author by telephone or email to clarify any queries concerning the questionnaire. Respondents were requested to return the questionnaires within two weeks of receiving them. Follow-up letters were sent by email to non-responding companies approximately two weeks after the dispatch of the questionnaire.

Quantitative analysis was applied to analyse quantitative data collected from the survey. Frequency distributions were plotted for all data, and represented in tabular form as frequency tables. Given that the small sample size would cause sampling error, statistical tests were not applied to analyse quantitative data.

Qualitative analysis was applied to analyse responses to the open-ended items in the questionnaire. One item asked the subjects to specify techniques used to align new products to the Australian Curriculum. Another item asked the subjects to explain how greater uniformity brought about by the Australian Curriculum had improved or hindered the publishing company's development and marketing of new products. For both of these items, the responses of all subjects were grouped into categories and then quoted in the report. In addition, one item sought a copy of the company's policy statement for aligning its products to the Australian Curriculum, while another item sought a copy of one product claimed by the publisher to have been aligned with the Australian Curriculum. As most respondents supplied only single components from multimedia basal programs, additional information about particular products was obtained from the publishing companies' websites. Products obtained from respondents, together with information obtained from the internet, were subjected to a form of content analysis referred to as instructional design analysis, which involves eliciting qualitative information for each of the four constructs or elements of the curriculum in terms of Tyler's objectives model. The instructional design analysis of each product is preceded by introductory information identifying the physical characteristics of the product, and a statement on the history of the product's development. The analyst also compared this information with available evidence provided by the publisher concerning alignment of the material with the Australian Curriculum.

Australian Curriculum Connect

Case study method was used to study the background, current status and environmental interactions of the Australian Curriculum Connect project. Initially, a case history on the Learning Federation, reported by Watt (2004), was used as the basis to develop the case study. As the timeline, covered developments only up to 2004, more recent information about the Learning Federation and its successor, the National Digital Learning Resources Network, was documented from information found on the website of Education Services Australia.

In addition, the reports of 12 studies, evaluating students' use of learning objects developed by the Learning Federation, were reviewed. With one exception, the reports were included in a collection of reports housed on Education Services Australia's website. Initially, the title of each report in the

collection was screened and, if necessary, the executive summary was read to determine whether the study related to students' use of learning objects. Each report, that met this criterion, was read and a summary was prepared. These summaries were then organised chronologically within the case study on the Australian Curriculum Connect project.

Curriculum into the Classroom

Case study method was used to study the background, current status and environmental interactions of Queensland's Curriculum into the Classroom project. Initially, a case study on the Curriculum into the Classroom project was reported by Watt (2015) in a comparative study investigating the implementation of the Common Core State Standards in the USA and the Australian Curriculum. Public access to information about the Curriculum into the Classroom project is limited, because key documents are housed on a secure portal. The case study was developed based on a set of fact sheets about the Curriculum into the Classroom resources supplied by the Queensland Department of Education, Training and Employment. The fact sheets were read and analysed to provide the basis for developing the case study.

Materials' Marketplace

The complex process by which materials move from publishers to teachers and students in classrooms has been the subject of postulation in the USA since researchers and commentators realised that textbooks and other materials form an important element in any reform effort. The paradigm of a 'materials' marketplace', in which producers, selectors and consumers interact within political, economic, social and legal contexts, first appeared in educational literature published in the late 1970s.

A Model of the Materials' Marketplace

Clearly detailing a conceptual model of the materials' marketplace for the first time, Goldstein (1978), a recognised expert in intellectual property law, concluded from an examination of its four central features that the political, social and economic forces, in which producers and consumers operate, shape the materials' marketplace. First, major trends in the development of textbooks, audiovisual materials, teaching machines, computers and innovative approaches to teaching and learning, such as inquiry learning, were met by largely unsuccessful attempts at testing the efficacy of materials in classrooms. Second, conservatism in purchasing materials was promoted by patterns of selecting materials in both state-level and local-level adoption states, which involved imposing checks and balances on diverse groups thereby permitting each to have some say in the selection process. Third, the relatively small size, moderate degree of concentration, calculated competitiveness, and limited invention of companies involved in the publishing industry failed to attract investment for making innovative changes to products. Fourth, programs sponsored by private foundations, but more particularly by the federal government aimed at developing new materials or for state and local education

agencies to purchase new materials, were ineffective, unless supported by efforts aimed at disseminating and facilitating the use of materials in schools. Goldstein argued that these features combined to obstruct needed changes in improving the quality of materials. Copyright and patent laws offered no incentive to invest in significant research and development, while initiatives for changing schools through increased accountability, performance contracting, and voucher programs were compromised by political decisions at the federal, state and local levels. Goldstein concluded that until schools overcome their resistance to change, it is unlikely that the quality of materials will improve.

The concepts identified by Goldstein appear to have been defined for the first time as a physical model by Komoski (1977), the executive director of the Educational Products Information Exchange, a New York-based organisation established in 1967 to collect, analyse and disseminate information to assist educators make decisions about selecting and implementing curriculum materials, audiovisual equipment, and computer software and hardware. Komoski reported that this model was envisaged in response to an article written by Broudy (1975), a former textbook editor, who concluded that the materials' marketplace is driven by economic forces encapsulated in the frequently-espoused maxim of the textbook publishing industry: "Kids don't buy books, teachers do". In its final form, the model proposed by Komoski (1985), which he termed the Schema of the Materials' Marketplace, consists of five stages: the education industry; state education agencies or local school districts; school buildings and classrooms; classrooms and homes; and homes and businesses. Illustrated as Figure 1, this schema defines criteria which affect materials as they proceed through a complex set of interactions between publishers' production and marketing strategies, committees' selection procedures, and consumers' patterns of use analysed through five attributes: marketplace setting; predominant values; 'evaluators'; evaluative criteria; and evaluative feedback.

Australia's Materials' Marketplace

A study commissioned by the Australian Publishers Association has identified key variables affecting the delivery chain of actors involved in distributing materials from publishers to teachers and students in classrooms of Australian schools. The study used several research methods to compare Australia's materials' marketplace to those of other countries. Data collected by the Australian Publishers Association about publishing companies' sales of materials were analysed to determine the pattern of expenditure on textbooks and supplementary materials. Data collected by the Copyright Agency Limited were analysed to determine the extent of teachers' practices in photocopying materials. More than 1,000 schools provided annual school reports for analysis, and over 50 educators participated in interviews, focus groups and public discussions. Members of the International Association for Research on Textbooks and Educational Media, educational publishing associations of Canada, France, Germany, the Netherlands and Sweden, and Abo Akademi in Finland provided comparative data for the study.

FIGURE 1

SCHEMA OF THE MATERIALS' MARKETPLACE (After Komoski, 1985)

Marketplace Setting	Predominant Values	'Evaluators'	Evaluative Criteria	Evaluative Feedback
Education Industry	<i>corporate</i>	<i>developers/ producers</i> (companies)	<i>feasibility</i> (Can it be made at a reasonable cost?) <i>marketability</i> (Will it make it in the market?) <i>profitability</i> (Will it make an acceptable profit?) <i>acceptability</i> (Will it be accepted by committees and teachers?) financial bottom line (Will it pay?)	<p>Feedback loop necessary for continuous improvement of materials' ability to communicate effectively to learners is hardly, if ever, closed. The ultimate consumers' experience with materials is seldom a factor that shapes the decision-making of the education industry, state agencies, school boards, or school selection committees. (This is less so when good teachers, who are sensitive to learning needs are given the permission, the training, the time, and the support to select materials.)</p>
State Education Agencies or Local School Districts	<i>societal</i>	<i>screeners/ adopters</i> (committees)	<i>contents</i> (philosophy and coverage) <i>acceptability</i> (ethnic, racial, religious, sex fairness) <i>useability</i> (by teachers and learners, durability) <i>cost</i> (initial and continuing) educational/social bottom line (Should it have its day or should it stay?)	
School Buildings and/or Classrooms	<i>group/ pragmatic</i>	<i>selectors/ prescribers</i> (teachers)	<i>contents</i> (appropriateness, coverage, objectives) <i>understandability</i> (by learners) <i>useability</i> (ease of use and durability) <i>likeability</i> (reactions of kids) instructional bottom line (Will it play?)	
Classrooms and Homes	<i>personal/ affective/ utilitarian</i>	<i>user/ learners</i> (ultimate consumers)	when in school: Do I enjoy it? Does it make clear what I am to do? Can I do it? Of what value is it to me?	
Homes and Businesses	<i>personal/ utilitarian/ spiritual</i>	(ex-students)	when an adult (non-teacher): Was it of value to me? Is it what I want my child to learn? Did it help prepare me to function well as an adult? Will it prepare my child well for the future?	

In the report on the study, Horsley (2012) found that the current process for procuring materials is complex, because three systems for purchasing materials operate in Australian schools. In a school operating a book-list system, school administrators, curriculum coordinators, resource specialists and teachers meeting in groups or individually select materials, which are compiled into a list and parents purchase them from designated booksellers. In a school operating a book-hire system, school administrators, curriculum coordinators, resource specialists and teachers meeting in groups or individually select materials, which the school purchases in sufficient quantity to hire a material to each student and levy a charge on each parent. In a school operating a class-set system, school administrators, curriculum coordinators, resource specialists and teachers meeting in groups or individually select materials, and the school purchases class sets of materials, which are rotated between different classes in the same subject and year level.

Funds available to schools for purchasing materials vary according to state, socioeconomic status, sector, level and the material's medium. Schools operating book-hire and class-set systems fund the purchase of materials from global budgets, but each state uses a different formula for determining school budgets. Global budgets of schools are also affected by each school's capability to source additional funds through levies, the activities of parent groups, and grants from federal and state governments. In all states, except Victoria, book-list systems are largely confined to independent schools. Victoria, however, operates a book-list funding system that caters for all secondary schools. In other states, schools using book-hire and class-set systems are predominantly public and Catholic systemic schools. Many more primary schools than secondary schools operate book-hire and class-set systems. Since publishers' sales of materials to each student in primary schools are almost half of each student in secondary schools, primary teachers have less access to materials, except for literacy and numeracy materials.

The federal government has invested significant funds in digital resources to support implementation of the Australian Curriculum. State governments have invested in digital education initiatives designed to provide hardware and software to support new connected pedagogies for teachers. Investment in digital resources from these sources has led to a significant imbalance in funds with significantly less provided for purchasing print-based materials. Furthermore, decision-making in selecting digital resources is influenced by the policies of federal and state governments relating to adoption and dissemination of digital resources.

The complex nature of funding for procuring materials has led to inequity in the provision and delivery of materials to teachers in classrooms reflected in the following findings. In spite of an increase in the aggregated nominal sales by publishing companies from \$39.89 per student in 2000 to \$46.76 per student in 2006, sales had fallen to \$44.00 per student in 2010. The aggregated nominal sales by publishing companies per secondary student were approximately twice the amount for each primary student. Aggregated nominal sales by publishing companies per student also showed variations across states and territories. The book-list system used in Victoria led to more than twice the funds being spent per secondary student on materials purchased from publishing companies. Sales in other states and territories, in particular the Northern

Territory, South Australia and Tasmania, were substantially less, because their schools used book-hire and class-set systems extensively. As well as leading to schools holding outdated materials, book-hire and class-set systems fail to deliver adequate supplies of materials to schools. This problem has encouraged teachers to photocopy materials as a significant element of their instructional practice. This practice has led to individual teachers developing their own sets of resources, adapted and customised to the needs of students. On the other hand, photocopied materials require excessive expenditure of time to prepare and their use leads to a fragmented approach to instruction.

A sample of principals reported in interviews that decisions about the purchase of materials were usually made in the context of strategic planning that required input from the school community. Usually teachers submit an itemised request for materials, which is then considered by a committee charged with funding such purchases. The principals reported, however, that the need for schools to acquire information and communication technologies to support a range of centrally determined priorities was dominating schools' budgetary decisions. The amount spent by the federal government on information and communication technologies through the Digital Education Revolution policy exceeded the total sales of publishing companies in print and software by 80 percent. In addition, state governments also invest in connected classroom programs, new technologies to increase access to websites and learning objects, and electronic whiteboards.

The evidence from research literature and case studies on teachers' classroom practices indicates that teachers use a wide variety of materials from an increasing range of sources to match students' learning needs. Furthermore, a review of research relating to the use of print-based materials in high-performing countries, assessed in international studies of educational achievement, shows that these materials play a prominent role in these countries' materials' marketplaces. The findings of other research studies confirm that current print and digital resources are complementary. The inequity in funding provided to schools to procure digital and print materials brought about by the Digital Education Revolution has introduced imbalance in Australia's materials' marketplace by undermining the role of publishing companies in providing print and digital materials to schools. Instead, policymaking should be directed to fostering research into the role of materials in supporting implementation of the Australian Curriculum and involving publishers as key stakeholders to redress this imbalance.

Reviews of Research Studies

The review of research literature on the role of the publishing industry in producing curriculum materials, and decision-making in the procurement, selection and use of curriculum materials is intended to identify relevant concepts and data relating to publishers' production and marketing strategies, selectors' decision-making processes, and consumers' patterns of use in Australia's materials' marketplace.

Studies on the Publishing Industry

By and large, little is known publicly about the role of publishing companies and government agencies in producing and marketing materials. Most textbooks and basal readers used in Australian schools in the nineteenth century were imported from Britain. By the end of the nineteenth century, Angus & Robertson, founded by Scotsmen, David Angus and George Robertson in 1888 and William Brooks & Co., founded by William Brooks in 1890, had become the principal companies publishing textbooks and basal readers. With the number of Australian authors of textbooks increasing in the early decades of the twentieth century, local publishing companies incorporated more Australian content reflecting state curricula, new educational theories and advances in knowledge into textbooks and basal readers. In the late 1960s, the curriculum reform movement led to collaboration between the states in curriculum development and the establishment in 1973 of the Curriculum Development Centre, which became an important developer and publisher of a wide variety of materials. The following critiques consist of general commentaries discussing the historical background of publishing companies' role in producing and marketing materials followed by two case studies investigating the role of state education agencies in these activities.

In a history of the publishing industry in Australia from 1891 to 1945, Prentice (2001) reported that state curriculum committees adopted textbooks for use in public schools during this period, and teachers were notable writers of textbooks. In the 1890s, state education agencies in New South Wales, South Australia and Victoria began publishing school papers for use as supplementary reading materials. At the turn of the century, each state education agency produced its own set of readers adapted from English readers, which included Australian literature, stories and verse. Nature study became an important subject at the primary level, and textbooks on topics in this field were published extensively for schools. Angus & Robertson and William Brooks & Co. were the main Australian publishers that dominated the textbook marketplace. The former published the *Australian School Series* of textbooks covering every subject in the curriculum for New South Wales, and the latter published *Brooks' Australian School Books* written for the curriculum in New South Wales and Queensland. The British publishers, Cassell, Macmillan, Oxford University Press and Thomas Nelson made considerable inroads into local textbook publishing through their Australian branches as did the New Zealand publisher, Whitcombe & Tombs.

In a history of the publishing industry in Australia from 1946 to 2005, Blaxell and Drummond (2006) reported that Australian publishing companies first began producing textbooks for secondary schools after World War II, replacing the prevailing practice of importing textbooks from Britain. State education agencies were the main developers of materials for primary schools during this period. In the 1960s, publishing companies began contracting teachers to write textbooks in competition to materials developed by curriculum reform projects. In the 1970s, publishing companies from the USA became involved in publishing in Australia, and by the late 1990s the publication of materials for schools was almost exclusively in the hands of foreign companies. During this period, the first niche publishers representing small independent companies, often established by former teachers or employees of large publishing companies, established a precarious hold at the margins of the marketplace.

Wilson (1993) reported that the marketplace for publishing materials was becoming increasingly concentrated in the 1990s with six major publishing companies controlling most of the output and turnover. All six major publishing companies were based outside Australia. As a result of takeovers in the 1970s and 1980s, each publisher produced a number of imprints representing ownership by a previous company. Textbooks were usually written by teachers and academics contracted by publishers. Publishers conducted market research, displayed materials at conferences, sent sales' representatives to schools, and review copies were distributed throughout the education system. Most states had book-hire systems that allowed schools to buy in bulk and hire materials to students.

The role of boards and agencies, responsible for administering public schools in Victoria, in procuring and publishing textbooks for schools was categorised by Musgrave (1997) into four stages. In the early years before separation of Victoria from New South Wales in 1851, the Board of National Education, established by Governor FitzRoy in 1848, adopted the Irish National texts produced in the early 1830s for use in Irish National schools, because they could be purchased from Dublin at a cheaper rate than they could be bought in England. At the beginning of the foundation of Victoria's education system a Board of Commissioners, established in December 1851, continued to purchase and distribute the Irish National texts to schools, but maintaining an adequate supply of texts from Dublin became a continuing problem. In 1862, an Act for Better Maintenance and Establishment of Common Schools was passed, which placed all schools under a single Board of Education. In 1864, the Board of Education issued an approved list of textbooks and requisites for local communities, which parents were required to purchase for their children's use in schools. Criticism of the appropriateness of the Irish National texts for the Australian context emerged, and in 1871 the first texts adapted for Australian conditions were placed on the approved list. Following foundation of the Education Department in 1872, the Minister, Robert Ramsay, contracted a Melbourne bookseller, George Robertson in 1874 to procure the Irish National texts at prices approved by the Education Department. In 1878, the Education Department issued a circular stating that in populous areas textbooks could be supplied to parents by bookshops, but in rural areas schools acted as suppliers. In 1875, Minister Ramsay adopted Nelson's *Royal Readers* for use in all primary grades. In 1887, revised versions of the readers for grades 3 to 6 were released containing Australian history, and in 1889, a separate textbook, *The Empire – a History of Britain and the British People* was adopted. By the end of the 1880s, the Education Department moved away from its earlier role as agent for distributing British textbooks to publishing its own textbooks. In 1895, a committee of inspectors recommended introducing *The School Paper* for grades 3 to 6. In 1906, a prescribed reader, *The Victorian Book for Class II*, published by George Robertson, incorporated text written by a committee of inspectors. Curriculum changes implemented in 1902 led to publishing companies commissioning inspectors to write textbooks for the revised curriculum. On the eve of World War I, inspectors recommended that supplementary reading books should be adopted for grades 3 to 8, and publishers were invited to submit two texts for each grade. The Education Department adopted two texts for each grade and publishers supplied copies. In the mid-1920s, inspectors recommended widening the range of reading

materials for the primary grades, and a set of committees was appointed to prepare the readers. *The Victorian Readers* were published in 1929, and replaced *The School Paper* as prescribed texts. With the introduction of a new primary course in 1934, the Education Department contracted Whitcombe & Tombs to publish the *Vivid History Readers* and the *Human Geography Readers*, which were included on the approved list thereby guaranteeing a profit for the publishing company. Musgrave concluded that the Education Department's participation in textbook publication and distribution involved a growing scale and complexity of effort over time, especially after the 1870s. By the 1920s, the Education Department had become the major publisher of elementary materials for Victorian schools. After World War II, growing support for individual teachers to select the materials they use in their classrooms and the advent of states cooperating in developing materials for the curriculum reform projects in the 1970s led to the demise of the Education Department's publishing role.

The limited availability of textbooks containing Australian content in the nineteenth century is reflected in a case history about the publication of an Australian history textbook for primary schools by the New South Wales Department of Public Instruction. Fletcher (1990) reported that enactment of the Public Instruction Act of 1880 necessitated changes to the Standards of Proficiency, which formed the basis for inspectors to test students annually. The neglect of Australian history meant that no textbook had been written for New South Wales. In May 1881, the chief inspectors of the New South Wales Department of Public Instruction asked inspectors to suggest suitable textbooks, but no proposal was received. When revised Standards of Proficiency were approved in 1884, the Department of Public Instruction adopted *History of Australia from 1606 to 1876*, published by George Robertson, the Melbourne bookseller, and written by Alexander and George Sutherland, Scottish-born brothers, both teachers and graduates of the University of Melbourne. Adoption of this textbook enabled Australian history to be taught in New South Wales, and the number of students studying the subject increased markedly. Soon after becoming Minister for Public Instruction, Joseph Carruthers, concluded that a more modern work was required than *History of Australia from 1606 to 1876*. In May 1889, he announced a public competition for writers to submit manuscripts for a suitable Australian history textbook written at a level suitable for twelve-year-old children. In March 1890, Hugh Hart Lusk, a barrister who had recently arrived in Sydney from New Zealand, was announced the winner. Initially, publication of his manuscript was delayed by a decision to seek expert advice on its different parts. In November 1891, the new Minister for Education, Francis Bathurst Suttor, decided to examine the suitability of the proofs, which delayed further work until October 1894. In December 1894, Joseph Finney, a lecturer at the Public Training College, was appointed to revise the manuscript, a task that was completed in December 1897. For unknown reasons, the book was not published until September 1901 under the title, *History of the Australian Colonies*. The initial 6,000 copies distributed to primary schools were insufficient and a further 3,000 copies were printed in 1902. Although the textbook was recommended until 1925, changes in the approach to instruction with new Standards of Proficiency issued in 1898 no longer specified the study of a single textbook, but listed broad areas of study representing the first step towards introduction of a syllabus. Fletcher concluded that most of the problems associated with the

textbook's publication were the result of mishandling by the government in its desire to be cautious in publishing a work that could generate controversy.

Studies on the Procurement, Selection and Use of Curriculum Materials

Evidence from historical research indicates that practices in procuring, selecting and using textbooks and basal readers in schools of the Australian colonies provided the means to control the content of the curriculum. State education agencies, founded in the late nineteenth century, delegated the responsibility for curriculum development to state curriculum committees and statutory boards, which administered state-wide examinations at the end of secondary schooling. In the late 1960s, the curriculum reform movement led to collaboration between the states in curriculum development, and the growing influence of school-based curriculum development in the 1970s decentralised decision-making authority to schools for procuring, selecting and adopting curriculum materials. The following critiques begin with a case study discussing practices used in the nineteenth century to procure and distribute curriculum materials to schools, followed by an analysis of research studies investigating the nature of decision-making in procuring, selecting and using materials in schools.

The means used to procure and distribute materials to schools have been reported by Vick (1988) in the context of educational practice in colonial South Australia. The 1851 Education Act in South Australia established a seven-member Central Board of Education to provide a system for licensing teachers, organising and managing licensed schools, regulating the curriculum and establishing a depository for school books. The Board appointed an inspector, William Wyatt, who visited each school and reported to the Board on the teacher's competence, the curriculum and provision of books, organisation, discipline, school accommodation and the number of students in attendance. Soon afterwards, a secretary, Edward Wickes, was appointed, and in 1855 a second inspector was appointed to inspect schools outside Adelaide. By the early 1860s, most of the administrative work of the Board was carried out by the chief inspector and the secretary. Where possible, the Board used district councils, magistrates and leading citizens as its agents and advisers in matters of locating new schools, selecting teachers and verifying the status of destitute children. Once licensing procedures and regulations had been established, the Board turned its attention to founding the depository. Initially, the Board called on local booksellers to supply the depository with set texts, but soon encountered their opposition because of alleged corruption in granting contracts. Then, the Board negotiated with the colonial government to use its agent in London to buy textbooks and basal readers from sources in Britain. When the materials arrived in Adelaide, the Board impelled teachers to use the depository by offering the materials on credit at discounted prices for future sale to their students' parents. Parents, who could not afford to pay school fees, applied to the teacher for free tuition, books and other materials. The teacher checked the validity of the claim and submitted a monthly return of destitute children to the Board, which paid the tuition fee and required the teacher to provide books and materials to each destitute child. The regulations and the books supplied by the depository standardised the curriculum, organised instruction into graded classes conducted by a trained teacher and housed in a building specially designed for the purpose.

In 1971, the federal government launched an initiative to address issues related to disadvantage experienced by non-English-speaking background students. A team of English-as-a-second-language curriculum developers was assembled by the Commonwealth Department of Education, and worked on projects to develop five materials: *Learning English in Australia* for students aged eight to 12 years old; *Transit* for second-phase learners aged 10 to 16 years old; *Origins* for second phase learners aged 10 to 16 years old; *Smile* for students aged five to seven years old; and *Highways* for secondary-aged beginners. The Commonwealth Department of Education commissioned Professor Jonathan Anderson of Flinders University, South Australia, to evaluate how 60 units of *Learning English in Australia*, *Transit Red* magazines and follow-up activities for second-phase learners and *Transit Green* materials for second-phase upper primary learners, who had remedial or enrichment English language needs, were used in schools.

In the study, Anderson (1981) evaluated the extent to which the materials were used in schools and teachers' perceptions about the quality of the materials in terms of objectives, approach, usefulness in instruction, form and layout, content and outcomes. In addition, discussions were held with consultants working in state education agencies and Catholic education offices in New South Wales, Queensland, South Australia and Victoria. Of 496 respondents to a survey of teachers in these states, 412 reported that the materials were used in their schools. Of the respondents using the materials, 95 percent were using *Learning English in Australia*, 94 percent were using *Transit Green* materials and 99 percent were using *Transit Red* materials. Overall, responding teachers rated *Learning English in Australia* at 3.6, *Transit Green* materials at 3.7 and *Transit Red* materials at 4.2 on a five-point scale. Similarly, consultants rated *Learning English in Australia* at 2.9, *Transit Green* materials at 3.7 and *Transit Red* materials at 4.0 on a five-point scale. The objectives of *Transit Green* materials and *Transit Red* materials were seen to be achieved by users, but only 89 percent of respondents indicated that the objectives of *Learning English in Australia* were clear. With regard to approach, 96 percent of respondents stated that *Learning English in Australia* was adaptable, 98 percent of respondents stated *Transit Green* materials were adaptable and 99 percent of respondents stated *Transit Red* materials were adaptable. The respondents believed all three materials were more useful with individuals and small groups than whole classes. The proportion of respondents regarding the content of *Learning English in Australia* to be appropriate varied across different aspects: 90 percent agreed that natural use of language was appropriate; 93 percent agreed that it was relevant to readers' interests and needs; 81 percent agreed it represented the diversity of cultures within Australia; 86 percent agreed it avoided stereotypes; and 74 percent agreed it provided support for students' cultural backgrounds. The proportion of respondents reporting positive outcomes from students using *Learning English in Australia* varied with 88 percent stating that there were gains in terms of activities and values, and 93 percent stating that there were gains in terms of interest and involvement. The findings of the evaluation identified three key issues that needed to be addressed. First, teachers did not generally regard they were adequately prepared to use the materials. Second, parts 1 and 2 of *Learning English in Australia* should be revised to embody a functional-notional approach. Third, teachers saw a major need for new materials for infants and young children,

and more advanced students. Administrators saw a major need for new materials for second-phase learners in upper primary school and for beginners in secondary school.

A second evaluation of the materials for non-English-speaking background students developed by the Commonwealth Department of Education was conducted following their implementation in 1981. A study was undertaken to evaluate how the *Origins* and *Smile* materials were used across different sites and in specific contexts by undertaking content analysis of the materials, using innovations configuration checklists to assess the use of the materials in classroom activities, interviewing curriculum developers and teachers, conducting case studies in two schools, administering a questionnaire to teachers, and administering a student checklist. The questionnaire was administered to teachers in nationwide cluster samples of 87 schools for the *Origins* material and 109 schools for the *Smile* material. In the report, Marsh and Kennedy (1989) described the findings from case studies involving using the *Smile* material in a primary school and the *Origins* material in a secondary school. The results of interviews with the principal, teachers and students were positive about the *Smile* material, and the innovations configuration checklist showed that animal materials (44 percent), picture story books (42 percent), dramatised stories (31 percent), noun cards (28 percent) and games (26 percent) were frequently used by teachers. Responses to the questionnaire showed that more than nine-tenths of the subjects agreed the material achieved the teaching objectives used with mainstream classes and achieved desirable outcomes with students. The results of interviews with the principal, teachers and students were negative about the *Origins* material, and the innovations configuration checklist showed that the reading cards and syllabus (59 percent), emphasis (38 percent), concept and skills (32 percent) and language (30 percent) components were frequently used by teachers. Responses to the questionnaire showed that more than nine-tenths of the subjects agreed the material was suitable as a supplemental material for mainstream classes and a majority of the subjects rated the design of the material highly suitable for variety of materials, and the student checklist showed that students enjoyed reading the cards (79 percent), the topics of the cards (72 percent), the charts (73 percent), stories on the cassette tapes (68 percent), and songs on the cassette tapes (54 percent). Marsh and Kennedy concluded that the policy initiative must be judged moderately successful, if teacher use of the materials is taken as an indicator. While a moderate number of teachers frequently used the *Smile* material, very few teachers frequently used the *Origins* material.

From surveying a sample of 22 primary teachers in northern Queensland, Brimble (1981) examined their attitudes about consulting particular individuals in selecting reading materials and the appropriateness of applying particular selection criteria. Large proportions of the respondents believed that involving teachers (91 percent), the principal (41 percent) and the resource teacher (36 percent) in selecting reading materials was very important. Large proportions of the respondents believed that vocabulary load (86 percent), a wide range of interests (82 percent), readability levels (77 percent), skills to be taught (73 percent), provisions for good readers (68 percent), natural language for children (68 percent), provisions for slow readers (64 percent), sentence length (64 percent), basic approach to reading (64 percent), aims and objectives of the

material (59 percent), concept load (55 percent) and story content (50 percent) were very important criteria.

Following a survey to determine the use of materials in primary schools, the Education Department of Western Australia decided to prepare and publish materials in mathematics, social studies, science, English and health education. The scope of this project led to a variety of problems, the most serious being the failure to deliver the materials to primary schools in time for teachers to implement new syllabuses. Requests from schools for more freedom in selecting materials led to funds being made available to schools in 1974 to purchase alternative materials for social studies, an initiative which was later extended to mathematics. The Education Department of Western Australia collaborated with Murdoch University in a study focusing on the distribution, selection and use of these materials. A three-stage research design, involving case studies in four schools and representative interviews of 40 teachers, was used to formulate items for a questionnaire administered to samples of teachers and principals in primary schools across Western Australia in 1979.

In the report on the study, Marsh et al. (1981) analysed the results of principals' and teachers' perceptions about processes used in 41 primary schools to select materials. The principals stated that the most common procedure for selecting social studies materials involved decision-making by the whole staff as a group (52 percent) or the principal and the deputy principal after general consultation with the staff (40 percent). The principals stated that the most common procedure for selecting mathematics materials involved decision-making by the principal and the deputy principal after general consultation with the staff (24 percent), the principal based on requests from the staff (24 percent) or the whole staff as a group (18 percent). Large proportions of teachers identified lack of time to select materials (53 percent for social studies and 46 percent for mathematics), having to order materials well in advance (53 percent for social studies and 30 percent for mathematics), materials not being available in the school (43 percent for social studies and 46 percent for mathematics), knowing what materials are available (45 percent for social studies and 36 percent for mathematics) and other classes already having the material wanted (35 percent for social studies and 43 percent for mathematics) as the most common problems. Large proportions of principals believed decision-making in selecting materials could be improved by teachers visiting other schools (67 percent for social studies and 50 percent for mathematics), a more detailed syllabus to guide selection (55 percent for social studies and 27 percent for mathematics), teachers given more time to evaluate materials (55 percent for social studies and 47 percent for mathematics), more funds (69 percent for social studies and 71 percent for mathematics) and more assistance from advisory teachers with materials selection (55 percent for social studies and 38 percent for mathematics). Large proportions of teachers believed decision-making in selecting materials was influenced by availability of funds (88 percent for social studies and 88 percent for mathematics), whether a material will be used widely (82 percent for social studies and 81 percent for mathematics), whether a material fills a gap in available resources (70 percent for social studies and 72 percent for mathematics), whether there is a good range of materials in that area (73 percent for social studies and 71 percent for mathematics), the potential number of students, who could use a material (56 percent for social studies and 62 percent for mathematics) and whether a group of teachers

lobbies for a material (50 percent for social studies and 52 percent for mathematics). The principals stated that social studies teachers most commonly used maps and atlases (74 percent), reference sets (67 percent), filmstrips and tapes (52 percent), picture sets (50 percent), topic books published by the Education Department (43 percent), source books (40 percent) and textbooks (28 percent). Social studies teachers indicated that they most commonly used their personal collections of resources (34 percent), library resources (27 percent), topic books (9 percent) and textbooks (11 percent). The principals stated that mathematics teachers most commonly used concrete materials (73 percent), duplicated activity sheets (56 percent), multi-base arithmetic blocks (53 percent), textbooks consisting mainly of exercises (53 percent) and mathematical games (50 percent). Mathematics teachers indicated that they most commonly used the K-7 mathematics syllabus with notes (61 percent), concrete materials (60 percent), duplicated activity sheets (55 percent), teacher-developed work cards (39 percent), workbooks published by the Education Department (36 percent), multi-base arithmetic blocks (29 percent) and textbooks (23 percent).

From a survey of 98 schools in all states and territories, Cohen and Harrison (1982) reported from 586 respondents that almost two-thirds used textbooks frequently and two-thirds stated that new textbooks had been implemented in their schools within the previous three years. The respondents perceived that decision-making in selecting materials was based in three main authorities: almost three-fifths indicated individual teachers were responsible; one-quarter indicated all teachers in subject departments were responsible; and a little over one-tenth indicated that subject coordinators were responsible. Two-thirds of subject coordinators and teachers, but less than one-tenth of principals, reported participating at high levels in purchasing materials. Nearly one-third of the respondents reported a high degree of satisfaction concerning selections of materials.

From a survey of a nationwide sample of 492 teachers of years 5, 7, 9 and 11 on their perceptions of decision-making authority in determining the English curriculum, the types of supplementary reading materials used and the balance between group and individual involvement in selecting supplementary reading materials, Bunbury et al. (1984) found that the roles of groups increased while the roles of individuals decreased in higher grades. In year 5, the greatest proportion of teachers reported that reading materials were selected by individual teachers (81 percent), the librarian (32 percent), a group of teachers (25 percent), students (24 percent), the department head or coordinator (13 percent), the principal (7 percent) and curriculum consultants (5 percent). In year 7, the greatest proportion of teachers reported that reading materials were selected by individual teachers (71 percent), a group of teachers (35 percent), the department head or coordinator (21 percent), the librarian (19 percent), students (18 percent), the principal (4 percent) and curriculum consultants (2 percent). In year 9, the greatest proportion of teachers reported that reading materials were selected by individual teachers (73 percent), a group of teachers (46 percent), the department head or coordinator (26 percent), students (22 percent), the librarian (10 percent), curriculum consultants (2 percent) and the principal (1 percent). In year 11, the greatest proportion of teachers reported that reading materials were selected by a group of teachers (66 percent), individual teachers (49 percent), the department head or coordinator (38

percent), students (18 percent), the librarian (4 percent), curriculum consultants (3 percent) and external examination boards (3 percent). In year 5, a majority of teachers had a class library (84 percent), allowed free choice of reading materials (70 percent), used programmed reading materials (68 percent), and used sequential readers (66 percent). In year 7, a majority of teachers used class sets of fiction materials (69 percent), allowed free choice of reading materials (52 percent), and had a class library (51 percent). In year 9, a majority of teachers used class sets of fiction materials (85 percent), used class sets of thematic texts (62 percent) and allowed free choice of reading materials (57 percent). In year 11, a majority of teachers used class sets of fiction materials (80 percent) and used class sets of thematic texts (53 percent).

Kennedy (1985) surveyed the principals, resource specialists and teachers at three schools in Western Australia on their use of a material, *Seventeen Australian Families*, produced by the Curriculum Development Centre and Qantas. In all of the schools, the principal was unaware of the material. In two schools, the material had been sent to the resource specialist, but no teachers had used it. In the other school, one teacher had used the material after seeing it displayed at a regional resource centre. Kennedy concluded that the low use of the material was due to organisational factors in the schools, which limited the role of resource specialists in promoting the material to teachers and ineffective support from the principals.

Following release of a report in 1981 on procedures for supplying curriculum materials and equipment to schools, the New South Wales Department of Education formed the Learning Materials Committee and the Equipment Committee. Provision was made for teachers, parent representatives and other groups to submit materials and equipment for consideration by these committees. The committees reviewed, selected and adopted a list of recommended materials and equipment, which were requisitioned annually and stored in a central depository. Each school selected materials and equipment, which met its needs from the list of recommended materials and equipment, and used funds from the Primary and Secondary Cash Grant, the Secondary Textbook Allowance or the Subsidies Grant provided by the state government to purchase them. The Secondary Textbook Allowance, however, remained at a fixed amount, in spite of inflationary pressures resulting in higher costs for schools in purchasing textbooks. In 1987, the Australian Book Publishers Association sponsored and funded the Textbooks in Secondary Schools Project to ascertain the situation regarding the funding, selection, and use of textbooks in New South Wales' public secondary schools. Commissioned to undertake the project, the Teaching Resources and Textbook Research Unit in the University of Sydney conducted two studies.

In the first study, four public high schools located in Sydney participated in a pilot study and a sample of 40 public high schools across New South Wales was chosen to participate in the main study. From this sample, 24 public high schools agreed to participate in the main study. An interview schedule posing questions relating to the availability and currency of textbooks, their use in classrooms and teachers' perceptions of quality in textbooks was developed in consultation with the Australian Book Publishers Association. In the pilot study, interviews were conducted with the head teachers of the English, history, mathematics, science, and social science departments in each school. The

results of the pilot study highlighted differences in respondents' attitudes about the use of textbooks in different subject areas. In the main study, interviews were conducted with the principals of nine schools, the head teachers of the English, history, mathematics, science, and social science departments as well as the head teachers of other departments in some of the schools.

In the report on the first study, Laws (1988) found that many respondents believed that textbooks no longer formed the basic means of providing the curriculum, because of changes in syllabuses, preference given to providing textbooks to students in years 11 and 12, and the increasingly varied needs of the student population. Two-thirds of the schools reported that the total amount spent on textbooks came solely from the Secondary Textbook Allowance, while the remaining one-third of schools used additional funds raised by the Parents and Citizens Association. The way in which these funds were allocated among departments varied considerably. In seven schools, the principal allocated funds to each department. In 12 schools, each department was provided with an annual budget usually agreed during discussions at executive meetings. In another six schools, individual department heads made requests for specific textbooks to the principal. Annually, the average amounts spent on textbooks varied between departments: English departments spent \$3,227; mathematics departments spent \$3,125; science departments spent \$2,462; history departments spent \$2,343; and social science departments spent \$2,308. Interviews with individual teachers confirmed that lack of sufficient funds to buy new textbooks meant that the decision-making process to select new textbooks was often delayed. A common procedure was for a subject department to spend some of its allocation on purchasing a copy of each textbook available for review by teachers before a decision was made at a faculty meeting. Visits by publishers' representatives, which had not been arranged, and unsolicited materials received from publishers, were usually not considered to be helpful. Displays of a range of materials from different publishers were seen as more valuable for review prior to selection. Schools in rural areas were more dependent on publishers' representatives and booksellers for information about new textbooks. The use of materials varied across departments. Class sets, consisting of a range of literary texts, were the main materials used in English. In years 7 to 11, schools reported that up to 20 texts were available from which six to eight texts were selected for study throughout the year. In year 12, texts were purchased from the prescribed reading list. Over three-quarters of history departments used class sets consisting of several textbooks, which often required students to share books. In years 11 and 12, all schools issued one or more textbooks to each student for mathematics, and it was common for a textbook to be issued to each student in years 7 to 10. In years 11 and 12, all schools issued at least one textbook to each student for science, but only about half the schools issued a textbook to each student in years 7 to 10. Other schools used class sets of textbooks for science. In social science, one or more textbooks were issued to each student in years 11 and 12, but in years 7 to 10 students used class sets of textbooks. In general, teachers perceived that the quality of textbooks had improved considerably over the past decade. These improvements were reflected in better organisation of the subject matter, improved layout and use of colour. Most negative comments referred to the poor binding of textbooks, which was inadequate to meet daily use by students.

Late in 1988, the project was extended to survey a sample of independent schools with funding provided by the University of Sydney. Of the sample of 26 schools selected for the study, 20 schools representing different Christian denominations or non-denominational philosophies participated in the study. The interview schedule used in the first study was used again. Interviews were conducted with the head teachers of the English, history, mathematics, science, and social science departments in each school as well as the head teachers of other departments in some of the schools.

In the report on the second study, Laws et al. (1990) found that book-list systems were used in 15 schools, book-hire systems were used in three schools, a class-set system was used in one school and textbooks were not used in one school, because they were incompatible with school's philosophy of studying themes from a multidisciplinary approach. In all 19 schools that used textbooks, class sets of supplementary materials were available. In schools that operated book-list systems, parents were given the choice of purchasing textbooks themselves or through the school. In the latter case, the school arranged for a bookseller to attend the school on a specific day or purchased textbooks at discount rates from a bookseller and sold them to students. Many schools organised annual displays of textbooks from a range of publishers to bring new materials to the attention of teachers. Literary texts formed the main materials used in English classes. In some schools, a selection committee reviewed these texts, while in other schools all English teachers reviewed them. In history departments, a wide variety of textbooks were available with five or more textbooks being used in years 11 and 12. Usually, all history teachers were involved in selecting new textbooks. A basic textbook, used in mathematics, was often supplemented with alternative textbooks. As it was often difficult to select suitable textbooks, some mathematics departments purchased every textbook available for teachers to review. In science, students in years 11 and 12 used a range of textbooks, while students in years 7 to 10 used only one textbook supplemented by various other materials. In social science, most schools used a basic textbook in years 7 to 10 with more than one textbook in years in 11 and 12. The textbooks were supplemented by a wide range of other materials. The amount of instructional time, in which textbooks were used, varied across subjects from 80 percent in mathematics, 60 percent in English, 50 percent in science, with variable use between teachers in social studies and history. Textbooks were widely used for homework, particularly in mathematics. Changes in syllabuses affected the use of textbooks in all subjects by reducing dependence on a single textbook and increasing the use of a range of different materials. Teachers' perceptions about textbooks they used focused on the quality of the subject matter, their physical characteristics and sturdiness. English teachers believed the binding of literary texts lacked sturdiness, while students' needs in language were not covered adequately in any single language or theme text. Mathematics teachers indicated preferences for textbooks, which contained guided exercises to extend gifted students. Science teachers believed that junior texts should include ideas for student investigation and research, while senior books should focus on presenting information. Social science teachers believed textbooks should contain exercises to encourage problem-solving rather than comprehension and review, present balanced views about contentious issues, and some respondents thought single module texts based upon contemporary themes would be useful. History teachers believed textbooks should present a

balance between primary and secondary sources, emphasise investigation and inquiry, and provide extension exercises for gifted students.

From surveying 140 science teachers in 80 district and senior high schools in Western Australia, Giddings (1988) reported on the respondents' perceptions about professional and curriculum materials they used for classroom preparation, the textbooks they used and the criteria they used to select them, and who should select the textbooks they use. In years 8 to 10, only two science textbooks were most often used by the respondents. In years 11 and 12, one textbook was used most often for biology, two textbooks were most often used for physics, four textbooks were most often used for chemistry and four textbooks were most often used for human biology. A majority of respondents indicated that appropriateness of the science content for the level taught (91 percent), the relationship of the text's objectives with the teacher's priorities (89 percent), overall impression (88 percent), readability (87 percent), illustrations and photographs (86 percent), references to further reading (78 percent), accounts of the application of science (69 percent) and appropriateness for gifted students (61 percent) were the criteria judged as fairly or completely adequate to evaluate the textbook most often used. A minority of respondents indicated that Australian examples (48 percent), suggested activities (41 percent) and appropriateness for struggling students (22 percent) were the criteria judged as fairly or completely adequate to evaluate the textbook most often used. When asked about which entity should define the aims and objectives of the science curriculum, 77 percent of the respondents believed the Ministry of Education should develop the course for science education. On the other hand, 70 percent of the respondents believed each school should be responsible for selecting textbooks for science programs. Giddings concluded that the respondents were satisfied with the science textbooks they used, which had been selected from a small number available in the state, although the same textbooks failed to meet the needs of gifted and under-achieving students, and they wanted schools to have authority for selecting their own textbooks.

In 1994, the Commonwealth Department of Employment, Education and Training commissioned the Curriculum Corporation to conduct a project to specify guidelines for government agencies and publishing companies to follow in developing curriculum materials for use in Australian schools. The project involved two consecutive activities: contracting an organisation to conduct market research on factors affecting the selection and purchase of curriculum materials; and developing a set of guidelines informed by the findings of the market research study. A steering committee was formed to oversee both the plan for conducting the market research study and the outline plan for the guidelines. Chris Cooper-Brown and Associates, a firm based in Melbourne, Victoria, was contracted to conduct the market research study. A standardised interview schedule was used to survey an area sample of 163 schools across Australia. In 136 schools, interviews were conducted by telephone, initially with the principal before involving other staff. In the other 27 schools, interviews were conducted with staff during site visits. Analysis of the demographic characteristics of the sample and the population of schools showed that there were no significant biases in relation to state, sector, level, size and location of the schools.

In the report on the market research study, Chris Cooper-Brown and Associates (1994) found that a similar decision-making process was used in schools across the sample to select materials. Curriculum coordinators were responsible for selecting materials directly or in consultation with groups of teachers. Materials were generally ordered by one of two ways: the curriculum coordinator ordered them directly; or the curriculum coordinator and the group of teachers, who selected the materials, ordered them through the school's administrative structure. It was also found that the selection and ordering procedures were affected by the cost of the material, terms of trade, level of service and required information to be disseminated to other groups, such as the school's principal, teacher-librarian, school support systems, and suppliers of materials. Most schools reported receiving free materials from publishing companies. Schools ordered materials throughout the year with variations in patterns related to budgetary and bulk purchasing requirements. The main sources of information about available materials came from word-of-mouth sources, mail, publishers' representatives and displays, subject associations and professional development activities. Schools rejected materials mainly because of excessive cost, but also for bias in aspects of social content. The types of materials purchased were influenced by state curriculum guidelines, but requirements for new materials were expected to change as new curriculum priorities emerge. Schools' demands for new materials, however, were conservative. Schools purchased materials for both student and teacher use. The medium of a material did not appear to influence decision-making in the selection process. The procedures for selecting and ordering materials were linked to schools' budgets. The allocation of funds for materials in school budgets tended to reflect individual school's priorities and thereby determined the selection and purchase of materials, which met these priorities. The cost of particular materials appeared to be an important factor in their selection and purchase, but the effect of cost was balanced by factors relating to quality in materials. Materials that were not print-based constituted a significant, but variable proportion, of materials purchased in school budgets, but they tended to be used as supplementary materials. The predominant criteria selectors applied related to their relevance to the curriculum with criteria relating to production quality and cost being secondary considerations. The extent of service was seen by schools to be an important factor in maintaining continuing dealings with publishers and distributors.

In 1992, the author initiated a study to examine the role that materials played in the implementation of the national statements. A questionnaire, posing items relating to the use of materials, sources of curriculum information, practices in selecting materials and using information services to access information about materials, was constructed. A pilot study was conducted in a stratified random sample of 47 schools in Tasmania in September 1992 to assess the adequacy of the questionnaire, the clarity of instructions, the appropriateness of the specified subjects as respondents, and the method of data collection and analysis. On the basis of feedback received from 18 schools in the pilot study, the questionnaire was revised for administration to a stratified random sample of 200 Australian schools, selected for the main study. Three copies of the questionnaire, sent to each school's principal between April and June of 1994, were designated for response by a school administrator, a teacher and a resource specialist. One hundred and ninety-seven subjects consisting of 35 principals, 40 deputy principals, 30 senior teachers, 42 teachers, 48 teacher

librarians and two resource teachers from 82 schools provided returns to the survey. The respondents worked in schools in each state and territory: 67 worked in schools located in New South Wales; 55 worked in schools located in Victoria; 36 worked in schools located in Queensland; 14 worked in schools located in Western Australia; 12 worked in schools located in South Australia; five worked in schools located in Tasmania; five worked in schools located in the Australian Capital Territory; and three worked in schools located in the Northern Territory. A computer-based file was designed and maintained to aid data collection and analysis. Statistical tests were applied to quantify the relationships between independent and dependent variables.

In the report, Watt (1996) concluded that decision-making authority in selecting materials was based in informal groups and individuals, and teachers depended on a wide range of materials. The respondents perceived that decision-making in selecting materials always, usually or sometimes involved participation by individual teachers (96 percent), resource specialists (95 percent) and the subject coordinator or principal (85 percent) more so than subject-based committees (72 percent) or school-wide committees (69 percent). The respondents' perceptions concerning the main procedure used to select materials in their schools were classified using a typology of ten categories for defining selection and adoption units used in a study conducted by the Institute for Educational Development (1969). It was found that six units were involved in selecting materials and nine units were involved in adopting selected materials. Selection involved group choice by teachers and the subject coordinator in 37 schools, group choice by teachers and the principal in six schools, group choice by the principal and the subject coordinator or resource specialist in five schools, individual choice by teachers in five schools, individual choice by the subject coordinator in four schools, and group choice by teachers in two schools. Similarly, adoption involved individual choice by the subject coordinator in 18 schools, group choice by teachers and the subject coordinator in 12 schools, group choice by the principal and the subject coordinator or resource specialist in 11 schools, group choice by teachers and the principal in eight schools, individual choice by the principal in five schools, individual choice by teachers in two schools, group choice by teachers collectively in one school, group choice by the school council in one school, and individual choice by the resource specialist in one school. Insufficient information was provided by 23 schools to identify the units involved in the decision-making process. The influence of demographic factors on the types of selection and adoption units operating in 59 schools, which provided this information, was analysed for interaction in terms of individual and group processes. In small schools, selection decisions were more often made by individuals and adoption decisions were more often made by groups, but in large schools, selection decisions were more often made by groups and adoption decisions were more often made by individuals. The issue of changing the selection procedure was investigated by measuring respondents' attitudes about centralising or decentralising the decision-making process. More than two-thirds of the respondents (69 percent) believed committees in each school would definitely or probably provide the best means for improving decision-making, but a large minority of respondents (42 percent) believed state or regional committees would definitely or probably provide the best means for improving decision-making, and almost one-third of the respondents (30 percent) believed a national committee would definitely or probably provide the best means for

improving decision-making. The respondents reported that the highest proportions of instructional time were spent using print materials. High to moderate proportions of the respondents, reported using teacher-developed materials (70 percent), supplementary reading materials (53 percent), textbooks (45 percent), print materials published by education agencies (24 percent) and kit materials (27 percent) for more than 25 percent of instructional time. Low proportions of the respondents reported using computer programs (20 percent), multi-media materials (19 percent), videos (12 percent), slides, filmstrips, films and television programs (12 percent), and audiocassettes, gramophone records and compact disks (11 percent) for more than 25 percent of instructional time.

From interviewing three teachers and reviewing school policy documents in each of three Christian schools in Perth, Hastie and Shamplin (2012) analysed each teacher's selection of literary texts for years 8, 9 and 10 and compared their choices to those of the other subjects in the study. The findings indicated that teachers' concern for engaging students in a particular literary text, the school's policy for procuring literary texts, and teachers' beliefs about the purpose of reading were the main factors influencing decision-making in selecting literary texts.

Publishing Industry

In the previous section, the review of research literature about the activities of the publishing industry in Australia showed that our understanding of its workings is at best imperfect. The mystery surrounding the publishing industry is confirmed by the observation that little, if any, research of substance has been conducted into the publishing industry. On the other hand, international studies of educational achievement have focused the attention of policymakers on the relationship between textbook content and the curriculum. However, the interest of researchers has not extended, as yet, to investigating the attributes of the publishing industry that influence this relationship.

The purpose of this section is to explore this dimension further by reporting a study of publishers' perceptions about the impact of the Australian Curriculum on the new materials they have developed to meet the needs of schools in implementing it. As an introduction, the issues of concern to the publishing industry are discussed by examining the policies on publishing and promoting materials advocated by the Australian Publishers Association.

Australian Publishers Association

In 1948, the New South Wales Publishers Association and the Victorian Publishers Association merged to form the Australian Book Publishers Association, a national association consisting of 20 members involved in publishing in Australia. Changing its name in 1996, the Australian Publishers Association grew over the intervening period to 116 members, representing companies producing about 80 percent of the annual turnover in the Australian publishing industry. The Australian Publishers Association contributes to the development of publishing, protects and encourages the interests of copyright owners, agents and businesses, represents members' interests, encourages

excellence in publications, protects freedom of expression, promotes members' publications through an annually held Australian Book Fair, and offers training for publishers. In order to accomplish this mission, the Australian Publishers Association convenes six sectional committees. The Children's Publishers Committee represents publishers that either focus on children's literature or have a significant proportion of their business in children's literature. The Independent Publishers Committee represents smaller publishers loosely defined as having an annual turnover of under \$10 million. The Scholarly and Journals Publishers Committee represents many of the large academic publishers. The Schools and Educational Publishers Committee represents publishers in the primary and secondary market. The Tertiary and Professional Publishers Committee represents publishers in the university, and technical and further education arena. The Trade Publishers Committee represents the larger publishers defined in terms of a turnover of more than \$10 million.

The Schools Educational Publishers Committee, which liaises with federal, state and territory education agencies, universities and subject associations on matters relating to curriculum development, funding, copyright protection, statistics, and the role of publishing in education, coordinates the annual Awards for Excellence in Educational Publishing. As a result of the findings of the Textbooks in Secondary Schools Project, Michael Horsley of the Teaching Resources and Textbook Research Unit in the Faculty of Education at the University of Sydney and Susan Donovan, head of the Schools Educational Publishing Committee, established the Awards for Excellence in Educational Publishing in 1994 to promote and celebrate innovative materials in the marketplace. A judging panel, consisting of members with expertise in primary, secondary and higher education as well as publishing, evaluates the materials submitted for the awards. Originally, the judging panel comprised staff of the Teaching Resources and Textbook Research Unit, primary and secondary teachers, publishing consultants, tertiary publishers' representatives and the editor of higher education for the national newspaper, *The Australian*. In response to publishers' requests for greater representation, judges have been selected by the Schools and Educational Publishers Committee from publishing companies since 2005. Initially, a subcommittee of the judging panel screens all submitted materials by applying criteria relating to clarity of writing, pedagogical implications, quality of illustrations, representation of the discipline, special features and characteristics, quality of the subject matter content, innovation and flair. From the initial screening, the most meritorious materials are analysed independently by primary, secondary and tertiary panels over a three-week period. On the final day, the three panels convene to decide the winners or shortlisted publications within the categories of student resource, reference resource and teaching resource across three levels: primary; secondary; and technical and further education, vocational education and tertiary. With the advent of digital resources, new categories were included in the awards. Since 1999, the awards have included a technology showcase for the primary and secondary levels, and since 2000 an Australian educational website category awarded across the four levels. Each year, a catalogue of the winners and shortlisted publications, published for the Australian Publishers Association by *The Australian* was disseminated to every school and public library across Australia for the first 15 years. In more recent years, the catalogue has been made available online on the Australian Publishers Association's website to provide guidance in selecting materials.

The impact of the Awards for Excellence in Educational Publishing has been evaluated in three studies. In an effort to explore the way the publishing industry conceptualises quality and how the Awards have improved educational publishing, Horsley interviewed 15 publishers with judging experience, conducted focus groups with publishers, and reviewed the Awards' shortlists and winning titles over the period from 1994 to 2007. In the report on the study, Horsley (2007) concluded that the results showed the Awards had a positive effect on the publishing industry. The respondents reported that a more competitive environment in the publishing industry, occurring between 1994 and 2007, had improved quality by setting benchmarks, and requiring analysis in establishing pedagogy and technology support. Most respondents reported learning about the Awards through submission of entries by their publishing companies. The respondents believed the Awards have had a positive effect by recognising success in publishing. Some respondents viewed the Awards as setting benchmarks for publishers to aspire to in their work, while other respondents believed the Awards play a dual role of rewarding innovation and setting benchmarks. In an effort to identify students' perceptions about quality in materials and the alignment between the judgments of student and professional judges, Dargusch et al. (2011) used panels of year 5 and 6 students from two primary schools in Queensland to replicate the judging process and criteria applied in the Awards. Twenty-five high-achieving literacy students from each school were trained in using the criteria before applying them in a trial. Then, they worked in pairs over two months to apply the criteria to analyse 78 materials submitted to the Awards in 2009 and 72 materials submitted to the Awards in 2010. Data collected on focus group transcripts, transcripts of the judging process and interview data about the quality of the short-listed and winning materials were analysed qualitatively. Student scores from the judging process were analysed quantitatively. It was found that there was a 48 percent alignment for materials submitted to the Awards in 2009 and 45 percent alignment for materials submitted to the Awards in 2010 between student and professional judges. There was greater alignment in student and professional judges in their judgments about materials designed for student use than those for teacher reference. Student and professional judges applied the criteria and conducted the judging process in similar ways. Student judges appropriated key concepts of the metalanguage of judging materials in discussions about the materials. Martin (2013) contended that the Awards have extended the scope and raised the quality of educational publishing in Australia. In the late 1990s, publishers began moving away from publishing print-based textbooks exclusively to publishing textbooks that included accompanying CD-ROMs. In the early 2000s, publishers were incorporating digital content in printed textbooks rather than as a separate component. These changes in the publishing industry were reflected in evolving categories included in the Awards.

Statement of the Problem

In part, the intent of this study is directed towards identifying the impact of the Australian Curriculum on the development of materials. It was presumed that an emphasis placed in developing the Australian Curriculum was based on an assumption that publishing companies would respond by developing new materials that aligned with the Australian Curriculum. There was little evidence,

however, that educational research had determined the effects of the Australian Curriculum on the content and design of new materials in measurable terms. Therefore, this study was intended to collect data about publishers' use of the Australian Curriculum to determine the content and design of new materials. It was anticipated that the data from the study would provide information for policymakers, state officials, school administrators and teachers in reaching judgments about the impact of the work of publishing companies in developing and marketing new materials to support implementation of the Australian Curriculum.

Hypothesis

The study examined the hypothesis that the development and implementation of the Australian Curriculum will lead publishers to align their new materials to the Australian Curriculum. The study tested three research questions related to this general hypothesis. First, the influence of the Australian Curriculum on the content of new materials developed by publishing companies was expected to be high, especially for Phase One subjects. Second, reference to the Australian Curriculum was expected to affect publishers' choices in the subject matter more than other features of their new products. Third, the application by publishers of subject matter from the Australian Curriculum was expected to affect a range of aspects relating to design in their new products that would influence selection decisions.

Results

Six publishing companies, representing 38 percent of the 16 companies sampled, provided returns to the survey. The responding companies were staffed by varying numbers of full-time employees: one company employed less than 10 employees; two companies employed 25 to 49 employees; two companies employed 50 to 100 employees; and one company employed more than 100 employees. The approximate value of the responding companies' annual turnovers in materials sold for use by students in primary and secondary schools varied in amounts. One company had an annual turnover of \$100,000 to \$599,999. One company had an annual turnover of \$1,000,000 to \$9,999,999. Four companies had an annual turnover of \$10,000,000 to \$50,000,000. All of the companies published materials for use in all Australian states and territories. Five of the companies published materials for use in foreign countries. One company stated that its materials are used in international schools around the world. One company stated that its materials are used in more than 20 countries at present and 44 countries historically in 22 languages. One company stated that its materials are used in the USA, Canada and Thailand. One company stated that its materials are used in Papua New Guinea. One company did not state in which countries its materials are used.

The publication of materials in different media at the time of the survey varied widely among the six responding companies. Five companies published textbooks, but one publisher did not respond to this item. Five companies published supplementary materials for reading, while one company had never

published them. Six companies published print-based kit materials. None of the companies published slides, filmstrips, films and television programs. One company published audiocassettes, gramophone records and compact disks, while three companies had published them in the past and two companies had never published them. Four companies published videos, while two companies had never published them. Six companies published multimedia materials. Four companies published computer software programs, while two companies had never published them. Two companies reported publishing other materials ranging from teacher reference books, teaching guides, photocopy worksheets and student work books.

The publication of materials in different subject areas at the time of the survey varied widely among the six responding companies. Four companies published materials for the Arts, while two companies had never published them. Five companies published materials for English, while one company had never published them. Four companies published materials for Health and Physical Education, while one company had published them in the past and one company had never published them. Five companies published materials for Civics and Citizenship, while one company had never published them. Three companies published materials for Economics and Business, while three companies had never published them. Five companies published materials for Geography, while one company had never published them. Five companies published materials for History, while one company had never published them. Three companies published materials for Languages, while three companies had never published them. Six companies published materials for Mathematics. Five companies published materials for Science, while one company intended to publish them. Four companies published materials for Technologies, while two companies had never published them. None of the companies published materials for Work Studies. In addition, one company published dictionaries and atlases.

First, the study sought to identify publishers' perceptions about the impact of the Australian Curriculum on the content of their companies' products. It was expected that the influence of the Australian Curriculum on the content of new materials would be high, although this influence would be highest for Phase One subjects. While the respondents reported that the Australian Curriculum covering Phase One subjects had the greatest influence, the influence of Civics and Citizenship, Economics and Business, Technologies, Health and Physical Education, and the Arts ranged from moderate to low.

As shown in Table 1, the respondents indicated that the extent of influence of the Australian Curriculum reflected this pattern.

An open-ended item enabled respondents to list techniques used to align curriculum materials their companies developed to the Australian Curriculum. Most of the respondents referred to the process used to align their materials to the Australian Curriculum, but they varied in the specificity they offered about the process. In the most detailed account, one respondent stated: "Ensure writers understand content descriptions. Create content that covers as many descriptions as possible. Create a scope and sequence that ensures a skill

TABLE 1

DISTRIBUTION OF RESPONDENTS' PERCEPTIONS ABOUT THE INFLUENCE OF THE AUSTRALIAN CURRICULUM ON THE CONTENT OF THEIR PRODUCTS BY EXTENT

Subject	yes, to a great extent	yes, to some extent	no, not at all	uncertain	not applicable	total
Arts	1	3	0	0	2	6
English	5	0	0	0	1	6
Health and Physical Education	1	1	2	0	2	6
Civics and Citizenship	2	2	0	0	2	6
Economics and Business	2	1	0	0	3	6
Geography	3	1	0	0	2	6
History	4	0	0	0	2	6
Mathematics	4	2	0	0	0	6
Science	4	1	0	0	1	6
Technologies	2	0	0	0	4	6
Work Studies	0	0	0	0	6	6

continuum across grade levels. Concentrate on key focus areas and pain points – areas that teachers will struggle to implement with existing resources". Another respondent stated: "Content aligned to content descriptors. Skills are aligned to skill outlines for each subject area. Special features of each subject area are highlighted i.e. science as Human Endeavour in the Science curriculum. Cross-curriculum priorities are featured". Another respondent stated: "Physical linking to ACARA by using content descriptions and erecting original materials – written by teachers – for use in a classroom ". Another two respondents cited more general factors. One respondent stated: "Cross-referencing curriculum with materials for teachers". Another respondent stated: "Aligning table of contents to ACARA documentation". One respondent referred to the expertise of those involved in aligning materials with the Australian Curriculum by stating: "We use a team of math curriculum experts to write to the Australian Curriculum. These experts have a minimum master's level in math education (curriculum) and combined experience of over 100 years".

Second, the study sought to identify publishers' perceptions about the influence of the Australian Curriculum on particular features in their new products. It was expected that the Australian Curriculum would be more important in affecting publishers' choices about subject matter than other features. The respondents reported that the Australian Curriculum was more important in affecting publishers' choices about identifying and incorporating essential strands of knowledge, skills and processes, and aligning elements of the curriculum in new products than influencing choices about the media of new products.

As shown in Table 2, the respondents indicated that the importance of the Australian Curriculum reflected this pattern.

TABLE 2

DISTRIBUTION OF RESPONDENTS' PERCEPTIONS ABOUT THE INFLUENCE OF THE AUSTRALIAN CURRICULUM ON PARTICULAR FEATURES OF THEIR PRODUCTS BY IMPORTANCE

Feature	yes, very important	yes, important	no, not very important	no, not at all important	uncertain	total
Identifying media	1	2	1	2	0	6
Identifying knowledge, skills and processes	6	0	0	0	0	6
Incorporating knowledge, skills and processes	6	0	0	0	0	6
Aligning the elements of the curriculum	4	2	0	0	0	6

None of the respondents reported that their publishing company had developed a policy statement for aligning its products to the Australian Curriculum.

All six publishing companies submitted products they claimed to have aligned with the Australian Curriculum. The content analysis of each product covers six components: the history of its development; introductory information identifying its physical characteristics; its intents; its contents; its methodology; and the means of student assessment. In addition, information relating to the constructs of the product was compared with available evidence reported in the material concerning its alignment with the Australian Curriculum. The presentation of analyses of these six products is ordered according to the alphabetical listing of each publishing company in Appendix A.

Cambridge University Press submitted the second edition of *Essential Mathematics for the Australian Curriculum*, a series of four textbooks for years 7, 8, 9, 10 and 10A written by David Greenwood, head of mathematics at Trinity Grammar School in Melbourne, Bryn Humberstone, head of mathematics at Caulfield Grammar School, Wheelers Hill (years 7 and 8), Sara Woolley, a mathematics teacher (years 9 and 10), Justin Robinson, director of positive education at Geelong Grammar School, Jenny Goodman, a mathematics teacher, Jennifer Vaughan, a mathematics teacher and Stuart Palmer, a professional development facilitator in mathematics education. For each year level, the second edition of *Essential Mathematics for the Australian Curriculum* consists of a revised and updated print textbook, a new interactive textbook, and an online teaching suite. The print textbook provides three pathways to allow differentiation for foundation, standard and advanced students, exercises organised into subsections that match the four proficiency strands as well as enrichment, gradients within exercises and proficiency strands, and questions to match each pathway. The interactive textbook, powered by Cambridge HOTmaths, allows navigation from the textbook content to over 200 video

demonstrations of worked examples in every year level, interactive widgets, a searchable dictionary of mathematical terms, automatically-marked quizzes and tests, and printable worksheets suitable for homework or class group work. The online teaching suite, also powered by Cambridge HOTmaths, provides a test generator with ready-made tests, printable worked solutions for all questions, and a learning management system with task-setting, progress tracking and reporting features. It can be inferred that *Essential Mathematics for the Australian Curriculum* is intended as a course for students of different abilities to meet the requirements of the achievement standards in the Australian Curriculum. The rationale for *Essential Mathematics for the Australian Curriculum* is not stated. The textbook for each year contains a sequence of chapters and two semester reviews consisting of multiple choice questions, short answer questions and extended response questions. The textbook for year 7 contains 11 chapters: whole numbers; geometry; number properties and patterns; fractions and percentages; algebra; decimals; negative numbers; statistics and probability; polygons, solids and transformations; equations; and measurement. The textbook for year 8 contains ten chapters: integers; lines, shapes and solids; fractions, decimals and percentages; measurement and introduction to Pythagoras' theorem; algebra; ratios and rates; equations and inequalities; probability and statistics; straight line graphs; and transformations and congruence. The textbook for year 9 contains ten chapters: reviewing number and financial mathematics; linear and simultaneous equations; Pythagoras' theorem and trigonometry; linear relations; measurement; indices and surds; geometry; algebraic techniques; probability and statistics; and introduction to quadratic equations and graphs. The textbook for year 10 and 10A contains ten chapters: linear relations; geometry; indices and surds; trigonometry; quadratic equations; measurement; parabolas and other graphs; probability; statistics; and logarithms and polynomials. The methodology uses didactic instruction, discussion and questioning methods, practice and drill methods, viewing, listening and answering methods, problem-solving, heuristic and discovery methods, and inquiry methods. The online teaching suite incorporates a test generator and ready-made tests that the teacher can administer to students in the interactive textbook. Cambridge University Press has aligned each chapter of *Essential Mathematics for the Australian Curriculum* to specific content descriptions of the number and algebra, measurement and geometry, and statistics and probability strands of the Australian Curriculum.

Era Publications submitted *Max Jumps*, one of its Wings series of readers for levels 1 to 3 written by Nigel Croser and illustrated by Neil Curtis. Published in 2002, the purpose of *Max Jumps* is to present beginning readers with an engaging character and entertaining plots to enable them to experience reading that is both enjoyable and meaningful. Designed for level 1, *Max Jumps* describes in simple words and illustrations how Max, a black sheep, jumps over seven objects: a flower; a stick; a rock; a log; a bush; a fence; and a hedge. Available as a printed book and an e-book, *Max Jumps* is accompanied by Teacher Notes written by Jennifer Cox. The Teacher Notes state that the purpose of the reader is to teach young children to read, describe the use of the reader for guided reading, recommend the use of guided reading as one of several pedagogical approaches within a literacy program, and present lesson notes and worksheets. The methodology for using *Max Jumps* for guided reading involves didactic instruction, discussion and questioning methods,

practice and drill methods, and inquiry methods. Assessment involves using reading records, observations and performance tasks. The reading record enables the teacher to conduct a miscue analysis, record the accuracy rate and determine the instructional level, and comment on fluency. A Class Observation Sheet is used to record observations of children's literacy progress. Performance tasks, undertaken by children on three worksheets, enable the teacher to assess their understandings and skills. Era Publications correlated *Max Jumps* to the content descriptions of the language, literature and literacy strands of the Australian Curriculum for F-10 English. An Australian Curriculum reference chart is presented in the Teacher Notes.

ORIGO Education submitted the printed materials for *ORIGO Stepping Stones Core Mathematics* for foundation to year 6 written by senior authors, James Burnett, an author of mathematics textbooks, Calvin Irons (years 1 to 6), a university lecturer in mathematics education and Rosemary Irons (foundation), a consultant in mathematics education specialising in early childhood education. Contributing authors were Debi DePaul, formerly a mathematics teacher, Peter Stowasser, a contributing author of mathematics textbooks, and Allan Turton, an author of mathematics textbooks. The purpose of *ORIGO Stepping Stones Core Mathematics* is to foster students' thinking and reasoning skills in mathematics. *ORIGO Stepping Stones Core Mathematics* is delivered online to give teachers one central location to access all of their lesson plans, student activity pages and teaching tools. The online version consists of a set of 12 modules for each year. For foundation, there are six full-class lessons and 12 small-group activities in each module. For years 1 to 6, each module is organised into five components: an introduction specifying the focus, proficiency strands, learning targets, language development and correlations; a resource overview; 12 lessons; more maths presenting investigations for students to apply mathematical skills, problem-solving activities and cross-curricular links; and assessment providing options for formative and summative assessments for specific modules and a recording spreadsheet. Each lesson is sequenced into four steps: preparing the lesson; starting the lesson; teaching the lesson; and reflecting on the work. Differentiation activities and ongoing practice are provided for each lesson. The printed materials for students consist of two series: student journals for foundation to year 6; and practice books for foundation to year 6. In foundation, the student journal provides young children with hands-on experiences to sort, match, compare and order quantities, pictures, units and numerals for each lesson in the 12 modules. In years 1 to 6, the student journal organises student activities for each lesson in the 12 modules by a sequence of three steps: a guided discussion to set the scene for the lesson; individual work based on the discussion; and an exercise to develop higher-order thinking skills. Each practice book provides opportunities for students to practice content previously learned to maintain concepts and skills. In addition, a series of 12 *ORIGO Big Books* is provided for foundation to year 2 to build on young children's interest in stories to help introduce key mathematical concepts. Interactive whiteboard tools are provided by FLARE, designed to facilitate interaction in whole class, small group and individual settings. Online games, provided through Fundamentals, are intended to reinforce and practise computation strategies. Teachers are supported by Mathedology, a library of professional learning videos presenting practical skills to help develop deep understanding of mathematical concepts. The methodology uses discussion and questioning methods, practice and drill

methods, problem-solving, heuristic and discovery methods, and viewing, listening and answering methods. *ORIGO Stepping Stones Core Mathematics* offers online formative and summative assessments for each module. In addition, quarterly tests can be used for summative purposes during the year. ORIGO Education correlated each module in *ORIGO Stepping Stones Core Mathematics* to the content descriptions of the number and algebra, measurement and geometry, and statistics and probability strands, and the proficiency strands of the Australian Curriculum for F-10 Mathematics and the *NSW Syllabus for the Australian Curriculum: Mathematics K-10 Syllabus*.

Oxford University Press submitted *Total Food: Book 1*, the first book of a two-part series for years 7 and 8 written by Leanne Compton, the Victorian Curriculum and Assessment Authority's Design and Technologies Curriculum Manager and Carol Warren, President of the International Federation for Home Economics and Chief Executive Officer of Home Economics Victoria. Published in 2015, *Total Food: Book 1* is also available online as a cloud-based web-book allowing students to add notes, bookmark, high light, save answers and export their work. An online multiple-choice question tool is provided for teachers to assign assessments to individual students, groups or classes and provide individual student and class average results. The purpose of *Total Food: Book 1* is to encourage an intensive and practical approach to the study of food and healthy eating in Australian schools. *Total Food: Book 1* consists of six sections: healthy food; grain foods; vegetables; lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes and beans; milk, yoghurt, cheese and alternatives; and fruit. Each section consists of one or more units, each organised by an introductory text, a review component and recipes for preparing food dishes. The methodology uses didactic instruction, discussion and questioning methods, and experiential methods. The means for student assessment have not been specified in *Total Food: Book 1*, but teachers can access Oxford University Press's online assessment platform to design assessments. Oxford University Press linked the subject matter of *Total Food: Book 1* to the content of the Australian Curriculum for F-10 Design and Technologies, and Health and Physical Education.

Pascal Press submitted the Australian Curriculum edition of *Targeting Maths* for year 4, one of a series of seven teaching guides for foundation to year 6 written by Robyn Hurley and Gloria Harris and published in 2013. The teaching guides support a series of seven student books for foundation to year 6, a series of six homework books for years 1 to 6, and a series of seven apps for foundation to year 6. Student books were also submitted for the New South Wales edition of *Targeting Maths* for years 4 and 5, two of a series of seven student books for kindergarten to year 6, a series of seven teaching guides for kindergarten to year 6, and of a series of six mental mathematics workbooks for years 1 to 6 correlated to the *NSW Syllabus for the Australian Curriculum: Mathematics K-10 Syllabus*. The purpose of *Targeting Maths* is to provide a clear structure for teaching, learning and assessing all outcomes of the Australian Curriculum. The teaching guide for year 4 organises the subject matter of the Australian Curriculum into four terms, each consisting of several units. Term 1 covers numbers to 10,000, addition, subtraction, length, fractions, investigation 1, odds and evens, patterns and algebra, time, 3D Space, data and chance. Term 2 covers numbers to 100,000, multiplication, division, decimals, investigation 2, money, patterns and algebra, 2D Space, volume and capacity, position, and

data and chance. Term 3 covers addition, multiplication, division, fractions, investigation 3, patterns and algebra, money, mass, 2D Space, and time and data. Term 4 covers special numbers, multiplication and division, subtraction, addition and subtraction, fractions and decimals, area, investigation 4, patterns and algebra, angles, time and position, and chance. In addition, the teaching guide includes two CD-ROMs of interactive activities. Rainforest Maths contains a set of interactive mathematics activities cross-referenced to the units. The Interactive Student Book can be used on an interactive whiteboard or a computer by students for saving and printing their work. Each unit is organised into two main parts. The first part presents a unit overview, content descriptions, key words, resources, app links, mental strategies, additional work sheets, links to problem-solving CDs, and an assessment. In the second part, a student book is organised into three sections: teach and discuss; mental and oral strategies; and an activity bank of practical activities for groups and individuals intended to provide differentiation and extension. The methodology uses discussion and questioning methods, practice and drill methods, and problem-solving, heuristic and discovery methods. A summative assessment for each unit is presented at the end of the textbook. An assessment record sheet is presented in the introductory section. Pascal Press correlated each unit in *Targeting Maths* to the content descriptions of the number and algebra, measurement and geometry, and statistics and probability strands, and the proficiency strands of the Australian Curriculum for F-10 Mathematics. An Australian Curriculum alignment chart is presented in the introductory section.

R.I.C. Publications submitted *Australian Curriculum Mathematics: Measurement and Geometry* for year 5, one of a series of seven teacher resource books for foundation to year 6, written by mathematics educator, Linda Marshall, and published in 2013. The purpose of the resource books is to focus on the measurement and geometry content stands of the Australian Curriculum. The teacher resource book for year 5 covers the sub-strands of the measurement and geometry content strand in four sections: using units of measurement is covered in three units; shape is covered in one unit; location and transformation is covered in three units; and geometric reasoning is covered in one unit. Each unit is organised into six parts: teacher information; hands-on activities; links to other curriculum areas; resource sheets; assessment; and checklist. The methodology uses experiential and inquiry methods, based on teaching points for using hands-on activities and resource sheets set out in the teacher information presented at the commencement of each unit. Each unit concludes with an assessment exercise based on the hands-on activities and resource sheets. R.I.C. Publications correlated *Australian Curriculum Mathematics: Measurement and Geometry* to the content descriptions of the measurement and geometry strand of the Australian Curriculum for F-10 Mathematics.

Third, the study sought to identify publishers' perceptions about the effect that reference to the Australian Curriculum had on particular aspects of the educational design in new products. It was expected that reference to the Australian Curriculum would have greater effect on aspects associated with the subject matter content coverage within new products than on other aspects. The respondents reported that the Australian Curriculum affected the content and acceptability of new products more than usability and cost.

As shown in Table 3, the respondents indicated that the extent of influence of the Australian Curriculum reflected this pattern.

TABLE 3

DISTRIBUTION OF RESPONDENTS' PERCEPTIONS ABOUT THE EFFECTS OF THE AUSTRALIAN CURRICULUM ON THE DESIGN OF THEIR PRODUCTS BY EXTENT

Aspect	yes, to a great extent	yes, to some extent	yes, to a little extent	no, not at all	uncertain	total
Content	3	1	2	0	0	6
Acceptability	2	1	3	0	0	6
Usability	1	0	3	2	0	6
Cost	0	2	2	1	1	6

An open-ended item enabled respondents to list reasons they perceived explained the effect of greater uniformity provided by the Australian Curriculum on improving or hindering the development of new products. Two respondents explained in general terms how greater uniformity in the curriculum affected the publishing industry in various ways. One respondent stated: "Economies of scale. 'One size fits all'. Increased product credibility. Longer lead time required". Another respondent stated: "Opened up access to more markets". Another three respondents referred to various effects that state variations of the Australian Curriculum have on limiting uniformity by requiring publishers to develop state editions of their products. One respondent stated: "Useful in creating a national version of our primary maths text. But NSW still has its own version and handwriting is still different with 4-5 state versions. This means in lower grades, it's difficult to model handwriting in, say a maths text (can you believe writing numbers is different in different states?). But it is. We created a NSW version of *Targeting Maths* as the NSW Department of Education modified and 'improved' the Australian Curriculum". Another respondent stated: "Initially, the concept of one Australian Curriculum was delicious. But now, with NSW and Vic versions of the Australian Curriculum, we are developing state-based versions of the Australian Curriculum". Another respondent stated: "It has made it easier to develop one product for all states and territories. But sales stalled for years as states and schools sat on their hands. Now we have states using the Australian Curriculum Mathematics as a basis to do their own thing. So benefits have been lost ". The other respondent referred to various effects that relate to the marketplace. This respondent stated: "Potentially should help, but red tape and state-based policies (e.g. NSW) hinder. States insist on putting their own brand on the curriculum and in the case of NSW charging fees for using curriculum references. Lack of cooperation between ACARA and the educational publishing industry is a flawed policy. Published content affects curriculum implementation greatly, but publishers are held at bay re curriculum development regarding their practical insights with teachers".

Discussion

The study showed that the influence of the Australian Curriculum on the content of new materials developed by publishing companies varied across different subjects. The content of English, Mathematics, Science and History, the subjects of Phase One, first implemented in schools in 2012, had the greatest influence on publishers. The influence of the content of the subjects in phases 2 and 3 on publishers ranged from moderate to low. While the influence of Geography, Civics and Citizenship, Economics and Business, and Technologies was moderate, the influence of the Arts, and Health and Physical Education was low. A probable explanation for this effect is the need for publishers to develop and market materials for the subjects of Phase One to support current implementation of these subjects in schools. Another possible explanation is that fewer textbooks and other materials are used in schools for some subjects, such as health and physical education, and the arts.

The study showed that the Australian Curriculum influenced publishers' choices about subject matter content coverage more than other features. A likely explanation for this effect lies in the fact that the Australian Curriculum provides guidance only about subject matter content coverage. Publishers' perceptions about the importance of the Australian Curriculum in influencing subject matter content coverage in their products were supported by the findings of the instructional design analyses of the six materials they submitted, indicating that five of those materials were correlated to the Australian Curriculum, and the other material was linked to the Australian Curriculum in more general terms. Four of these materials were correlated to the Australian Curriculum F-10 Mathematics, and the other material was correlated to the Australian Curriculum F-10 English. The sixth material was linked to the Australian Curriculum F-10 Design and Technologies, and Health and Physical Education. The different degrees, to which publishers aligned materials to different subjects of the Australian Curriculum suggest that materials published for the core subjects may be more closely aligned to the Australian Curriculum than those in other subjects. Further research, however, investigating the relationship between the degree to which publishing companies refer to the Australian Curriculum across different subjects is needed to establish the power of this relationship conclusively. In this respect, the Surveys of Enacted Curriculum, developed by the Council of Chief State School Officers and the Wisconsin Center for Education Research in the University of Wisconsin at Madison, could be applied to analyse the alignment of the text, examples and exercises in a material to each content description of the Australian Curriculum.

The study showed that the Australian Curriculum affected the content and, to a lesser extent, acceptability of the educational design in new products more than usability and cost. One probable explanation for this effect is that the treatment of social content issues in curriculum materials has become a more significant issue for publishers within Australia's multicultural society.

The main limitation of the study related to the method of sampling, and the inappropriateness of applying statistical tests to analyse the data. In the first instance, the difficulty in defining the population of companies involved in publishing materials led the author to select an unrepresentative sample. In the second instance, the relatively high attrition rate from the sample meant that the small number of cases resulted in sufficient sampling error to make the use of statistical analysis for testing significance impracticable.

Australian Curriculum Connect

In the 1990s, governments and school communities began working to harness information and communication technology to extend students' learning experiences and improve educational outcomes. Investments of funds by governments led to a substantial increase in the number of computers in schools, teacher professional learning about the use of information and communication technology in the classroom, and the number of programs and projects to engage teachers and students in local, national and global learning networks. In May 2008, the Ministerial Council on Education, Employment, Training and Youth Affairs issued the *Joint Ministerial Statement on Information and Communications Technologies in Australian Education and Training: 2008-2011*, agreeing to national collaboration to share resources and expertise, leverage existing initiatives, and address the information and communication technology enablers of technology-rich learning environments through the Australian ICT in Education Committee. During the federal election campaign in December 2007, the Australian Labor Party announced the Digital Education Revolution, a policy aimed at funding a computer for every student in years 9 to 12. In 2008, the Australian Government committed \$2.1 billion in funding to the Digital Education Revolution for providing computers and software, reliable infrastructure, professional development and digital resources. In May 2009, the Council of Australian Governments reached an agreement to establish the National Secondary Schools Computer Fund, the Information and Communication Technology Innovation Fund, the National Schools Interoperability Program, Australian Curriculum Connect and supporting Australian Curriculum Online.

Collectively, these policy initiatives are shaping a strategy commenced in 1999 to design a repository for digital materials. The purpose of this section is to scrutinise the priority that policymakers have placed on developing and implementing digital materials to support the Australian Curriculum by investigating the background, environmental interactions, and the current status of the strategy originally known as the Schools Online Curriculum Content Initiative.

Schools Online Curriculum Content Initiative

In 1999, the Conference of Education System Chief Executive Officers proposed an initiative to establish a repository for digital materials. At the same time, the Curriculum Corporation commissioned Trinitas, a consulting firm providing advice on business issues, to investigate the market for digital materials. In its report, Trinitas (2000) recommended that the Ministerial Council for Education, Early Childhood Development and Youth Affairs should initiate a four-year project to develop digital materials in the areas of literacy, numeracy, science, information technology, studies of society and environment, civics, vocational education, and languages. At its meeting in March 2000, the Ministerial Council for Education, Early Childhood Development and Youth Affairs agreed to pursue the initiative recommended by Trinitas, and authorised

the Conference of Education System Chief Executive Officers to oversee the Schools Online Curriculum Content Initiative over three phases.

The first phase involved conducting a series of feasibility studies and reaching agreements between partners participating in the initiative. The Conference of Education System Chief Executive Officers commissioned the Curriculum Corporation to conduct projects on market information and quality assurance, and Education.au to conduct a project on information systems brokerage. The Conference of Education System Chief Executive Officers developed a policy for sharing intellectual property between states and territories for future materials developed outside collaborative arrangements, and considered the involvement of independent schools. Priority areas were determined and advice was provided to the Curriculum Corporation on structuring projects to deliver a collection of materials to meet these priorities. The Conference of Education System Chief Executive Officers also commissioned the Curriculum Corporation to develop an approach for project management of content development, and to contract a research study on the ways that teachers use digital materials in their teaching practice.

Meeting in November 2000, the Conference of Education System Chief Executive Officers determined that the six priority areas of science, mathematics and numeracy, literacy for students at risk, studies of Australia, innovation, enterprise and creativity, and languages other than English would be encompassed in 25 projects to be undertaken in the second phase between July 2001 and June 2006. In June 2001, the Conference of Education System Chief Executive Officers approved the five-year plan to develop the 25 projects over several rounds. At the thirteenth meeting of the Ministerial Council for Education, Early Childhood Development and Youth Affairs held at Auckland, New Zealand, in July 2001, New Zealand joined the initiative, and the Schools Online Curriculum Content Initiative was renamed the Learning Federation.

Learning Federation

The third phase involved building a sustainable supply of online curriculum content between July 2006 and June 2009. A further 4,000 digital materials were developed for Australian and New Zealand schools. A project management framework, standards and structure were established for sharing online curriculum content between jurisdictions in Australia and New Zealand. An online platform, Scootle, was designed to enable sharing and peer-reviewing of teacher-initiated digital materials. Arrangements were brokered with vendors to support distribution and use of online curriculum content in schools. Education systems in Australia and New Zealand consolidated support for a local education digital content industry.

The project management framework set out the production process, methodology, and consultative process. The production process consisted of four steps. First, a curriculum area reference group developed a brief outlining the scope of the project. Second, each project was commissioned on a competitive basis. Third, specific criteria were applied to select the successful contractor from the applicants. Fourth, an expert focus group was formed to provide advice for the sequence of five phases for content development. The

first phase involved the developer working with the curriculum area reference group to prepare concept and design specifications for the digital material. The second phase involved the developer producing components for a prototype of the digital material. In the third phase, the prototype was pilot-tested in selected schools for usability and content integrity. In the fourth phase, the developer continued developing further components. After testing by an independent testing agency, the fifth phase involved field-testing the digital material in schools. The methodology used a model of user-centred design applying the active involvement of users, collecting feedback from users during development, involving multi-disciplinary developer teams, and using media appropriately for treatment of content. The consultative process allowed for three consultative groups to operate across several projects, while other groups were established for particular projects within a learning area. Members of the curriculum area reference groups were selected on the basis of their experience in a learning area, school education, national curriculum initiatives, and information and communication technology. Each curriculum area reference group was responsible for specifying the project objectives, developing the characteristics and requirements of the content area, determining preferred teaching methods, establishing proposed developmental phases, and reviewing the brief. Members of expert focus groups were selected on the basis of their experience in a learning area, teaching practice, using digital resources in the classroom, and implementing information and communication technology in schools. Each expert focus group provided the project management and content developers with feedback during the developmental process. Members of user focus groups were teachers with classes in the particular learning area of each project, who were able to demonstrate the use of digital materials in the classroom. The user focus groups provided school-based testing, evaluation and review of the content during the developmental phase.

National Digital Learning Resources Network

At the end of the third phase, the Learning Federation was renamed the National Digital Learning Resources Network and its management was taken over by Education Services Australia, an agency formed in March 2010 from the merger of the Curriculum Corporation and Education.au. In 2010-2011, the repository was expanded to 12,000 digital materials, including 5,000 resources which were aligned to the Australian Curriculum. The digital materials were made available to teachers through state portals, while Scootle was upgraded as part of the Australian Curriculum Connect project. At completion of the upgrade, Scootle could be used to browse the Australian Curriculum, explore resources aligned to content descriptions, save resources and create learning paths for students. Developed by Education Services Australia to facilitate searches on Scootle, the Schools Online Thesaurus was updated to include Australian Curriculum terms for English, Mathematics, Science and History. In 2011-2012, Education Services Australia expanded Scootle to serve 200,000 users and established a teachers' help desk. Metadata requirements for Australian Curriculum implementation were developed and reviewed by stakeholders. Research and consultation were conducted to enhance the Scootle web site through the provision of a publishers' portal. In 2012-2013, full coverage of digital materials was achieved for the Australian Curriculum in English, Mathematics, Science and Geography. Over 50 percent of Australian

teachers in all states and territories, except New South Wales, were registered Scootle users. In May 2013, Scootle Community, an online social networking tool, was launched to support teachers exchange information and ideas about the Australian Curriculum. A team of teacher champions from urban, regional and remote locations across Australia was formed to promote this service. A publishers' resource exchange was launched to assist publishers align their products to the Australian Curriculum, and enable aligned materials to be made available to teachers through Scootle. Education Services Australia partnered with the Australian Broadcasting Corporation to design and launch ABC Splash, a portal containing archival clips aligned to the Australian Curriculum. In 2013-2014, all Australian teachers were registered as Scootle users once the platform became available to New South Wales teachers. By June 2014, Scootle Community was used by over 14,000 educators, and 725 networks had been established based of shared professional interests.

Accessible at www.scootle.edu.au, Scootle includes a searchable repository of digital materials, learning paths for students, a publishers' gateway, and links to Scootle Community, Improve, the Language Learning Space, ABC Splash, the ICT in Everyday Learning Toolkit, Myfuture, the Scootle Lounge, the Safe School Hub and Global Education. The repository of more than 20,000 digital materials aligned to the Australian Curriculum consists of two types. Learning objects consist of one or more files that stand-alone or form components of a learning sequence. The user may reconfigure a learning object to suit specific teaching requirements. The instructional design of a learning object aims to enhance the attractiveness of layout and design, easy navigation, flexibility for users to modify, the use of composite multimedia formats, and the appropriate use of technologies to support learning outcomes. Digital resources are typically sourced from cultural institutions, and commercial and non-profit organisations. They are a single item such as a piece of text, picture, sound or video sequences, accompanied by some information designed to assist teachers to discover and use them in classrooms. Teachers can use Scootle to create learning paths consisting of digital materials organised into a learning sequence targeted at individual or groups of students. The publishers' gateway provides a searchable repository of professional resources, print and electronic books, and digital materials submitted by publishers. Scootle Community provides an online professional learning network featuring search functionality to enable educators to find and contribute to relevant professional learning discussions, networks, events and courses. Improve is an interactive tool, which enables teachers to develop and administer personalised student assessments. The Language Learning Space provides a web-based platform offering resources and services to support teachers and students of Chinese, Indonesian and Japanese. ABC Splash is a portal containing videos, audio clips, games and interactive tools sourced from the Australian Broadcasting Corporation. The ICT Everyday Learning Toolkit supports teachers' capacity to incorporate digital technologies into instruction as they implement the Australian Curriculum. Myfuture is an online career information service created to assist career planning, career pathways and work transitions. The Scootle Lounge provides resources, conversations and strategies to support educators. The Safe School Hub provides a framework to support schools build and foster a safe school environment. Global Education provides resources to support the integration of a global perspective across the curriculum.

Research Studies

The Learning Federation commissioned several studies during the developmental phase focusing on students' use of learning objects and learning outcomes to provide early evidence about the Learning Federation's learning objects in schools. Later, the findings from these trials formed the basis for more extensive evaluations using several research methods to investigate the use of learning objects by different groups of students. Critiques of the reports from these research studies, presented below, support the contention that policymakers have placed a priority on developing and implementing digital materials to support the Australian Curriculum.

The Learning Federation contracted the Centre for Learning, Change and Development at Murdoch University, Western Australia, to conduct a pilot field review to evaluate the pedagogical application of the learning object model and the use of digital materials in schools. Conducted between March 2003 and February 2004, the evaluation consisted of a pilot study, conducted in four schools in Perth, and a pilot field review conducted in 14 schools in New South Wales, Northern Territory, Queensland, Tasmania, Western Australia and New Zealand using student observations, interviews and surveys as well as teacher interviews and observation. In the report, Lake et al. (2004) found that teachers were enthusiastic about the potential of learning objects to introduce a wider variety of learning activities into the classroom. Teachers believed learning objects were most useful when they displayed or simulated situations that could not be experienced readily in the classroom. Teachers incorporated learning objects into their lessons in various ways. Use of learning objects stimulated teachers to innovate in their instructional practice. Teachers perceived the need for professional support and development to assist their use of learning objects appropriately and effectively. Students were able to use learning objects without difficulty. Overall, students found learning objects stimulating and enjoyed using them. The way teachers incorporate learning objects into lesson units, and how they introduce them, set expectations and monitor their use are critical factors in determining how students interact with learning objects. The capability to access learning objects depends on the information and communication technology infrastructure and individual teachers and students, which varied widely across the 14 schools.

The Learning Federation commissioned a review of research literature on the use of information and communication technology in schools and a field review on the use of learning objects in schools. The field review consisted of site visits to six schools in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria, and a survey of teachers and students administered by online questionnaires focused on identifying the subjects' judgments about the motivational and instructional efficacy of learning objects. A total of 500 teachers and 1,681 pupils from all states and territories responded to the survey. In the report, Freebody (2005) found that available research literature provides relatively little reliable guidance relating to medium- and long-term effects of using information and communication technology, but the findings of the field review showed that participants consistently reported improved learning outcomes from engagement with learning objects. The findings from the site visits and the survey of teachers and students were

consistently positive. Teachers, parent home-tutors and students supported the use of learning objects enthusiastically. The use of learning objects enhanced students' learning across a range of tasks. Statistical analyses of the data from the survey identified that four issues require further examination. Learning objects may operate more effectively in some task domains and for some learning purposes, and these domains and purposes are not equally distributed across content areas. There are potentially important differences in the nature and possibly the efficacy of using learning objects in classrooms of primary and secondary schools. Cultural, socioeconomic and linguistic backgrounds of students may have a substantial effect on the efficacy of using learning objects. The design of work stations, in relation to the main classroom, may relate to the nature and possibly the efficacy of using learning objects, because it relates to the extent to which students can access learning objects.

The Learning Federation commissioned a field review of early-stage implementation of learning objects in schools. The field review consisted of site visits to 17 schools in all Australian states and territories and New Zealand, and a survey of teachers and students administered by online questionnaires in August 2005 focused on identifying the subjects' judgments about the motivational and instructional efficacy of learning objects. A total of 283 teachers and 2,518 pupils from 186 schools responded to the survey. In the report, Freebody (2006) found teachers and students were positive about using learning objects, although there were variations in awareness and usage of learning objects between schools. Students were most positive about the ease of using learning objects, and the capacity of learning objects in allowing them to work at their own pace. Teachers endorsed the helpfulness of learning objects to enhance students' motivation, enjoyment and learning. Furthermore, they believed learning objects were helpful in transferring knowledge, conceptual understanding and factual content. Cluster analysis of the teachers' responses showed that one group, 42 percent of the sample, responded significantly higher than the means for the entire sample, and another group, 13 percent of the sample, responded significantly lower than the means for the entire sample. The other 45 percent of the sample divided into two groups: one group indicating that they believed learning objects were beneficial mainly for learning pertaining to factual content; and the other group indicating that they believed learning objects were beneficial mainly for transferring knowledge. There were statistical associations between students' ratings of learning objects and the content areas in which they were located. Learning objects for languages other than English rated lower in approval than other content areas, and learning objects for literacy rated a little higher than other content areas. The results of the site visits showed marked differences in the use of learning objects across 17 schools. In one school, the use of learning objects was embedded in instructional practices. In five schools, substantial use of learning objects was restricted to a small proportion of teachers. In six schools, some teachers used learning objects occasionally. In five schools, use of learning objects was in the earliest stages of awareness or implementation. Positive perceptions about the format of learning objects, student engagement and learning outcomes from using learning objects were reported from observations during site visits.

The Learning Federation selected six primary schools in the Archdiocese of Melbourne to trial learning objects for mathematics and numeracy based on

these schools' use of a system-wide learning management system to deliver online curriculum content, implementation of a system-wide numeracy program and the presence of professional learning teams, which collaborate on integrating an information and communication technology infrastructure. Twenty-five teachers and 521 pupils in 19 years 3, 4, 5 and 6 classes participated in the year-long trial in 2004 comprising of introductory workshops, planning meetings, classroom observations, surveys of teachers and students by online questionnaires, and review discussions about the data collected from each school site. Each of the schools selected different learning objects from the measurement and number strands to integrate into their mathematics programs. In the report, Clarke and Gronn (2004) discussed the attributes of the learning objects, transactions occurring in planning sessions, and the results of surveys of teachers and students in using learning objects for three groups participating in the trial. In two schools, which selected measurement learning objects, students could articulate the mathematical content embedded in the learning objects and were very positive about their use. Generally, teachers found the learning objects helpful, but differences in teachers' awareness of the potential of learning objects for their instructional practice were observed. In one school, which selected addition and subtraction learning objects, students recognised that the instructional design elements of the learning objects were helpful for learning mathematics. Teachers found that the learning objects, which focused on students learning a range of strategies to help them with addition and subtraction, may have been better suited for earlier grades. In three schools, which selected fractions learning objects, the learning objects complemented and supported a diverse range of instructional activities and strategies. In all three schools, students identified and articulated how the instructional design features helped them to learn. Several key findings emerged from the trial. Most teachers recognised the value of learning objects for teaching mathematics, but they needed time to explore, understand and reflect on the value of learning objects, align learning objects to curriculum requirements and appropriate cognitive abilities and skills of their students, and plan, prepare and evaluate instructional activities that integrate learning objects.

The Learning Federation collaborated with the Victorian Department of Education and Training to trial learning objects with Indigenous students to increase understanding about the capacity of online resources to support their learning. Three primary schools at Traralgon, Morwell and Drouin and two secondary schools at Traralgon and Drouin were selected for the trial. During an initial workshop held at Moe in November 2005, teachers, Indigenous educators and regional support professionals discussed ways learning objects could be incorporated into the curriculum and ascertained access and delivery arrangements in their schools. Following the workshop, teachers developed and taught lessons or units during the trial incorporating learning objects for mathematics and numeracy, science or literacy. A second workshop was held in December 2005, at which the participants shared the work they had done, and reflected on how useful learning objects were in meeting the needs of Indigenous students. Based on discussions at the workshops, interviews with teachers and Indigenous educators, classroom observations and student responses to an online questionnaire, Clarke and Bowe (2006a) reported that the trial led to eight key findings. Teachers were very enthusiastic about the role of learning objects to engage and motivate students, and support their learning. Teachers and Indigenous educators expressed enthusiasm about

learning objects in supporting the learning needs of Indigenous students. Teachers identified particular features of learning objects, which support all students. Teachers used learning objects in different ways to support a range of pedagogical purposes. Learning objects worked best when integrated into well-planned lessons focused on specific learning outcomes and used together with a range of other online and offline activities. All students, Indigenous and non-Indigenous, were enthusiastic about using learning objects. Teachers reported that successful use of learning objects is predicated in a thorough understanding, and embedding them carefully into a learning sequence. Learning objects proved a context for teachers and students to develop information and communication technology skills.

The Learning Federation collaborated with the Victorian Department of Education and Training to trial learning objects with students from non-English speaking backgrounds to increase understanding about the capacity of online resources to support their learning. Two primary schools and one secondary school in the Western Metropolitan Region, selected for the trial, had classes that included half numbers of students from non-English speaking backgrounds. They included students, who received additional in-class or withdrawal support, classes consisting entirely of students from non-English speaking backgrounds with continuous intake of new arrivals, and a bridging class for new arrivals transferring from an intensive English language school to mainstream classes in the secondary school. During an initial workshop held at the Curriculum Corporation in September 2005, the teachers explored the range of learning objects, discussed ways learning objects could be incorporated into the curriculum and ascertained access and delivery arrangements in their schools. For the trial, teachers selected learning objects for mathematics and numeracy, science, studies of Australia or literacy and integrated them with a range of other learning activities to meet specific learning outcomes. A second workshop was held in December 2005, at which participants shared the work they had done, and reflected on how useful learning objects were in meeting the needs of English-as-a-second-language students. Based on discussions at the workshops, interviews with teachers, classroom observations and student responses to an online questionnaire, Clarke and Bowe (2006b) reported that the trial led to six key findings. Teachers perceived that the subject matter of the learning objects, and the interactive, multimodal format engaged and motivated English-as-a-second-language students and contributed to their learning. Teachers identified particular features of learning objects, which support English-as-a-second-language students. Teachers commented on ways learning objects provided a range of experiences for new arrival students not normally possible in the classroom. Learning objects worked best when integrated into well-planned lessons using a range of different approaches. Teachers commented on the alignment of learning objects to their curriculum needs and the Victorian Essential Learning Standards. English-as-a-second-language students liked using learning objects, because they can work at their own pace.

The Learning Federation commissioned an evaluation of teachers' use of digital resources consisting of site visits to six schools located in Victoria, South Australia and New Zealand and a survey of teachers administered by an online questionnaire. A total of 78 teachers from 72 schools responded to the survey. In the report, Freebody and Muspratt (2007a) discussed the results of teachers'

perceptions about accessing, using and evaluating digital resources. About three-quarters of the teachers accessed the digital resources from a CD or DVD supplied by the Learning Federation for the survey. Generally, the respondents experienced few difficulties when searching for appropriate digital resources. The digital resources were used across all levels, but more frequently in upper primary and lower secondary levels. They were used in a range of content areas, but mostly for English, social studies and history. A large number of primary teachers used them in an integrated or cross-disciplinary way. Teachers used digital resources for four main reasons. First, history and social studies teachers, in particular, required their students to access them as primary sources. Second, teachers used digital resources to compare or contrast an aspect of a past social environment with current circumstances. Third, teachers used digital resources for motivational effects. Fourth, teachers used still images in visual literacy units, either in a critical literacy context or as a writing exercise. Teachers used a range of methods to make digital resources available to students. Most teachers displayed digital resources to the whole class, and a little more than half of the respondents arranged for individual or small group viewing. Approximately, one-third of the teachers used the digital resources with other online resources. Most teachers rated highly the usefulness of digital resources in supporting instruction and students' learning. Teachers also rated highly the usefulness of educational value statements attached to digital resources. Approximately, one-third of the teachers reported that they encouraged students to refer to the educational value statements, although some teachers believed the statements were too difficult for less able students to comprehend. Few teachers used digital resources with other materials or indicated that they integrated them into a learning sequence.

The Learning Federation commissioned an evaluation of the effects of learning objects on students' motivation and learning outcomes consisting of a survey of teachers and students administered by online questionnaires, site visits to eight schools, and a field experiment conducted in 19 schools. A total of 206 teachers and 2,465 students from 109 schools in all Australian states and territories, representing a quota sample selected by Learning Federation site-based liaison officers, responded to the survey. Taking place in three primary schools, one high school, two combined primary and secondary schools, a field study centre and a school of distance education, the site visits involved observations of lessons, and interviews with principals and teachers. In the field experiment, 708 years 5 and 7 students from 19 schools in the Australian Capital Territory, New South Wales and Queensland were randomly assigned to one of two classroom conditions: a 'business-as-usual' condition, in which mathematical topics were taught in the accustomed way; and a 'learning object use' condition, in which the same mathematical topics were taught using learning objects. Students' learning outcomes arising from these conditions were measured by testing before and after the experiment. Statistical analyses of the data followed a sequence of three steps: a single-level analysis to establish baseline estimates; multilevel analysis with 'classroom' as a random factor to determine variation at the classroom level; and treatment to arrive at the relative performances of the two groups of students. In the report, Freebody et al. (2007) discussed the findings of the evaluation in relation to the survey, site visits and the field experiment. The results of the survey showed that teachers and students used learning objects more heavily in mathematics and science, moderately in literacy and studies of Australia, and least in languages

other than English, art, design and technology, and business and enterprise. Teachers reported that they used learning objects more frequently to help students develop new knowledge, concepts and skills, and allow students to work at their own pace and level. Students strongly agreed that learning objects were easy to work through and helpful for working at their own pace. In their perceptions of the value of learning objects, teachers indicated minor differentiations between factual, conceptual and applied learning outcomes. The results of the site visits, conducted in seven sites regarded as successful implementers of digital learning and one site in the early stage of implementation, showed that successful implementation is associated with five factors: committed leadership; a champion of the cause; a working plan; well-directed and high-quality resources; and substantial and effective professional learning. In the field experiment, the group of students, who used the learning objects, were found to have achieved significantly higher scores in mathematics test items than the group of students, who learnt the same content under the 'business-as-usual' condition. There was evidence that this effect was strongest, when learning objects dealt with difficult-to-teach concepts.

The Learning Federation extended the field experiment to include science as well as mathematics, and expanded the design to include two different contexts for using learning objects. The effects of using learning objects on students' outcomes for mathematics in the lower secondary level and for science in the upper primary level were tested in the field experiment. In each content area, classrooms were assigned to one of three conditions: a 'business-as-usual' condition, in which topics were taught in the accustomed way; a 'learning object use' condition, in which the same topics were taught using learning objects; and a 'Moodle' condition, in which learning objects were embedded within a Moodle learning management system. The field experiment was conducted in 28 secondary schools for mathematics across six Australian states and New Zealand, and 27 primary schools for science across six Australian states. The study used a quasi-experimental design, in which class groups were assigned to its control and treatment groups, based on a pre-test and post-test. In mathematics, teachers taught an algebra topic focusing on number patterns, pro-numerals, and linear and non-linear functions. In science, teachers taught lunar cycles. Multilevel regression was used to analyse the data, but, because the number of classrooms in the sample was smaller than recommended for maximum likelihood procedures, the analysis was embedded in a Bayesian framework using Markov chain Monte Carlo procedures. Statistical analysis of the data led Freebody and Muspratt (2007b) to report three major findings from the field experiment. First, there were significant positive effects for the use of learning objects in science. Second, there was no advantage for the group using learning objects within a Moodle learning management system in science over the group using learning objects only or the control group, whether overall or for any components of the science test. Third, there were no reliable significant effects for either learning object use or Moodle use in mathematics, except that there was a statistically reliable advantage for the Moodle group on post-test items relating to linear functions. In addition, site visits were conducted in ten schools recognised by the Learning Federation as featuring good practice in using learning objects within instructional practice. Located in the Australian Capital Territory, New South Wales, Northern Territory, Queensland, Tasmania and New Zealand, they consisted of six primary schools, two secondary schools, one combined primary-secondary school and

one special school. Review of the case studies from the site visits led to 15 findings. First, secondary schools were less likely to have adopted a whole-school approach to implement learning objects than primary schools. Second, there was little professional development directed to building teachers' capacity to integrate learning objects into instructional practice. Third, some states placed an emphasis on producing exemplars that incorporate information and communication technologies. Fourth, teachers' appreciation of the capabilities of interactive whiteboards was often restricted to rudimentary operation. Fifth, specialist teachers were found in all ten schools, but consisted of token positions in some schools. Sixth, the importance of teachers working together to support one another in acquiring greater confidence in classroom use of information and communication technologies was noted in many interviews. Seventh, school administrators believed that the wider introduction of information and communication technologies can drive pedagogical change. Eighth, parents were enthusiastic about the integration of information and communication technologies into instructional practice. Ninth, schools serving low socioeconomic communities reported a low incidence of computers in students' homes. Tenth, schools that were integrating information and communication technologies successfully evidenced planning for professional development and resources in this area. Eleventh, teachers stressed the need to familiarise themselves with a learning object before using it with students. Twelfth, the content of learning objects was commonly reported to be versatile, flexible and multimodal. Thirteenth, none of the recently appointed teachers to the schools reported receiving pre-service training in integrating information and communication technologies into instructional practice. Fourteenth, digital resources, other than learning objects, were observed in use at only one school. Fifteenth, provision of adequate hardware in schools remains a significant issue with evidence of high levels of difference between schools.

In February 2007, the Ministerial Council for Education, Early Childhood Development and Youth Affairs' Reference Group for Indigenous Education approved the Learning Federation's Indigenous Projects Plan for 2007 to 2009 aimed at researching Indigenous students' and their teachers' use of online materials, building communities of practice among Indigenous students, and expanding the capacity to provide culturally appropriate materials for Indigenous students. The Learning Federation initiated a study to investigate these issues by selecting 26 schools from all Australian states and territories, and conducting a series of workshops for principals, teachers and Indigenous education workers from the participating schools between May and August of 2007. Each participant received a DVD of all the digital materials published by the Learning Federation to ensure that they were not reliant on obtaining access by the internet. The Learning Federation's Indigenous projects officer established a role for participating teachers at each site, visited the sites to interview teachers and provide support to those, who were in the early stage of using digital materials. The study involved a survey of teachers and students by online questionnaires, and site visits to the participating schools to interview teachers and observe lessons. Of 442 students, who responded to the survey, just over half were Indigenous. A total of 57 teachers responded to the survey. In the report, Wallace (2008) presented the results of the surveys and site visits, and discussed the implications of factors characterising successful implementation of digital materials. The results of the survey showed that there were no significant differences between Indigenous and non-Indigenous students in

finding learning objects motivating and engaging, or helpful for learning. There was a significant difference, however, between Indigenous and non-Indigenous students in their access to computers and the internet outside school. Teachers' responses to the survey showed similar results to the findings of other studies. The site visits provided evidence from teacher interviews and classroom observations that use of learning objects increases Indigenous students' motivation to learn. The findings of the study showed that five contextual factors affected Indigenous students' use of digital materials. The extent of Indigenous education workers' engagement with digital materials affected Indigenous students' use of digital materials. Indigenous students' lack of proficiency in English impeded their use of search functions. Digital materials were not necessarily age-appropriate for Indigenous students. Indigenous students' use of digital materials increased their level of school attendance. The relationships between Indigenous students' need for help in using digital materials, prior access to computers and the internet outside school, and their low information and communication technology and literacy proficiency present a significant issue for state and territory education agencies to manage in improving their motivation and engagement in learning.

As part of the Indigenous Projects Plan, the Learning Federation extended the research conducted in 2007 to identify the effects of using digital materials on Indigenous students' motivation to learn and their engagement in learning. The primary research question for the extension was to investigate how effective digital materials were in meeting the learning needs of Indigenous students. An advisory team was formed to establish a framework for the study that allowed participants to conduct their own investigations and select digital materials to meet challenges in their own settings. The study consisted of a series of 33 small-scale, school-based projects conducted between June and December of 2008 in 25 schools across six Australian states and the Northern Territory. Workshops were conducted in a range of locations to assist the participating teachers identify areas for investigation, select digital materials relevant to their investigations and prepare project plans. Of the 33 projects, 21 focused on numeracy, five focused on literacy, two focused on science, two focused on studies of society and environment, and three involved integrated or multiple studies of literacy, numeracy and science. Digital materials were accessed in 25 projects as part of whole-class activities, five projects as separate activities within class settings, in two cases students were withdrawn from the class for additional support, and in one case in a homework centre. Members of the advisory team visited each school at the end of its project to interview teachers and collect data to form the basis for case study reports. Participating teachers were invited to complete a reflection sheet and an online questionnaire. Selected participants gave presentations on their projects at a forum held in Melbourne for representatives of state and territory Indigenous education units. In the report, the Learning Federation (2009) found that use of digital materials led Indigenous students to become engaged in learning. In 24 projects, significant gains in engagement were reported without qualification. In six projects, the qualification related to ways, in which the use of the digital materials was scaffolded. In two projects, limited evidence of student engagement was attributed to the selection of appropriate digital materials. One project had not been completed in a meaningful way. Qualitative analysis of the data from the projects showed that engagement occurred in three distinct ways. In almost all of the projects, students' enthusiasm about using digital

materials generated motivation and interest. Many of the projects reported an increase in on-task behaviour by students in the form of increased levels of confidence and participation, related talk and collaborative assistance. In nine projects, which focused on learning outcomes, evidence from pre- and post-testing showed that Indigenous students achieved well-defined gains in learning.

In a study aimed at investigating how students engage with and respond to learning objects, how learning objects support student learning and what role the teacher plays in the use of learning objects, students in two classes, consisting of a year 3 class and a composite years 5 and 6 class, in a public primary school in Wollongong, New South Wales, participated in learning objects lessons. Data collected from student focus group interviews, participant observations and informal discussions with teachers were transcribed and coded to document the case histories of the learning objects lessons in each classroom. In the study, Cameron and Bennett (2010) found that the teacher's role affected learning outcomes from students' use of learning objects. In one classroom, where the teacher used a student-centred approach based on collaboration and peer learning with minimal facilitation, many of the students failed to demonstrate understanding of key concepts. In the other classroom, where the teacher used a combination of direct teaching and modelling followed by open-ended project-based activities, all students demonstrated understanding of the basic concepts and a majority developed projects expressing this understanding. This finding suggests that the way the teacher scaffolds and integrates the learning object contextually within the instructional process, as part of a whole learning experience, reinforces student learning outcomes.

Curriculum into the Classroom

The Queensland Department of Education, Training and Employment developed a comprehensive and flexible set of professional and curricular resources to support core learning priorities for implementing the Australian Curriculum in Queensland schools.

Following the inaugural principals' conference held in February 2011, the Department of Education, Training and Employment developed an agenda for improvement from 2012 to 2016. Launched in July 2011, *United in our pursuit of excellence* sets out six core learning priorities: reading; writing, including spelling, grammar and punctuation; numeracy; science; attendance, retention, attainment and transition of students at key junctures of schooling; and closing the gap between attendance and outcomes of Indigenous and non-Indigenous students. The core learning priorities set out in *United in our pursuit of excellence* are supported by four frameworks. The *Parent and Community Engagement Framework* sets out five key elements for parent and community engagement: communication; learning partnerships; community collaboration; decision-making; and participation. The *Learning and Wellbeing Framework* sets out guidelines for optimising well-being within a school context covering practices in four domains: learning environment; curriculum and pedagogy; policies and procedures; and partnerships. The *Capability and Leadership Framework* is a multi-layered, self-reflective framework designed to enrich

instructional leadership, develop capabilities, and provide a focus for performance development planning for school administrators. The *P-12 Curriculum, Assessment and Reporting Framework* specifies requirements for each Queensland school to implement the enacted curriculum, develop a curriculum plan and use Curriculum into the Classroom materials, comply with policy statements for developing a pedagogical framework and meeting the needs of student cohorts, comply with a policy statement for administering assessments, and comply with a policy statement for reporting student achievement against learning expectations to parents.

Curriculum into the Classroom Project

To support these priorities, the Department of Education, Training and Employment initiated a project, Curriculum into the Classroom, based on resources developed by the Queensland Studies Authority, now known as the Queensland Curriculum and Assessment Authority. The Curriculum into the Classroom project was initiated to support endorsement by the three sectors of a framework setting out minimum resources that would need to be developed and delivered to complement the Australian Curriculum content descriptions and achievement standards, and build the capacity of school leaders and teachers to implement the Australian Curriculum. In June 2010, the Queensland Studies Authority began a project in collaboration with the Department of Education, Training and Employment, the Queensland Catholic Education Commission and Independent Schools Queensland to develop an initial resource to support Queensland schools implement the Australian Curriculum for English and Mathematics in preparatory to year 10. The exemplar project involved teachers from across preparatory to year 10 in the three sectors working collaboratively to develop draft year-level programs using the draft Australian Curriculum. The outcome of this project was a collection of resources, including advice for planning with the Australian Curriculum, advice for planning for whole-school, year-level and unit overview programs at single years and multiple-year levels, a whole-school plan (template and exemplar), year-level plans for preparatory to year 10 English and Mathematics (template and exemplars), and unit overviews to exemplify one unit from each of the year-level plans for English and Mathematics (template and exemplars). Since publication of these resources on the Queensland Studies Authority's web site in January 2011, they have been supplemented by resources for preparatory to year 10 Science, preparatory to year 10 History, and preparatory to year 10 Geography.

These resources formed the basis for further development of five types of resources by the Curriculum into the Classroom project. Planning documents, including whole-school curriculum and assessment plans, year-level plans and band plans, teacher lesson overviews, topic overviews and assessment materials were derived from the exemplar project. The other four types of resources were developed as key components of the Curriculum into the Classroom project. Classroom planning materials, such as unit plans, lesson outlines and topic outlines and linked teacher and student resources formed one type. Example multi-level materials, including a whole-school curriculum and assessment plan, preparatory to year 6 and years 7 to 10 semester overviews and multi-level classroom planning samples, scope and sequence

documents, unit plans, assessment materials, monitoring opportunities, and student and teacher resources formed a second type. Example planning materials for students with disabilities, including unit overviews, unit synopsis, unit plans, teacher lesson overviews, student tracking tools, whole-class learning episodes, assessment materials, and monitoring tools formed a third type. Independent learning materials, designed for school of distance education teachers, parents and home tutors formed a fourth type.

In February 2011, teams of experienced teachers began developing units containing lesson plans and resources for English and Mathematics. The teams of teachers incorporated a concept overview into the units for English, which set out concepts to be taught from preparatory to year 10. The units also list literary texts referenced to model ways to build student understanding of a particular topic, but teachers may use alternative literary texts based on student needs and the availability of texts. A spelling library houses five types of spelling materials: weekly spelling lists, unit spelling overviews, spelling dashboards, spelling programs and guides for preparatory to year 6; resources for year 7 spelling for units 1 to 4 and spelling dashboards including unit summaries for years 7 to 10; Curriculum into the Classroom resources; other resources; and spelling materials for students with disabilities. Teachers can modify spelling lists to suit student needs or use spelling programs provided by publishing companies. The teams of teachers incorporated a set of example learning sequences into each unit for Mathematics to provide a model for teachers to plan and deliver learning opportunities to enable students develop mathematical knowledge, skills and understanding. Teachers can adapt and differentiate the learning sequences to build upon each student's knowledge and understanding, progress each student's learning to more sophisticated knowledge, concepts and skills, and develop student's higher-order thinking and problem-solving skills. A guided inquiry process is included in many of the units to allow students to move towards the collaborative building of knowledge. The units include links to suggested online resources, but teachers may use textbooks aligned to the Australian Curriculum. Each unit contains a monitoring audit tool for each year from preparatory to year 10. Aligned to the achievement standards of the Australian Curriculum, the monitoring audit tool can be used to assist teachers to record evidence about student progress. In May 2011, a team of teachers commenced developing units containing lesson plans and resources for Science. The teams of teachers structured the units for Science to support learning through inquiry without using a specific model. Teachers are able to view the units and lesson sequences and overlay the specific inquiry approach that is used in their schools. The units for Science reference *Primary Connections: Linking Science with Literacy*, a program developed by the Australian Academy of Science to link the teaching of science with the teaching of literacy in primary schools, where appropriate and relevant. Materials and equipment lists are provided for each unit for years 7 to 10.

Subsequently, the units were reviewed by panels of teachers across Queensland through web conferencing and by a technical panel to ensure alignment to the Australian Curriculum. Then, the lesson plans were disseminated to schools for implementation by teachers. Later, other resources that provide examples of how to differentiate instruction and how to plan for the multi-level classroom were developed. In October 2011, the first sets of units for English, Mathematics and Science were launched on a portal, OneSchool.

In July 2012, the units were revised to take account of feedback received from teachers and aligned to the updated version of the Australian Curriculum. The units were also produced in a printed format for use by distance education teachers based in schools of distance education located at Brisbane, Cairns, Capricornia (Rockhampton and Emerald), Charleville, Charters Towers, Longreach and Mount Isa. Revised and refined units for English, Mathematics and Science were published in 2012. A conference was held on the Sunshine Coast in November 2011 to train more than 30 advisers, who were based in the seven regions across the state in March 2012 to provide professional development through regional workshops and online presentations to assist principals, curriculum coordinators and teachers use the units in their schools.

The units for phases two and three are designed to be more flexible than the units developed for Phase One of the Australian Curriculum. The topic overviews contain four components: an introductory statement about the unit; topics within the unit including assessment, connections between learning and assessment, and topics derived from content descriptions; subject-specific advice in designing a sequence of instruction; and a topic map.

In the Humanities and Social Sciences learning area, units have been developed in each subject. In History, two units for each year have been developed for preparatory to year 6 and three depth studies units for each year have been developed for years 7 to 10. In Geography, two units for each year have been developed for preparatory to year 10. Each unit for History and Geography includes the same components as those developed for English, Mathematics and Science. These components comprise year-level plans, unit plans, assessment materials, teacher lesson overviews, lesson outlines with linked resources, and mapping documents. The units for History were implemented in 2013 and units for Geography were implemented in 2014. In Civics and Citizenship, two units for each year have been developed for years 3 to 10. In Economics and Business, two units for each band have been developed for years 3 to 10 and four depth studies units for each band have been developed for years 9 to 10. Band plans, unit plans, assessment materials, topic overviews, topic outlines with linked resources, and mapping documents were developed for Civics and Citizenship and Economics and Business.

In Health and Physical Education, four units for each year have been developed for each of the two strands: personal, social and community health; and movement and physical activity. Each unit consists of band plans, unit plans, assessment materials, topic overviews, topic outlines with linked resources, and mapping documents. The units have been designed for delivery by health, physical education and home economics specialist teachers, non-specialist teachers in conjunction with specialist teachers or itinerant specialist teachers. The units, which provide alternative contexts for schools that do not have facilities to implement specific subject matter, were published in 2014.

In the Arts learning area, units have been developed in each subject. In Dance, Drama, Media Arts, Music and Visual Arts, band plans, unit plans, assessment materials, topic overviews, topic outlines with linked resources, and mapping documents were developed for each subject. For preparatory to year 6, these units consist of discipline-specific units, which are independent of other units,

and partner units, which are linked to units in the core subjects of the Australian Curriculum. The units, which have been written in a form that can be delivered by teachers, who are not specialists in the Arts subjects, were implemented in 2015.

In Technologies, units have been developed for each subject. In Design and Technologies, units have been developed for each of four contexts: engineering principles and systems; materials and technologies specialisations; food and fibre production; and food specialisations. Independent units have been developed for Digital Technologies. Band plans, unit plans, topic overviews, topic outlines, resources, assessment materials and mapping documents were developed for each unit. These units, which use an inquiry-based or project-based learning approach for students to work collaboratively or independently, were implemented in 2015.

Teachers working in Queensland public schools can access Curriculum into the Classroom units on OneSchool, OnePortal, the Managed Internet Service or Curriculum into the Classroom download manager on Computers for Teachers' devices. OneSchool is an integrated platform combining a student information system and an instructional improvement system with components for student management, curriculum and instructional management, finance and asset management, resource management, and performance, reporting and analysis. OneSchool provides a platform to copy unit plans for adaptation to students' needs, scheduling topics, assessment tasks and excursions, sequencing the unit plans across the year, and entering and reporting student assessment data. OnePortal is the Department of Education, Training and Employment's intranet portal for corporate and school-based staff. The Managed Internet Service provides teachers and students in public schools with content-filtered internet access, home accessible virus-filtered email, website hosting for school and class websites, and secure storage of information online. Teachers in Queensland Catholic and independent schools can access Curriculum into the Classroom units on Scootle.

Research Studies

The Curriculum into the Classroom materials project has not been subjected to extensive evaluation. One study analysed the Curriculum into the Classroom units for mathematics prior to their revision in 2012. One small-scale study investigated implementation of Curriculum into the Classroom materials in a small sample of primary schools.

Tierney Kennedy, a mathematics consultant, professional development provider, author and publisher based at Townsville initiated a review of the Curriculum into the Classroom units for mathematics, when they were released in October 2011. The purpose of the review was to determine whether the Curriculum into the Classroom units meet requirements of the Australian Curriculum, Queensland's policy documents regarding quality instruction, developmental sequencing of mathematical ideas, and specific areas of weakness in Queensland students' performances in the National Assessment Program. The review involved three mathematics specialists conducting a content analysis of 57 lesson plans for years 1 to 7, action words, focus

questions, diagnostic questions, strategies for differentiation, time allocations for lessons within each unit, and content identified as prior knowledge. In addition, the sample assessment from the Scribbly Gum unit for year 6 and raw data from the National Assessment Program were analysed to identify weaknesses in the performance of Queensland students. Analysis of the requirements of the Australian Curriculum focused on three areas: developing understanding, fluency, logical reasoning and analytical thought and problem-solving skills; presenting questions comprising a range of familiar and unfamiliar situations; and requiring application of mathematical understanding creatively and learning experiences that are challenging and engaging. Kennedy et al. (2011) found that the results of the analysis showed the Curriculum into the Classroom units do not meet Australian Curriculum requirements for problem-solving, reasoning, understanding and fluency in terms of allowing students to choose their own strategies and promoting flexibility that builds a robust knowledge of mathematics. Content analysis of Queensland's policy documents focused on identifying whether key principles of pedagogy and assessment, referred to in these documents, were referenced to the Curriculum into the Classroom units. The content analysis showed that the Curriculum into the Classroom units failed to meet the pedagogical approaches inherent in these policy documents. The content analysis of the Scribbly Gum assessment items showed that they were almost entirely based on recall of content taught in the units and failed to meet the principles of assessment underpinning the policy documents. Content analysis of the developmental sequencing of mathematical ideas in the Curriculum into the Classroom units found both transitional and systemic problems, particularly with respect to key mathematical concepts such as place value and fractions. Analysis of data on student performance in numeracy from the National Assessment Program showed that Queensland students perform well on items relating to routine processes and fluency compared with students in other states and territories, but poorly on items relating to deeper understanding and unfamiliar problems. Content analysis of the Curriculum into the Classroom units indicated a heavy emphasis on fluency, but very little emphasis on developing deep understanding or problem-solving. Given the critical shortcomings identified from the review, the authors recommended that the Curriculum into the Classroom units should be revised prior to implementation, and professional development should be provided for school administrators and teachers in instructional strategies relating to their implementation.

In an attempt to understand the views of school administrators and teachers about the implications of the Curriculum into the Classroom units, a study was initiated to collect information from personnel responsible for leading implementation in schools. One principal, one deputy principal and two teachers from four primary schools were interviewed on two occasions: once during implementation of the materials; and once one year later. The interviews were transcribed and coded for thematic analysis of aspects seen as important by the interviewees. Thematic analysis aimed at identifying conceived and perceived ideals of implementers in terms of spatial theory. Barton et al. (2014) contended that a prescriptive approach underpinning implementation of the Curriculum into the Classroom materials created mistrust and devalued teachers' expertise. In the interviews during implementation of the materials, school administrators were positive about the potential of the Curriculum into the Classroom units to raise student performance and teachers were expected

to use the materials. On the other hand, teachers believed the Curriculum into the Classroom units were too prescriptive and their scope could not be covered in the available instructional time. This tension led to a practice of secrecy in the way teachers implemented of the Curriculum into the Classroom units. In the interviews one year later, school administrators perceived that teachers had been forced to change their pedagogical practices, while teachers perceived they had retained power to adapt the Curriculum into the Classroom units to cater for student diversity and time constraints.

Discussion

Explanation of the findings relating to the objectives of this study is intended to help the working group identify where necessary changes will need to be made to establish a balanced and coordinated set of activities that will credibly align materials with the Australian Curriculum. The discussion, in turn, explains what implications the findings of the analysis of Australia's materials' marketplace, the review of research literature, the results of the survey of publishing companies, and the case studies have for developing a delivery plan for distributing aligned materials to schools across Australia.

The analysis of Australia's materials' marketplace indicates that changes need to be made to introduce a balanced and coordinated set of activities. The book-list and class-set systems, operating in most public and Catholic schools for procuring materials, have led to inadequate supplies of new materials being delivered to schools, the widespread use of outdated materials and the reliance on photocopying extracts from materials. This situation has been exacerbated by governmental policies supporting the development and implementation of digital materials. These trends are adversely affecting the capability of publishing companies to compete on a level playing field within Australia's materials' marketplace.

The review of research literature shows that in the colonial period the National Board and later, colonial boards of education, adopted textbooks and supplemental reading materials, which were imported from Britain. Later, colonial boards of education played an important role in developing textbooks and supplemental reading materials, which were marketed to schools within their jurisdictions. In the last decades of the nineteenth century, publishing companies began playing a more important role in developing, publishing and marketing textbooks. In the early years of the twentieth century, British publishing companies established branches in Australia followed in later decades by American publishing companies. Practices adopted from Britain and the USA led to the institutionalisation of a publishing process that established specific roles for authors, editors and sales representatives as well as the introduction of new technologies in printing and new media for presenting materials. In the 1990s, mergers and takeovers, resulting from reductions in profit margins faced by many publishing companies, led to the incorporation of publishing activities within multinational media, communications and entertainment conglomerates, while new emerging publishers filled a vacuum in the marketplace as niche publishers. The more competitive financial environment concentrated the publishing of most textbooks in the hands of a few large publishing houses, while small niche publishers struggled to survive

precariously at the margins of the marketplace. Within the bounds of this arena, the marketplace today presents a substantially different environment in the world of publishing than depicted by research investigating the publishing industry in the past.

The review of research literature shows that in the colonial period regulations promulgated by boards of education and materials distributed to schools from depositories standardised the curriculum. In spite of a lack of research into procedures used for procuring, selecting and using curriculum materials in the intervening period until the 1980s, records documented in historical accounts of Australian education systems suggest that the influence of the curriculum reform movement dominated projects conducted by the Curriculum Development Centre in the 1970s, but at the same time advocacy for school-based curriculum development, particularly in Victoria, devolved decision-making authority in these aspects to schools by the end of this period. Since then, the findings of several large-scale studies indicate that procedures for procuring, selecting and using curriculum materials are on the whole decentralised, highly differentiated, and unsystematic. The systematic differences that were observed in these studies seemed to be based on the size of the school, whether it was located in an urban, suburban or rural setting, its socioeconomic characteristics, and the attitudes of school personnel, who were influential and involved in procuring, selecting and using materials. Local patterns for selecting different types of materials did not seem to differ, except in the case of digital materials, which are not selected by the same procedures as printed materials. Planned, systematic intervention to change the prevailing procedures for procuring, selecting and using materials is perceived to be extremely difficult, because of their complexity, decentralised and unsystematic natures, and dependence on local variations.

The findings of studies investigating the efficacy of the Awards for Excellence in Educational Publishing show that the Awards have improved the quality of materials produced by publishing companies. The findings of the survey of publishers conducted in this study support this conclusion. Publishers, who responded to the survey, believed that greater uniformity provided by the Australian Curriculum assisted in the development of new materials for the marketplace, but this advantage was compromised by the need to develop state editions of new materials, because of state-level variations in the Australian Curriculum. Publishers believed that the Australian Curriculum influenced the content of new materials they developed, in particular, decisions about identifying and incorporating essential strands of knowledge, skills and processes. Publishers also reported undertaking various activities to correlate new materials they have developed to the Australian Curriculum. Efforts that publishers were making to correlate new materials to the Australian Curriculum were confirmed by content analyses of six products, showing that five of the materials were aligned to some degree with the Australian Curriculum. Claims made by publishers about the alignment of their new materials, however, are difficult to substantiate unless a set of data collection, analysis and reporting tools, the Surveys of Enacted Curriculum, are applied to provide a quantitative means for calculating alignment measures.

The findings of the case study on the Australian Curriculum Connect initiative show that it has been shaped by an imperative on the part of policymakers to

utilise information and communication technologies to extend students' learning experiences and improve educational outcomes. The Conference of Education System Chief Executive Officers proposed the Schools Online Curriculum Content Initiative, which the Ministerial Council on Education, Employment, Training and Youth Affairs funded the Curriculum Corporation to conduct. Extension of the initiative to New Zealand, and renaming it the Learning Federation, enhanced its status. The development of a repository of digital materials led to a series of research studies, initially exploratory studies using survey questionnaires examining aspects of learning objects students find appealing, but later involving evaluations using surveys, site visits and field experiments. The findings of these studies provide evidence that learning objects engage and motivate students, but they provide limited insight into how students use and think about their learning with learning objects.

The findings of the case study on the Curriculum into the Classroom project shows that it was shaped by state policymakers to meet the needs for implementing the Australian Curriculum in Queensland schools. Articles published in the news media about the initial implementation of the Curriculum into the Classroom units in 2012 reported various challenges. Teachers received mixed messages about whether implementation of the units was mandatory, or the units could be adapted to local needs. Early childhood educators reported that the Curriculum into the Classroom units were too difficult for children in the preparatory year. The state-wide computer network crashed frequently, because there was insufficient bandwidth to handle the increased number of users for the online the Curriculum into the Classroom units. The printed versions used by the schools of distance education contained factual errors, technical language parents could not understand and incomprehensible gaps in the contents.

Conclusion

The purpose of this section is to present national, state and local policymakers, education officials, school administrators, curriculum specialists, publishers, professional development providers, educators and other interested people with recommendations that relate to improving the delivery of curriculum materials as they proceed through publishers' production and marketing strategies, committees' selection procedures, and consumers' patterns of use. The recommendations, which have been determined from a careful analysis of the findings of the study, refer to the roles of key actors in the delivery chain: policymakers; publishers; selectors; teachers; and learners.

Policymakers

A goal embodied in the rationale for the Australian Curriculum is the potential of economies of scale and a substantial reduction in the duplication of time, effort and resources. Implied in this goal is an assumption that implementation of the Australian Curriculum would encourage states and territories to share curriculum resources.

The evidence from the findings of this study suggest that policymakers have prosecuted this goal with respect to decisions made in planning changes in the provision of digital materials to teachers and students that exclude them from meeting criteria that affect materials within the marketplace. On the other hand, materials developed by publishing companies are influenced by these criteria as they compete with other products within the environment of the materials' marketplace. The imperative on the part of policymakers to exclude digital materials from the political, social and economic forces that operate in the materials' marketplace has undermined the role of publishing companies in producing new materials, affected decision-making by selectors in schools, and distorted knowledge about the range of materials by promoting research exclusively into the content and usability of digital materials.

The following recommendations should be considered by the working group to expand policymaking by including stakeholders representing all interest groups participating in Australia's materials' marketplace.

Recommendations for expanding participation in policymaking for aligning materials to the Australian Curriculum

Recommendation 1: The working group should convene a forum of representatives from the education and publishing sectors to promote cooperative work on a range of issues relating to curriculum materials and the Australian Curriculum.

Recommendation 2: The development of a delivery plan for distributing materials, which are aligned with the Australian Curriculum, should form the main business for the participants in the forum.

Publishers

Publishers are key actors in any delivery plan, because they develop materials that selectors screen and teachers implement in their classrooms. Although publishers' decisions about developing new materials are determined by economic forces operating within the materials' marketplace, adoption and implementation of the Australian Curriculum is focusing the work of publishing companies on aligning their new materials to the Australian Curriculum.

The evidence from the findings of this study shows that the Australian Publishers Association has institutionalised the Awards for Excellence in Educational Publishing as an integral and accepted component of the ongoing work of publishing companies, and provided evidence that the Awards for Excellence in Educational Publishing have enhanced publishers' role in developing materials. Evidence collected in this study from a sample of publishers verifies the claims of publishing companies that they are aligning materials to the Australian Curriculum. However, there is no means of providing evaluative information on alignment of materials with the Australian Curriculum

to help teachers make informed decisions in selecting materials. Furthermore, a rigorous technique, needed to evaluate alignment and misalignment of materials with the Australian Curriculum is not available for application within the Australian educational setting. In spite of these limitations, the relatively small size of Australia's materials' marketplace means that innovation to effect change in this field of study is feasible through innovation.

The following recommendations should be considered by the working group to enhance publishers' role in developing high quality materials aligned to the Australian Curriculum.

Recommendations for increasing publishers' role in developing high quality materials aligned to the Australian Curriculum

Recommendation 3: The working group should convene a meeting of representatives from the Australian Government Department of Education and Training, the Australian Curriculum, Assessment and Reporting Authority, Education Services Australia and the Australian Publishers Association to consider establishing a program to evaluate the alignment of materials with the Australian Curriculum.

Recommendation 4: A research study should be commissioned to investigate whether extending the annual Awards for Excellence in Educational Publishing or planning an alternative program will form the basis for the new program. The research study should focus on examining models, which have been developed and implemented in foreign countries for aligning lessons and units, print materials and open educational resources to academic standards. As part of the research study, the working group should investigate the feasibility of commissioning the Wisconsin Center for Education Research to use the Surveys of Enacted Curriculum to code the content descriptions of the Australian Curriculum, and analyse the alignment and misalignment of a sample of materials to the Australian Curriculum.

Recommendation 5: Using the findings of the research study, the working group should develop an action plan specifying outcomes to be achieved, work to be performed, and resources and time to develop the program. The working group should make choices and refine procedures for implementing the program by using a planned change model. The working group should establish a process for determining whether the desired ends of the activities of the program have been attained, so decisions can be made to continue, terminate, evolve or modify the program.

Selectors

Selectors are key actors in any delivery plan, because they screen the materials that teachers implement in their classrooms. As selectors of materials are based in schools, they also influence decisions about adoption and procurement of new materials.

The evidence from the findings of this study shows that selection procedures are decentralised, highly differentiated, unsystematic and dependent on demographic characteristics, such as the size of the school, whether it is located in an urban, suburban or rural area, its socioeconomic status, and the attitudes of influential participants in the decision-making process. The analysis of research studies shows that materials are selected in each school by curriculum coordinators, resource specialists and teachers working in groups or individually. Authority for adoption of materials, selected by these groups or individuals, has been conferred on principals, although they are often not highly involved in the decision-making process. Instead, adoption of materials is often delegated in a high proportion of schools to curriculum coordinators, either individually or as part of a group. The difficulty of intervention to change prevailing selection and adoption procedures in schools is likely to increase potential weaknesses in the delivery chain for distributing materials from publishing companies to schools.

The following recommendations should be considered by the working group to enhance selectors' role in screening and reviewing high quality materials aligned to the Australian Curriculum.

Recommendations for increasing selectors' role in screening and reviewing high quality materials aligned to the Australian Curriculum

Recommendation 6: The working group should convene a meeting of representatives from the states and territories to develop a set of guidelines to which school-based selectors should comply in selecting materials aligned with the Australian Curriculum. The guidelines should include elements about conducting a curriculum review, specifying screening and review criteria, identifying options for dividing labour in reviewing materials, combining information and voting on final decisions, permitting publishers to make presentations about their products, permitting citizens to present comments, and specifying procedures for challenges to controversial materials.

Recommendation 7: The working group should convene a meeting of representatives from the Australian Curriculum, Assessment and Reporting Authority to define criteria for selecting materials to be included in each learning area of the Australian Curriculum.

Recommendation 8: The working group should convene a meeting of representatives from the Australian Institute for Teaching and School Leadership to develop a program for training selectors to be implemented by state and territory education agencies.

Teachers

Teachers are key actors in any delivery plan, because they request new materials as well as implement them in their classrooms. They participate in selecting materials, and influence decisions about adoption and procurement of materials.

The evidence from the findings of this study shows that teachers depend in their instructional practice on using teacher-developed resources derived from photocopying materials. This practice has arisen from the prevalence in schools of book-hire and class-set systems, which fail to deliver sufficient new materials to schools and perpetuate the use of out-dated materials in schools. The analysis of research studies shows that procurement and selection of materials, which are linked to school budgets, are influenced by the cost of the materials, publishers' terms of trade and level of service. Publishers' terms of trade and level of service form the best means for selectors and teachers to lobby publishing companies to provide teachers with in-service training to implement their products in classrooms. Display centres, housed in universities or regional offices, would form an important resource for selectors and teachers to view and become familiar with new materials marketed by publishers.

The following recommendations should be considered by the working group to enhance teachers' role in selecting, procuring and implementing high quality materials aligned to the Australian Curriculum.

Recommendations for increasing teachers' role in selecting, procuring and implementing high quality materials aligned to the Australian Curriculum

Recommendation 9: The working group should convene a meeting of representatives from the states and territories to develop a set of guidelines to which school budgetary committees should comply in procuring materials aligned with the Australian Curriculum. The guidelines should include elements about specifying criteria for allocating funds for procuring materials, and developing procedures for negotiating favourable contracts with publishers and distributors of materials.

Recommendation 10: The working group should convene a meeting of representatives from the Australian Publishers Association to develop a program for publishers to provide in-service training of teachers to implement their new products. The training program should include an overview of the product, a demonstration of its use with students, and question-and-answer feedback sessions after the product has been used by teachers.

Recommendation 11: The working group should convene a meeting of representatives from the states and territories to investigate the practicality of establishing, operating and maintaining a network of display centres for teachers and the public to view new materials aligned with the Australian Curriculum.

Learners

Learners are key actors in any delivery plan, because they are the ultimate consumers of materials. However, learners' experiences with materials are seldom a factor that shapes decision-making by publishers and selectors.

The evidence from the findings of this study shows that policymakers have not called upon publishers to satisfy consumer demands for high quality design and content in materials by incorporating procedures for gathering and analysing data obtained from verifying materials with appropriate group of learners, and then revising the materials on the basis of the results. An outcome of the market research study conducted by Chris Cooper-Brown and Associates was the specification of guidelines and strategies for trialling materials with students, which the Curriculum Corporation (1996) included in guidelines as an important initial step for publishers to follow in developing materials. The failure of book-hire and class-set systems, widely used in schools as a basis for purchasing materials, to deliver sufficient new materials to schools highlights the need to ensure that each learner has sufficient materials that are aligned to the Australian Curriculum.

The following recommendations should be considered by the working group to enhance learners' role in the development of and access to high quality materials aligned to the Australian Curriculum.

Recommendations for increasing learners' role in developing and accessing high quality materials aligned to the Australian Curriculum

Recommendation 12: The working group should convene a meeting of representatives from the Australian Publishers Association to develop guidelines and strategies for publishers to verify new materials with learners and revise the materials based on feedback. A research study should be commissioned to examine guidelines and strategies developed in foreign countries.

Recommendation 13: The working group should convene a meeting of representatives from the states and territories to identify a strategy for each school to determine annually whether students have sufficient basic materials in the core subjects that are aligned with the Australian Curriculum.

APPENDIX A

SAMPLE OF AUSTRALIAN PUBLISHERS OF CURRICULUM MATERIALS

Cambridge University Press, 477 Williamstown Road, Port Melbourne, VIC 3207

Cengage Learning Australia, Level 7, 80 Dorcas Street, South Melbourne, VIC 3205

Eleanor Curtain Publishing, Level 1, Suite 3, 102 Toorak Road, South Yarra, VIC 3141

Era Publications, PO Box 231, Brooklyn Park, SA 5032

Firefly Education, PO Box 634, Buderim, QLD 4556

Insight Publications, 3/350 Charman Road, Cheltenham, VIC 3192

Knowledge Books, Unit4, 498 Scottsdale Drive, Varsity Lakes, QLD 4227

Macmillan Education Australia, Locked Bag 1400, Prahran, VIC 3181

McGraw-Hill Education, Level 2, 82 Waterloo Road, North Ryde, NSW 2113

ORIGO Education, PO Box 5441, Brendale, QLD 4500

Oxford University Press, 253 Normanby Road, South Melbourne, VIC 3205

Pascal Press, PO Box 250, Glebe, NSW 2037

Pearson Australia, 707 Collins Street, Docklands, VIC 3008

R.I.C. Publications, PO Box 332, Greenwood, WA 6024

Scholastic Australia, PO Box 579, Gosford, NSW 2250

Wiley, 155 Cremorne Street, Richmond, VIC 3121

APPENDIX B

SURVEY OF PUBLISHERS OF CURRICULUM MATERIALS

Questionnaire

Introduction

The purpose of this questionnaire is to identify the impact of the Australian Curriculum on the development and marketing of curriculum materials, and its effect on the educational design of curriculum materials. This survey involves a sample of publishers selected from members of the Australian Publishers Association involved in publishing curriculum materials for use in primary and secondary schools.

The questionnaire is divided into four parts:

Part A: Background Information (items 1-33);

Part B: Impact of the Australian Curriculum (items 34-52);

Part C: Educational Design of Curriculum Materials (items 53-57); and

Part D: Additional Information (items 58-61).

Responding to the Questionnaire

It is suggested that a company employee with expertise in sales should complete Part A. Another employee, who is familiar with the process used by your company to develop and align curriculum materials to the Australian Curriculum, should complete Parts B and C. The company's director should complete Part D.

Most items can be answered by printing X in a box. Please use the spaces provided to respond to open-ended items.

Your name is not required, but you are requested to identify your company to assist data collection procedures. All information obtained from this survey will be treated confidentially, and presented in the project report in tabulated form only, without identifying your company. In participating in the survey, you understand that research data gathered for the study may be published, but that you may withdraw at any time from the survey. If you require further background information about the survey, or have any queries concerning the questionnaire, please contact me by email at michaelgwatt@internode.on.net or call me by phone on 03 6225 1335.

I would appreciate if you can complete and return the questionnaire within two weeks of receiving it. Completing the questionnaire should take about 30 minutes. I hope you will be able to make this time available, as your opinions are valued

Returning the Questionnaire

Please return the completed questionnaire by mail to Michael Watt, 316 Churchill Avenue, Sandy Bay, Tasmania 7000 or email it to michaelgwatt@internode.on.net. You are requested to attach a note identifying your company, if returning an uncompleted questionnaire. This will avoid follow-up communications being made to your company.

Part A: Background Information

Please print X in the appropriate box.

1. Approximately, how many full-time employees work in your publishing company?

- A. less than 10
- B. 10 to 24
- C. 25 to 49
- D. 50 to 100
- E. more than 100

2. Approximately, what is the value of your company's annual turnover in curriculum materials sold for use by students in primary and secondary schools in Australia?

- A. less than \$100,000
- B. \$100,000 to \$999,999
- C. \$1,000,000 to \$9,999,999
- D. \$10,000,000 to \$50,000,000
- E. more than \$50,000,000

Part A includes a sub-set of questions consisting of items numbered 3-11. To the right of each item are four boxes, which are labelled at the top. Please read each item and then print X in the box that best fits your opinion for that item. You can print X in more than one box for each item in this sub-set.

Does your company publish curriculum materials for use in schools in ...	no, never	yes, intend to	yes, at present	yes, in the past
3. ... the Australian Capital Territory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. ... New South Wales?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. ... the Northern Territory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. ... Queensland?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. ... South Australia?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. ... Tasmania?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. ... Victoria?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. ... Western Australia?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Does your company publish curriculum materials for use in schools in ...	no, never	yes, intend to	yes, at present	yes, in the past
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11. ... foreign countries? (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Part A includes a sub-set of questions consisting of items numbered 12-20. To the right of each item are four boxes, which are labelled at the top. Please read each item and then print X in the box that best fits your opinion for that item. You can print X in more than one box for each item in this sub-set.

Does your company publish	yes, intend to	yes, at present	yes, in the past	no, never
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12. ... textbooks for use in schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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13. ... supplemental reading materials for use in schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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14. ... print-based kit materials for use in schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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15. ... slides, filmstrips, films, and television programs for use in schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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16. ... audiocassettes and compact disks for use in schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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17. ... videos for use in schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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18. ... multi-media materials (that combine print, audio-visual, video, and/or computer-based media) for use in schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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19. ... computer software programs for use in schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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20. ... other materials for use in schools? (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Part A includes a sub-set of questions consisting of items numbered 21-33. To the right of each item are four boxes, which are labelled at the top. Please read each item and then print X in the box that best fits your opinion for that item. You can print X in more than one box for each item in this sub-set.

Does your company publish curriculum materials for ...	yes, intend to	yes, at present	yes, in the past	no, never
21. ... the Arts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. ... English?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. ... Health and Physical Education?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. ... Civics and Citizenship?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. ... Economics and Business?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. ... Geography?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. ... History?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. ... Languages?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. ... Mathematics?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. ... Science?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. ... Technologies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. ... Work Studies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. ... other? (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Part B: Impact of the Australian Curriculum

Part B examines the impact that the Australian Curriculum is having on publishers of curriculum materials in Australia.

Part B includes a sub-set of questions consisting of items numbered 34-45. To the right of each item are five boxes, which are labelled at the top. Please read each item, and then print X in the box that best fits your opinion for that item.

To what extent do you believe that the content of curriculum materials, which your company developing, is aligned to the Australian Curriculum for ...	yes, to a great extent	yes, to some extent	no, not at all	un-certain	not applicable
34. ... the Arts?	<input type="checkbox"/>				
35. ... English?	<input type="checkbox"/>				
36. ... Health and Physical Education?	<input type="checkbox"/>				

Part B includes a sub-set of questions consisting of items numbered 47-50. To the right of each item are five boxes, which are labelled at the top. Please read each item, and then print X in the box that best fits your opinion for that item.

How important is the Australian Curriculum for ...	yes, very important	yes, important	no, not very important	no, not at all important	un-certain
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47. ...identifying the media of materials that teachers should use to support the curriculum in particular learning areas?	<input type="checkbox"/>				
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48. ... identifying the essential strands of knowledge, skills and processes of particular learning areas?	<input type="checkbox"/>				
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49. ... incorporating essential knowledge, skills and processes within new materials that teachers should use to support the curriculum?	<input type="checkbox"/>				
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50. ... aligning the elements of the curriculum, such as, the objectives, content, teaching and learning approaches, and the means for assessing students, that teachers should use to support the curriculum?	<input type="checkbox"/>				
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The researcher wishes to obtain copies of your company's policy statement for aligning its products to the Australian Curriculum, if one is available, and one of your company's products, which is aligned to the Australian Curriculum.

51. What is the title of this policy statement? Please name it, and send it when returning this questionnaire.

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52. What is the title of this product? Please name it, and send it when returning this questionnaire.

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Part C: Educational Design of Curriculum Materials

Part C examines the effect that your company's efforts to align new curriculum materials to the Australian Curriculum have had on their educational design.

Part C includes a sub-set of questions consisting of items numbered 53-56. To the right of each item are five boxes, which are labelled at the top. Please read each item, and then print X in the box that best fits your opinion for that item.

To what extent do you believe that your company's efforts to align new curriculum materials to the Australian Curriculum have affected ...	yes, to a great extent	yes, to some extent	yes, to a little extent	no, not at all	un-certain
53. ... their content in terms of philosophy and coverage?	<input type="checkbox"/>				
54. ... their acceptability in terms of inclusiveness?	<input type="checkbox"/>				
55. ... their useability by teachers and students?	<input type="checkbox"/>				
56. ... their initial and continuing cost?	<input type="checkbox"/>				

57. In what ways do you believe that greater uniformity in the curriculum, afforded by the Australian Curriculum, has improved or hindered your company's development and marketing of new curriculum materials? Please list them.

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Part D: Additional Information

Please print X in the appropriate box or write in the space provided. Responses to these items are optional.

58. What is the current role within the publishing company of the respondent to Part A?

- A. department manager
- B. editor
- C. sales person
- D. other
(please specify)

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59. What is the current role within the publishing company of the respondent to Parts B and C?

- A. department manager
- B. editor
- C. sales person
- D. other
(please specify)

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60. What is the name and address of your company?

Name:

Address:

..... State: Post Code:

61. Do you have any general comments to make? Please present these below.

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Please check that you have completed all items. Thank you for spending the time to answer the questionnaire.

Please return the completed questionnaire by mail to Michael Watt, 316 Churchill Avenue, Sandy Bay, Tasmania 7000 or email it to michaelgwatt@internode.on.net.

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