

## **Examining the Literacy Demands of the Enacted Curriculum**

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### Published

1999

### Journal Title

Literacy Learning: the Middle Years

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# Examining the literacy demands of the enacted curriculum

Claire M. Wyatt-Smith and J. Joy Cumming

## Introduction

Literacy and literacy standards have been high-profile issues in Australia for decades, though it is only in recent times that they have assumed prominence on the nation's education policy agenda. Currently, it is 'a major policy objective of the Government ... to provide all young people in Australia with strong foundational literacy skills' (Department of Employment, Education, Training and Youth Affairs, 1998, p. 7) In writing this paper, we are mindful of the ferment that surrounds this policy objective in action. There is, for example, the National Literacy Plan, including the literacy benchmarks at years 3, 5 and 7; state-based literacy testing programs; analyses of state test data to measure the literacy health of Australia's year 5 students; and the introduction this year of compulsory literacy education programs for some young unemployed people. Against this backdrop, it is timely to focus on the literacy demands of curriculum as teachers and students enact it in the classroom.

In this paper we present some key findings of a recently completed two-year research study entitled *The Literacy-Curriculum Interface*<sup>1</sup>, which examined the literacy demands of the curriculum in the senior years of schooling (years 11 and 12). The study included three main strands—arts/humanities, maths/science and technological/vocational education—and was undertaken in response to a Federal Government brief indicating that the research should:

consider the inclusiveness of the curriculum requirements of the post-compulsory years, and the adequacy of these in the preparation for the workplace, vocational training and tertiary education.

In our discussion, we invite readers to consider how findings from the study apply to the strands and discipline areas with which they are most familiar. We also ask readers to reconsider the meaning of the term 'literacy', especially as it relates to what happens in the teaching and learning of subjects across the curriculum, including subject English.

## The study in outline

For the general purposes of the study, literacy was understood to include reading, writing, listening, speaking, viewing and critical thinking, as defined in the Australian Language and Literacy Policy (1991), and used more recently by Lokan *et al.* (1995). The definition indicates how literacy and curriculum are interactive and fully interdependent:

The ability to read and use written information and to write appropriately, in a range of contexts; to develop knowledge and understanding; to achieve personal

i The study was funded by the Commonwealth Department of Employment, Education, Training and Youth Affairs through the Children's Literacy National Projects Program. The full title of the Final Report of the study is *The Literacy-Curriculum Interface: The Literacy Demands of the Curriculum in Post-compulsory Schooling*. An Executive Summary with the same title has also been produced. For further information on publications associated with the project including the chapters of the invited experts, please contact Ms Stephanie Gunn, National Literacy Research Projects, Centre for Literacy Education Research, Griffith University, Nathan, Qld 4111. Phone: 07 3875 5705, Fax: 07 3875 5685, Email: S.Gunn@edn.gu.edu.au

growth; and, to function effectively in our society. Literacy also includes the recognition of numbers and basic mathematical signs and symbols within text plus the integration of speaking listening and critical thinking with reading and writing. (Lokan *et al.*, 1995, p. 32)

This is one of several literacy definitions that point to the dynamic nature of literacy understood to include, among other elements, semiotic, visual and textual practices. Such definitions indicate the role of cultural knowledge in meaning making, and the cultural and contextual dependency of literacy.

From the outset we also decided to adopt a multitheoretical and multidisciplinary approach. We chose a multitheoretical approach in the understanding that a range of different theoretical perspectives and methodologies could act as multiple lenses through which to examine curricular literacy demands in ways not possible through the application of a single perspective. Our approach was also cross-disciplinary. That is, we explored all curriculum areas with subjects taken from the three main strands of schooling, mentioned earlier. In so framing the study, we included subjects from traditional academic orientations as well as those related to general/vocational preparation. This inclusive approach to theories and curriculum was in keeping with our interest in exploring barriers to success for students, especially sociocultural, cognitive and linguistic barriers. Readers interested in the details of this approach are advised to see the Final Report and Executive Summary of the project, listed in the references.

The study involved three phases. Phase one consisted of comprehensive analyses of syllabus guidelines and policy documents for subjects in post-compulsory schooling in New South Wales and Queensland. This analysis was undertaken to allow consideration of the literacy demands and expectations of the official curriculum, that is, the curriculum designed at the **official** level for delivery by teachers in schools. While most focus was on the curriculum as experienced by students, that is, the **enacted** curriculum, the official curriculum was understood as the framework that directs the work of schools and teachers.

The second phase of the study involved a survey of the reported literacy practices of students in post-compulsory education. The survey asked students to respond to questions about their reading, writing, listening, speaking and viewing activities, for in-school and out-of-school leisure, study and work purposes. Information was also collected on various background variables for the students including languages spoken at home. Respondents to the survey were drawn from a representative sample of schools across State, Catholic and Independent school systems in New South Wales and Queensland. Approximately 1500 questionnaires were completed.<sup>ii</sup> Outcomes for phases one and two of the study are not reported in this paper.

Phase three comprised two parts: data collection and expert analyses. The major source of data was video recordings of the literacy/learning environment as experienced by a sample of focus students from four schools, two from Queensland and two from New South Wales, with representation of metropolitan and rural sites in each state. The students were selected to represent those studying the three strands of curriculum previously mentioned. In video recording, the focus student in each class was not the object of the video but, in effect, provided a lens for capturing the literacy demands of the enacted curriculum. We called this approach **studentcam** suggesting how the video camera was more than an eye on the classroom. Its purpose was to record the literacy demands placed on students, from the point of view of a focus student. Essentially, the studentcam approach provided a lens for viewing literacy demands in much the same way as viewers see the car race track as it appears to the driver when the camera is located in the driver's cabin. What was captured then was an authentic record of the student's engagement with the

ii This aspect of the study went beyond the post-compulsory years. At the request of several schools, year 9 and 10 students were included with the year 11 and 12 students.

curriculum including interactions with the teacher, fellow students and a range of materials, as these occurred during the course of lessons. Students were tracked and videotaped for three consecutive days for each of two different episodes of schooling. In addition to the video data, artefacts of various types related to the curriculum, instruction and student assessment were also gathered. Collectively, these data provided records of actual practices in the post-compulsory years.

The second component of phase three was the analyses of the data where the multitheoretical and multidisciplinary philosophy of the research was most important. Four-hour segments of video data were compiled from the raw video sources for further intensive analyses. These segments, it must be stressed, followed the everyday lives of students in post-compulsory classrooms, as distinct from selected significant or critical events. For example, the segments represented either one day in the life of a student, or consecutive days for a student in a selection of subjects, comparisons of subject expectations across sectors and states, comparisons across years 11 and 12, and so on. These video data, along with a range of artefacts such as syllabus documents, copies of student work and textbook pages, were then the focus of analysis by a group of fifteen researchers from Australia, the United States and the United Kingdom. The researchers operated from a variety of theoretical perspectives with expertise either in literacy education, or in education in a specific discipline area with a focus on literacy issues. The researchers were invited to participate in the project by providing an expert lens on a segment of video-taped data (approximately 4 hours) and the written artefacts associated with the video. (Appendix 1 on page 29 provides a listing of the researchers who participated in the analyses.)

Attention now turns to consider a selection of key findings that emerged in the analyses. These include:

- the concept of curriculum literacies
- the differences between official accounts of literacy demands and actual demands
- the connections between literacy and authority in classroom practices and
- the use of a subject-specific metalanguage.

In discussing each of these findings, extracts are drawn from the researchers' analyses for illustrative purposes, where appropriate. Readers are advised to see the monograph (Cumming and Wyatt-Smith, in press), titled *Literacy curriculum connections: Implications for theory and practice*, for the full text of each writer.<sup>iii</sup>

## The concept of curriculum literacies

The study showed clearly that literacy demands are dynamic, varying significantly both within lessons and across subjects. In taking up this point, Kress stated that ‘“Literacy” is not one thing, evenly spread across curricular areas. It varies with the kinds of disciplinary practices and forms of knowledge which are at issue in a school-subject’. In short, literacies take on different forms, in different subjects and classrooms. The rejection of the view of **literacy** (in the singular) in favour of **curriculum literacies** (understood as plural and diverse) was strong in the analyses. The point is that what students learned in, say, an English class, was not literacy in some abstract sense, but a situated view of literate practices that differed in kind, as well as form, from those adopted in Biology, Mathematics or Agricultural Studies classes. Essentially, the process of interacting between speech, writing and reading—the ‘mix’ of communicative practices—can and does vary from subject to subject, and also one lesson to the next. This observation led Kress to conclude that the subjects English, Drama, Art and Film/TV are ‘quite different in their use of

<sup>iii</sup> For monograph publication details, readers are advised to contact Stephanie Gunn at the address provided in footnote i (see page 17).

literacy ... and are also distinct in their engagement with their part of the world, and in their representation and communication of that'.

A major challenge facing students is to coordinate different literacy modes simultaneously as well as to 'switch' among linguistic skills, knowledges and discourses, judging those that are appropriate in each case. The data showed that student control of such complex coordination and switching manoeuvres was essential if they were to play an active role in the pedagogic routines of the classroom. In all cases, however, the issue of how 'to do' such switching remained implicit. It was an activity that students had to learn 'on the job', and that successful students managed, without explicit instruction. The challenge facing teachers then is to use what Reid described as 'framing information' to bring literacy demands into proper focus for all students.

The point is that the intended curriculum or what the teacher wants students to know and do can seem perfectly obvious from the teacher's point of view but the nature and point of classroom activities may not have been framed for students in a way that is sufficiently clear to them and that motivates them. In taking up this concern, Lemke pointed to the implicit demands of the senior chemistry curriculum, saying that students are expected to have mastery of advanced literacy skills for reading not normally taught in the preparatory curriculum. It seems that students are expected to achieve and demonstrate such mastery 'on the job', as though it were taken for granted. This observation informed Lemke's conclusion that:

multi-literacies and hybrid genres should be taught. What I mean by this is that both teachers and students should be made consciously aware of their existence: what they are, what they are used for, what resources they deploy, how they can be integrated with one another, how they are typically formed, what their values and limitations are. This is not so much a matter of adding a whole new strand to the curriculum as it is of foregrounding and thematising what is already in the curriculum, getting teachers and students to pay attention to what was formerly taken for granted. Doing so would help teachers plan for redundancy and for pacing, it would help students see more clearly what is expected of them for success, it would enable all of us to take a reflexive look at these genres and multi-literacies and evaluate them critically and thoughtfully. It would also add real substance to otherwise rather nebulous prescriptions for more emphasis on 'meta-cognition'. Most of what meta-cognitive practices must attend to, or at least the parts that are accessible to examination and revision, are precisely the ways we make meaning with real genres deploying the semiotic resources of language, image, quantity, relationship, gesture, and action.

The concept of curriculum literacies becomes even more significant when considered in relation to the observed rate of literacy demands. In discussing the issue of rate, Cambourne<sup>iv</sup> described how, in a Legal Studies class, the student:

listens to her teacher's and her peers' oral language ... uses oral language to respond to comments and questions from her teachers ... uses oral language to require and convey information pertinent to the lesson ... reads the written language on the worksheet and from the text book ... writes responses in the appropriate spaces on the worksheet ... skim reads the textbook ... views the pictures and diagrams associated with the material she reads ... [and] appears to be composing silently just prior to engaging in writing.

iv Unless otherwise indicated, authors referred to and citations quoted in this paper are drawn from the monograph titled *Literacy-curriculum connections: Implications for theory and practice*.

In reflecting on the interplay of literacy demands made on the student, Cambourne concluded that 'if literacy related behaviours in ... other subjects occur at even one tenth the rate they occur in [the studied] segment, the sheer number of literacy related behaviours in which [the student] engages during the course of an academic year begin to take on astronomical proportions'.

The rate of literacy demands was also a focus in Lemke's analyses of data from Physics, Chemistry and Mathematics B classes. According to Lemke:

the maximal literacy demands of the curriculum are experienced by students in the classroom when a rapidly paced lesson relies on the close integration of a maximum number of individually sophisticated general-academic and discipline specific literacies.

According to Lemke, the focus student in these classes was expected to interpret several systems of signs; deal with several material channels that carry symbolically coded information to and from him; and combine what Lemke described as various kinds of 'culturally normative meaning-making practices' at a rapid rate. As an illustrative instance of how such demands combined for the student, Lemke wrote:

Just for starters, one such student had to interpret a stream of rapid verbal English from his teacher; the writing and layout information on an overhead transparency; writing, layout, diagrams, chemical symbols and mathematical formulas in the open textbook in front to him; the display on his handheld calculator; more writing, layout, diagrams, symbolic notations, and mathematics in his personal notebook; observations of gestures and blackboard diagrams and writing by the teacher; observations of the actions and speech of other students, including their manipulation of demonstration apparatus, and the running by-play commentary of his next-seat neighbor. In fact he had quite often to integrate and coordinate most of these either simultaneously or within a span of a few minutes. There is no way he could have kept up with the content development and conceptual flow of these lessons without integrating at least a few of these different literacy modes almost constantly.

What emerges in this extract is a clear picture of the need for students to manage a dynamic mix of speech, writing, reading and observations of non-verbal messages. In the event that such literacy demands appear easy, Lemke warned readers to remember that for the student:

many of the words are new or unfamiliar, the meanings being made are about strange matters of which he has no personal experience, the diagrams and graphs and formulas may bear only an outline resemblance to any he has seen before, the problems are difficult for his current level of mastery, the subject matter is abstract, and the problems of mutual coordination and calibration of all of these channels and literacies and activities very substantial indeed.

We do not want readers to construe such claims concerning the high rate of literacy demands as a criticism of teaching practice. As Lemke noted, 'I know the pressure teachers are under to cover an overstuffed syllabus before an unforgiving examination; leeway in pacing may be minimal. It is the curriculum that is often at fault'. In this final sentence, there is a clear indication of the downwards pressure of the official curriculum on how teaching and learning occur on a day-to-day basis.

The importance of making explicit literacy demands and learning expectations applies to all students, and especially to those who tend to form what Davies described as 'part of the backdrop to the talk and action in the classroom, rather than part of the action'. More specifically, Davies

made the point that the female student who produces herself as a 'good girl' in the classroom—'compliant, unresisting, obedient and attractive'—may be particularly at risk of 'losing out' in an enacted curriculum when the demands tend to remain largely implicit.

## Official/actual literacy demands

The difference between the official accounts of literacy demands, as available in relevant syllabus and policy documents, and the actual demands of the enacted curriculum, was a strong finding. Of interest was how, broadly speaking, the official accounts tended to focus sharply on assessment requirements and the acquisition of knowledge, skills and processes necessary for satisfying such requirements. Missing from such accounts, however, was recognition of how, in classroom practices, actual literacy demands were essentially dynamic, multimodal and hybrid in nature. Street commented on this difference as he saw it operating in senior English. According to Street, the overt demands of English curriculum are concerned with formal writing and speaking for assessment and the acquisition of different specified genres that are complete, wholistic forms based on known conventions (e.g. the short story; an analytical exposition). The actual demands, however, spring from the complex ways in which writing, reading and oral language interweave to construct distinctive, more hybrid genres. In elaborating on the hybridity of the classroom's actual literacy demands, Street described the students' actions as follows:

He has an exercise book open and holds his pen over a blank page; his companions also have textbooks open (probably the text of the [novel] on which they are working in this lesson) and refer backwards and forwards between this, their conversation and the occasional writing in the exercise books. There is a lot of physical handling of the various material forms—the exercise books, the text books—and reading from them or writing in them. At one point [the student] takes out a folded sheet from the exercise book lays it out, writes on it, then folds it and puts it back, returning to their reading and writing. This may be timetable entry and he's switching between different literacy tasks, further adding to the complexity of the literacy demands of this particular classroom. Similarly, a girl near him moves between speech, reading text and writing; she says that they 'have to read' the text and as they talk about it, he asks 'Did we make it up?' implying a need to be 'true' to a source in which they write themselves.

Several writers drew attention to how successful negotiation of the final years of secondary curriculum requires students to coordinate multiple **literacies** simultaneously and at an advanced level, as discussed earlier. Referring to a senior Chemistry class, Elkins commented on how the teacher's written equations on the blackboard represent a text that is 'not complete or fully explicit, and the students need to be able to follow the teacher's talk to understand the material'. Referring to a senior English class, Street identified that: 'the genre in which [the student] is engaged appears to be a complex mix of spoken and written notetaking and discursive writing, text reading, talk and writing'.

The stringency of demands made on students for mastery of multiple literacies at an advanced level was also evident in Wilson's analysis of the literacy demands made on students in Biological Science. In capturing the multiple literacies of the class, Wilson noted how the students were required:

to read a lengthy experimental procedure, conduct an experiment based on that procedure, use graphical and mathematical skills to record, calculate and present data, and write a laboratory report in an appropriate scientific format.

The dynamic mix of ways of reading, writing and doing, evident in this extract, was a strong focus in Lemke's analyses of data drawn from Physics, Chemistry and Mathematics curricula. According to Lemke:

not only must students [in these subjects] learn to coordinate and articulate multiple literacies simultaneously. In fact this multiliteracy is itself the primary tool they need for learning: how well they master it may well be decisive for their academic success.

At issue is how actual literacy demands turn on the number of different channels and specialised genres that the student must manage, sometimes simultaneously. Additionally, the student faces the demands of integrating different types of meaning systems (i.e. verbal, chemical-symbolic and mathematical) across genres that depend as much on visual layout as on linguistic syntax or vocabulary meanings for their sense. This insight makes clear how the student's achievement in the scientific curriculum turns on the ability to coordinate among the various literacies. And for effective learning to occur, the student must be able to make sense, to use Lemke's words, 'multiply, simultaneously, [and] inter-operably', by using 'an integrated and genuinely multimedia<sup>v</sup> literacy as well as a multisemiotic one and a multigenre one'.

While readers may not be surprised to learn that the hybridity of curriculum literacy demands is not captured in policy documents, it may come as a surprise that the data provided little evidence of explicit teaching of writing, including teachers' efforts at modelling writing for students. The expectation seems to be once again that knowledge of writing processes, skills, and strategies, including those for drafting, revision and editing would be learnt 'on the job', without explicit teaching. Referring to senior English classes, Gerot claimed that 'there is apparently an expectation that the considerable leap between rehearsal comprised of teacher talk about writing to full blown performance of writing on the part of students will somehow look after itself'. Further, the data brought to light what Street referred to as 'the process of engaging in a mix of oral and written activities ... and it appears uncertain how pupils are meant to learn to do this or how it relates to the product that will be cross-marked'. According to Street, this uncertainty provides an insight into the reasons for 'possible discrepancies between the teacher's view of writing and the actual practices pupils are acquiring'.

## Literacy and authority

Another recurring finding across the analyses was the relationship between the literacy demands made on students and what Cambourne referred to as 'the power and ubiquity of the teacher'. In discussing data drawn from Legal Studies and Business Studies classes, Cambourne elaborated on this aspect of the teaching-learning relationship as follows:

The events in [the studied] classrooms involved one group of adults, (students), behaving in ways that had been largely determined by one adult, (the teacher). Between them, students and teachers had created a culture in which in-built rules and ways of behaving and responding were adhered to by all who entered the setting.

But it was the teacher whose influence was most pervasive. She was involved in almost all of the significant parts of the classroom setting. She decided who would talk, who would read, who would respond, what would be read, what would be written about in these settings. She signalled the

<sup>v</sup> As used here, the term multimedia is not used in the technological sense, but refers instead to the need for students to manage literacy demands that range across modes and media.



beginnings and end of most of the episodes that occurred. She managed the transitions between episodes. She defined the content and form of student action. In summary it could be said that the teacher in these classrooms influenced the purposes, practices, and processes that occurred in these settings to a significantly higher degree than any other adult who chose to enter them.

These extracts spotlight the authority of the teacher over the learning agenda, with the learners being allocated a strikingly subordinate position from which challenges to the agenda were not expected. This occurred even though, as Cambourne noted, the pedagogy did not incorporate mini-lectures, narrative expositions or 'tellings-about'—as a sample of more obvious ways of controlling classroom talk. While the extent of teacher-control is clear in this extract, Cambourne leaves the reader in no doubt about the uncontested and seemingly uncontested authority of the teacher when he stated that:

The power of the teacher was reflected by the fact that except for some minor challenges to these purposes, practices and procedures, they were fully complied with. It is difficult to imagine another setting in our culture in which groups of 18–19-year-old adults would be prepared to let another adult dictate so much of what they do. It is as if the teacher had been able to create a setting which gave the message:

*'You are now in a Senior Secondary classroom. The things you do here and the ways you behave are not to be confused with things and behaviours at other times or in other places'.*

Other writers also addressed the literacy–authority connection and its influence on how the curriculum enacted. Christie made clear the extent of teacher control over classroom talk in a year 11 English class showing the strength of teacher's views, as communicated to students, and the apparent expectation that students would adopt the same views unquestioningly. The following extract highlights how the concern in the lesson seemed to be less with writing as a resource over which learners themselves can and should have some command, than with writing and speaking as an opportunity to demonstrate that certain authorised 'moral' attitudes have been adopted:

The essay question reads: 'How do role models on television influence children's socialisation?' While the teacher says at one point that 'the essay is very open to how you wish to interpret the question', it becomes clear as the talk proceeds, that he holds fairly forcible views himself about the negative impact of films and TV programs, and he appears to assume that the students will agree with him, though he occasionally asks if they agree or disagree. In a lesson apparently committed to development of capacity to express point of view, there is no great incentive for students to express a contrary point of view to that expressed by the teacher. A strong moral imperative appears to apply for the students to adopt the general views espoused by the teacher.

Christie went on to consider the significance of the observation concerning the apparently strong moral imperative mentioned in this extract, writing that:

In one sense, this may not be seen as news, as a great deal of English teaching has been perceived as about ethics and morality for some time. But in another sense it points to a worrying ambiguity about English teaching that should be cause for concern. The ambiguity lies in the fact that while English as a school discipline is often publicly talked up for its commitment to development of

capacity in students to express independent opinion, it is in practice often quite authoritarian about the capacity to express other points of view.

Christie's point regarding student coercion to accept a consensus position on moral issues is of vital concern, especially when read in conjunction with her statements that 'no other discipline that I am aware of makes quite the claims that does English for the development of independence and individuality'; and that 'schools look for, and actually reward, attitudes that are "mainstream", not controversial ... while they endorse ways of using language in English which frequently remain poorly articulated and taught'. The latter claim concerning the lack of explicit articulation and teaching of language in English classrooms lends support to Street's view that literacy demands of the classroom may be more related to the teacher's efforts at maintaining authority and classroom discipline than to elaborating the complex linguistic skills involved in deploying a range of literacy repertoires.

Interestingly, tight teacher-control of classroom talk was judged variously by the experts, depending on the perceived impact of the talk on student engagement with set tasks. The point is that a high level of control, of itself, was not reported as necessarily constraining student learning; on the contrary, it was shown on occasion to enhance it. The critical determinant of the pedagogical effects of teacher talk, including enhancement or disengagement from learning, seems to be student interaction with the talk, including opportunities for spoken and written interaction. In taking up this point, Castanheira *et al.* examined the role of lecture-style delivery in a Hospitality class, and the literate practices that were inscribed in and needed to interpret the lecture. While these writers reported the dominance of teacher talk and how the overall activity was governed by the teacher, their finding was that 'the lecture was jointly constructed'. In elaborating on this observation, Castanheira *et al.* reported that the student followed the flow of activity and content of the talk. In effect:

by latching on [to the talk], the student made visible a range of literate actions and provided evidence that he was following the lecture, interpreting the content correctly, and engaging in the lecture in a dynamic way. It also showed that the teacher and students were jointly constructing the lecture through coordinated actions as well as verbal insertions into the lecture text. The fact that the teacher took up (i.e., latched on to) student comment ... showed that such student actions were discursively appropriate and academically relevant.

In regard to classroom talk, a critical finding emerging from the analyses as a whole was the variation across the ideological stances of teachers, as evidenced in their classroom practices, as well as across their presuppositions about the nature of subject knowledge. An associated finding was how the powerful mix of ideologies and subject knowledge presuppositions influenced literacy demands to the point where the demands worked to construct the identity as teacher and as learner. By way of example, Castanheira *et al.* showed how, in Mathematics classes the construction of identity and of epistemological understandings were interrelated, with positive effects. In these classes, a year 11 student, Simon, had opportunities:

to work collaboratively with someone who had more knowledge to construct jointly an understanding, not merely an answer. He also had opportunities to see that he was capable, and that he needed to have 'confidence' in his ability to do this work. He learned that mathematical knowledge entailed a range of types of representations: graphs, numerical data represented as mathematic sentences ... and oral data. Finally, through his interactions with the teacher, he had the opportunity to understand that mathematical knowledge was social knowledge, knowledge of a group, and not merely personal knowledge.

Broadly speaking, the study showed how literacy demands always include power relations and are not simply neutral, technical or efficiency driven. And, as Street wrote, 'the epistemological presuppositions that underpin the subject content of lessons are not divorced from the linguistic forms in which the lessons are "delivered"'.

## The use of a subject-specific metalanguage

The fourth finding concerns the notable differences in the nature and extent of teacher use of discipline-specific terminology. More specifically, the balance between everyday, commonsense language and subject-specific terminology was shown to vary widely, with some subject areas, including Agricultural Studies, Marine Studies, Physics, Chemistry, Mathematics and Biology, relying sometimes extensively on the use of such terminology, while other subject areas made little, if any, use of it.

In commenting on this variation, Street wrote that:

In Economics, for instance, it seems to be assumed that students know the everyday meanings of words such as 'competition' and 'cooperation' and that the lesson simply elaborates on these, whereas in the Information Processing and Technology context the teacher assumes everything has to be explained and justified. Writing instructions on the computer is, of course, described as a 'language' and at times it is as if the students are engaged in second language learning, including issues of layout and procedure as well as of lexicon and syntax.

Teachers' reliance on and consistent use of discipline-specific vocabulary in mathematics subjects was shown to be effective. In discussing the literacy demands of the year 12 Maths in Society class, Elkins reported how the teacher provided 'a useful blackboard summary of the meaning of key words (terms, explain, like terms, simplify, factorize)'. Castanheira *et al.* similarly provided a positive finding concerning teaching efforts in mathematics classrooms to induct students into the use of a discipline-specific metalanguage. They wrote that 'in Mathematics, the talk between the teacher and [student] provided a key source of technical language and knowledge (e.g., differentiation, graph, consolidation)'. Referring specifically to Mathematics C, Cumming similarly described how the teacher's 'general language always [related] to approaches, strategies and metacognitive aspects', while her remaining language was very specific in its use of appropriate mathematical terms. While Cumming noted that 'hearing the words in mathematical terms is the first major aural demand on the students', she also suggested that for students with language backgrounds other than English this strategic mix of language use may be 'the better approach': 'the mathematical terms and concepts will have specific meanings and usage and direct reliance on highly technical language may *lower* the language demands' (emphasis in original).

Notably, efforts at inducting students into learning some discipline-specific terms were consistently missing from the data on English classes in years 11 and 12. Cumming drew attention to this omission and stated that 'the English teacher is ... different from the Mathematics teacher in her lack of use of discipline-specific terminology'. Similarly, Gerot indicated how, in two different English subjects, both the teacher and students tended to 'fall back on the obvious, (like spelling) and the everyday (like 'formal', 'obscure' and 'flow') in the absence of an explicit and revealing way to analyse and discuss text'. She concluded that 'while the teachers were able to name the tasks the students were expected to be able to do, they were limited in their ability to articulate the means for doing the tasks. Nor did they demonstrate or model how to do the tasks'. This was the situation even though the tasks made what Gerot described as 'heavy and

sophisticated demands for/on literacy'. Her recommendation was that 'what we need is a more revealing and explicit language for talking about meanings and this requires a conceptualisation of language as wordings rather than words'.

The data also showed little evidence of systematic instruction in or supervision of extended writing in particular. This finding applied across the three strands of subjects studied, including English. Christie commented, for example, on how, the data set from English classes 'is remarkable for its absence of a technical language to do with the nature of writing, and this is particularly disturbing precisely because student performance is so fundamentally evaluated in ability to write appropriate text types or genres'. Referring to a year 11 English classroom in which students were being prepared to write an argumentative exposition on the effects of television viewing, she noted how:

some talk ... goes into constructing a summary of points for writing: this is instructional field information. There is also some teacher talk and advice about the construction of the genre. He refers to the need, for example, for 'topic sentences' in paragraphs, and to the associated need for 'linking sentences', alluding to earlier lessons in which he has given advice about these matters. But little is said about the overall rhetoric or generic structure, and there is no great use of a metalanguage of the regulative field that might help the students ... create appropriate written language.

In the absence of a well-developed and shared metalanguage, Christie indicated that the actual demands of the writing task were not addressed, with most of the following matters receiving no attention:

What might be the steps in the construction of an argumentative genre? How would they be recognised? How would one recognise the main thesis? What would be linguistic evidence of a well-organised argument in support of the thesis? What research might one reasonably be asked to do in finding data with which to develop the arguments?

## Conclusion

Overall, the study shows that it is no longer appropriate to talk about 'literacy across the curriculum', or even literacy and curriculum. Instead, there is a need to define curriculum literacies. We use 'curriculum' deliberately as a noun, instead of the adjectival 'curricular', in order to demonstrate that this conjunction represents the interface between a specific curriculum and its literacies, rather than literacies related to the curriculum in a generic sense, or a singular literacy that can be spread homogeneously across the curriculum.

This position makes possible a pedagogic sharpening of what is meant by the term literacy. It indicates a shift away from the profligate use of 'literacy' as synonymous with 'fluency' or a 'knowledgeable state' to the conceptualisation of literacies in terms of the integrating of reading, writing, listening, speaking, viewing and critical thinking practices in recognisably appropriate, subject-specific ways. As examples, we advocate the use of the term 'Science literacies' to describe the Science-literacy interface, and more specifically, perhaps, 'Physics literacies', 'English literacies' or 'Food Technology literacies'.

In recommending this move, we want to highlight the potential benefits of active teacher participation in future classroom-based research on how subject-literacies vary from subject to subject. Teachers and other researchers need to examine collaboratively those specialised multiliteracies and hybrid genres actually required in practice. Such a research partnership could

determine when and how the multiliteracies and genres should be taught explicitly (still in the context of content learning, of course), and take them into account in determining the learning demands that a curriculum imposes on students. Attention could also be given to considerations of: terminology and subject-specific vocabulary; symbolic codes and other representational forms; relationships between what is taken to be common or 'everyday' language and subject specific terminology; the language of the processes of the subject such as scientific processes; the match between the language of instruction and the language of assessment; the gaps between preparatory literacy education and the actual, current reading and writing demands of the specific subject; and the literacies of classroom interactions within which curricular learning is to occur. In the light of such considerations, teachers will be well placed to adjust their pedagogy, including their pacing, to the total learning demands of the curriculum, including both specialised content and specialised multiliteracies.

Teachers need to play a key role in such ongoing work for they are best placed to engage in conversations that work to build a real understanding of the potentials of the curriculum literacies used in classroom practices. In discussing the need for this work, Kress reported what he referred to as a 'worry' that:

There seems to exist no sense of connection either for teachers or students between the subject areas. That is, from the materials provided I get no sense that the student knows or feels that there is—at however general or abstract a level this might happen—a commonality of purpose between the four subjects in relation to modes of communication and their potentials for engagement with the natural and social world. Nor do I get a sense that such a recognition exists for the teachers.

If such insulation between subjects in fact exists, then Kress warned that 'no real sense of a broad literacy curriculum can emerge, and no synergy can develop between the people in these different subject areas and the curricular contents of the subjects'. In discussing the implications of such insulation for students, Kress commented:

I do feel that the fact of the separation, discreteness, autonomy of the subject areas leads to a further sense of decontextualisation which renders the curriculum more meaningless for ... students. It is difficult for them to engage given the perceived or real absence of connection, integration, valuation, and meaningfulness.

If we are to take up the challenge of contextualising literacy demands in terms of the actual curriculum and classroom sites in which those demands are enacted, then students must also be key participants in the research. In short, we recommend that it is very valuable to look at curriculum literacies from the student's point of view. This type of student involvement will yield further vital insights into student understandings about curriculum relevance and motivations for engaging (or not engaging) with classroom activities. Such analysis will also permit us to better understand how individual students adopt a considerable range of strategies for coping with the literacy demands of the curriculum and that they vary these strategies from episode to episode, class to class. Essentially, then, the challenge can and should be met in a teacher–student–researcher partnership.

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## Appendix 1

### **Commissioned researchers**

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Dr Linda Gerot	<i>Queensland University of Technology</i>
Professor Judith Green (with others)	<i>University of California Santa Barbara</i>
Professor Jerome Harste (with others)	<i>Indiana University</i>
Professor Gunther Kress	<i>University of London</i>
Professor Jay Lemke	<i>City University of New York</i>
Professor Ian Reid	<i>Curtin University of Technology</i>
Professor Brian Street	<i>Kings College London</i>
Dr Jan Wilson	<i>Griffith University</i>
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