Review Article

Writing in a foreign language: teaching and learning

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This article is organised in five parts. The introduction defines the area covered and gives the rationale for a focus on FL writing research particularly in classroom contexts. The second section gives an overview of cognitive and social theoretical frameworks, noting that these have mainly been developed for L1 writing, and drawing attention to recent attempts to build models for FL writing. The third part covers research on process-based instruction, on teacher and peer feedback and on grammar correction. Part four deals with the growing use of computers in the teaching and learning of FL writing, looking particularly at work on word processing, software for teaching and research, at the relationships between network-based language teaching and process-oriented pedagogy and between writing and the development of oral communicative competence. The final part comments on research approaches, on FL writing and second language acquisition, and on post-process theory, concluding with a set of pedagogically-oriented research questions for the future.

Introduction

This article surveys the research and professional literature on teaching and learning to write in a foreign language published in English since the early nineties. (The last reviews in *Language Teaching* were Pery-Woodley (1990, 1991)). The period since has been one of growth in the study of second language writing, marked by the publication of research reviews (Connor, 1996; Flowerdew & Peacock, 2001; Grabe & Kaplan, 1996; Hyland, K., 2000; Hyland, 2002; Johns, 1997; Kroll, 1990; Ransdell & Barbier, 2002; Swales, 1990a) and enriched particularly by the introduction of the *Journal of Second Language Writing* in 1992. Monographs which focus particularly on FL writing have also appeared (Scott, V., 1996; Smith, 1994) recently joined by a work that focuses more broadly on FL literacy – (Kern, 2000). I am conscious that there is also work published in other languages which I have not, due to time and space constraints, been able to include.

Until August, 2003, Teresa O'Brien was a Senior Lecturer at the University of Manchester where, among other responsibilities, she taught a module on the teaching of L2 writing skills. She has trained foreign language teachers in North Africa, Eastern and Central Europe, South-east Asia and South America. She is particularly interested in classroom-based research and recent publications include Collaborative Research in Second Language Education *co-edited with Michael Beaumont (2000: Stoke-on-Trent: Trentham Books).*

Archibald & Jeffery (2000) list four main areas of research into L2 writing: the process, the product, the context and the teaching of writing. This article focuses on the teaching of writing in a particular type of context, while taking account of relevant research from the other areas. In the literature, the term "L2 writers" covers many different situations but, generalising grossly, it encompasses two types of learners: those writing in a second language (SL) within the language of the community in which they live and those writing in a language to which they do not have daily access and which is therefore foreign (FL). The literature of "second language" writing has been dominated, for partly practical reasons, by the first situation. This article aims to draw together work which focuses on the second; it does not attempt to cover work carried out in bilingual/immersion classrooms, nor even all the work relevant to FL classrooms (assessment, translation, writing for academic and other specific purposes, all of which warrant their own reviews, have been omitted). Research carried out in Hong Kong has been included since, as Sengupta (1998: 76) points out, English is not a second language there. Although it is the declared medium of instruction in most secondary schools, a mixed code of Cantonese and English has been the predominant style of presentation. There is a further complicating factor which I have chosen to ignore: FL students may be taught by teachers who share their L1 and culture or by teachers from the target language/culture who do not share their L1, the latter situation being more typical of EFL than other FL situations.

Reichelt (1999; 2001), writing from the US tertiary context, has highlighted the paucity of research on FL writing, identifying the lack of a unified sense of purpose for writing within the FL curriculum as a possible cause. She links this with two factors: the fact that FL students are usually not required to write in their TL outside the FL classroom, and uncertainty about the role of FL writing inside the classroom – is it for language practice, as a support for other skills learning, to communicate about the FL culture, or to learn about composing? There are signs within the literature that attitudes are changing. Wolff, writing from the German context, makes a strong case for writing as an important tool for learning a language "probably the most efficient L2 learning tool we have" (Wolff, 2000: 111),

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supporting his case with reference to a small-scale study of Spanish-speaking adults in a US pre-university English programme (Weissberg, 2000) which found that new morpho-syntactic forms and increased grammatical accuracy were more likely to appear in written rather than oral tasks. Carson, examining the relationship between SLA research and writing, comments that considering that an understanding of the development of writing abilities requires an understanding of SLA in general, it is noteworthy that studies of SLA competence and L2 writing performance have remained so distinct (Carson, 2001: 191).

Harklau (2002) argues for classroom based studies which focus on how students learn a second language through writing, pointing out that as early as 1985 Swain proposed that learners' efforts to produce *comprehensible output* in a second language in tasks like written composition might prompt them to use cognitive processes integral to their acquisition of the language. Composing might function as a psycholinguistic output condition, as Cumming (1990: 483) puts it, wherein learners analyse and consolidate second language knowledge that they have previously, but not yet fully, acquired. Cumming argues that a strong version of the *comprehensible output* hypothesis would suggest that self-monitoring during extended language production is requisite to attaining full proficiency in the second language while a weak version would suggest that reflective thinking during writing helps students gain some control over their language production processes. Both hypotheses remain speculative, however, lacking empirical data to substantiate their claims.

From within the university classroom, Kern & Schultz (1992) argue that teaching students how to write effectively in their foreign language is an important way of bridging the gap between the language courses of the early years of a degree and the literature courses of the later years which require students to write academic essays in their target language. Kern (2000: 172) rehearses arguments for FL writing at tertiary level most of which could also apply to secondary schools: it develops learners' ability to think explicitly about how to organise and express thoughts, feelings, and ideas in ways compatible with imagined readers' expectations; it provides a platform for learners to test hypotheses about the new language; it provides time for learners to process meaning, reducing the anxiety often felt in oral production; it provides opportunities for creativity, preparing learners to read works of literature with greater sensitivity.

Awareness of the need for more attention to be paid to FL writing is evident in several recent review articles. Reichelt (1999), reviewing over 200 works on FL writing research and pedagogy published in the US in the previous 30 years, argues that in order to be accurate and inclusive, a theory of second-language writing must take into account information about foreign language writing. This she defines, from the US perspective, as "non-English writing" but from a more international perspective, English, too, is a foreign language in many teaching situations and for that reason has been included in this review. Leki (2000) has pointed out that L2 literacy studies are far too English oriented. Roca De Larios, Murphy & Marin (2002) also make a point of highlighting the thirty or so FL writing process studies among the sixty L2 studies they review. While most of these involve people learning to write English, there are also studies of people writing in French, Russian, German, Arabic, Chinese, Spanish and Japanese.

An important critique of the state of the art of L2 writing research concerns the failure to address the context of writing. As Roca de Larios *et al*. (2002: 45) acknowledge, the study of L2 writing processes has been approached mainly from a cognitive perspective leading to a failure to consider the role played by contextual and social factors. They suggest that one of the central questions in composition research is whether the theoretical discourses underlying the cognitive and the social conceptualizations of writing are compatible.

The teaching/learning situation is, of course, an important part of the context of writing in FL. Teachers in these situations, particularly those working in secondary schools, may find an emphasis on writing processes very alien to their experience of teaching the language. Reichelt (1999) points out that of the 81 articles published in the *Journal of Second Language Writing* between 1992 and 1998 only three deal with writing in a second language other than English, despite the journal's call for manuscripts related to second and foreign language writing. In her survey she found that articles on FL writing appeared in publications addressing FL professionals, suggesting that many of those engaged in FL writing research and pedagogy see themselves as primarily *language* teachers rather than *writing* teachers. None of the 233 sources located appeared in composition journals other than the *JSLW*. She suggests that this offers evidence that FL writing is currently seen more as *foreign language* than *writing*. I will discuss below, however, how the growing use of the computer in FL teaching, while perhaps not yet changing the primary focus of FL teachers on linguistic accuracy, is affording opportunities for communicative writing which might stimulate a new focus on the role of writing.

Theoretical frameworks and model building

While the focus of this article is on the pedagogy of FL writing, it is essential to establish the theoretical frameworks which can be drawn upon in elaborating such a pedagogy. It is a commonplace to note that

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SL and FL writing research has developed from L1 writing research and this is as true of the social models as of the psychological. It is also generally acknowledged that we lack as yet a comprehensive theory of writing (Cumming, 1998; Witte, 1992). Cumming & Riazi, (2000: 56) observe that there are not many models of second language writing and very few are framed in terms that aim to "account comprehensively for the complexities of educational circumstances". This overview will first cover the available cognitive and socio-cognitive models of writing in L1 and FL and will then outline social theoretical frameworks. It will become apparent that attempts to validate the various models draw on different research approaches and techniques. As early L2 writing research (Arndt, 1987; Raimes, 1985; Zamel, 1983) is associated with the psychological models, the review begins by summarising developments in this area.

Cognitive models of the writing process

Roca de Larios *et al*. (2002: 21), in a comprehensive critical examination of L2 writing process research, point out that the Flower & Hayes (1981) model of L1 writing processes is still the most widely used and cited. In response to criticisms, eg Nystrand (1982), separately, and in different ways, Flower and Hayes have revised this model to incorporate, in Flower's case, a social element (Flower, 1994), and in the case of Hayes, a socio/affective element and a new focus on working memory (Hayes, 1996).

Alamargot & Chanquoy (2001) give a historical, analytical and comparative account of the main models of verbal production beginning with Hayes & Flower (1980), moving through Bereiter & Scardamalia's (1987) developmental model involving the two strategies of knowledge-telling and knowledge-transforming, van Wijk's (1999) adaptation of the Levelt (1989) model of speaking, the Hayes (1996) revision and the Kellogg (1996) model integrating writing processes with a model of working memory. Alamargot and Chanquoy (2001: 20) emphasise the complementarity of these models, which all aim to describe the process of writing as a whole but conceive it as composed of several processes (*planning, translating or formulating into language, revising*) under the control of a monitor and subject to processing constraints associated with short-term or working memory. Differences between the models exist, based on divergent theoretical conceptions with regard to the nature and the functioning of operations which compose the processes. In particular, some processes are ignored and some are reduced in importance. For example, neither Flower and Hayes (1981) nor Bereiter and Scardamalia (1987) clarify the linguistic translation process, while the vanWijk model includes linguistic processes (grammatical, lexical, morphological, graphemic). I highlight this specific difference because it is relevant to the consideration of the use of these models in L2 writing research. L2 models tend to pay more attention to the translating/formulating sub-process which includes a more linguistic focus. Zimmerman (2000), noting the heavy influence of the Hayes and Flower model and its lack of attention to the translating/formulating sub-process, briefly reviews and rejects models in the German context. Zimmerman examines Borner, (1987), which closely follows Hayes and Flower, Krings, (1992, 1989), which lacks elaboration and clarity (for further comment see Smith, 1994: 62) before proposing an alternative model in which the central formulating (translating) component is substantially elaborated through the introduction of several functionally discrete sub-processes, notably *tentative formulation in L1/L2*.

Chenoweth & Hayes (2001) have proposed a model of L2 text production or fluency, based on an adaptation of Kaufer, Hayes & Flower (1986) and Hayes (1996). Their model includes the hypothesis that the effect of linguistic experience on written fluency is mediated primarily by two internal processes called the *translator* and the *reviser*. Fluency is defined as the rate of production of text and they hypothesise that burst length is a central contributor to fluency. If a given set of ideas can be translated into words in one burst, the total time required for writing will be less than if two or three bursts are required to produce the same word string. The process level of the model includes four internal processes: a *proposer* (prelinguistic ideas), a *translator* (converts prelinguistic ideas into strings of language with appropriate word order and grammar), a *reviser* (evaluates both proposed and written language) and a *transcriber* (turns the content of the articulatory buffer into written language). Details of the study may serve to exemplify the psycholinguistic research approach. It was small-scale (13 students of French and German) and involved think-aloud protocols of students composing one essay in English and one in the FL (for an overview of writing process research methodology, see Smagorinsky (1994)). Significant findings were: students wrote fewer words per minute in L2 than L1 (10.75 v 17.2) ie fluency was lower. The average writing burst was longer when writing in L1, and fifth semester students wrote in longer bursts than semester three students. Bursts which ended in revision were more frequent in L2 (L1 13%, L2 26%). The percentage of proposed new words that were included in the final text was greater when writing in L1 than in L2. Fifth semester students used more of what they orally proposed than did the third semester students.

Chenoweth and Hayes interpret the results as reflecting the working of two of the processes underlying written fluency: *translation*, turning thought into proposed language, and *revision*, selecting or modifying the proposed language. They believe that

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burst size is a parameter of the translation process fundamentally related to fluency; an increase in burst size reflects an increase in the capacity of the *translator* to handle complex language structures; changes in *revision* performance reflect changes in the *translation* process. As the *translator's* facility with complex grammatical forms and lexical retrieval increases, cognitive resources are freed up enabling it to apply more fully the writer's sense of the grammar while proposing a string of language. In contrast, for writers with limited linguistic experience, lexical retrieval is more effortful, and the *translator* is unable to fully apply the grammar; their sense of the grammar is more fully applied by the *reviser*, freed from the burden of creating the text. Chenoweth and Hayes believe that students revise less as they become more experienced with the language not because the revision process becomes more lax, but because the *translator* becomes more grammatically accurate while proposing a string of language and thus less frequently generates language that violates the writer's own sense of the grammar.

Cumming & Riazi (2000) reflect that although we now have considerable information about the ways in which people compose in a second language, we have far less information about how people actually learn to write in a second language or how teaching might influence this. They document the complexities of their unsuccessful attempt to develop an explanatory model in a bottom-up fashion with young adults on an intensive ESL programme at a Canadian university. Based on multivariate and factor analyses of students' prior literacy experiences, texts, self-reported strategies, and on interviews and observed teaching behaviours, this was intended to explain the relations between the students' backgrounds, processes of learning and using classroom instruction, and their achievement in ESL writing. Although unsuccessful as an explanation, the study has implications for future research and for conceptualisations of learning and teaching second-language writing. The analyses suggest there are particular, identifiable clusters of current practices, past experiences, or personal preferences that ESL students demonstrate in respect to second language writing. There appear to be complex configurations of background and process variables that interrelate students' previous educational experiences and present practices learning to write in a second language. It might be argued that ESL classes are usually more culturally heterogeneous than FL classes and that FL writing research might not require such a complex model. The homogeneity of FL classes, however, is probably more apparent than real and the vision of Cumming and Riazi (2000) is an important guide for future research.

Sasaki (2002), working within a foreign language context (English in Japan), dissatisfied with the unsatisfactory dichotomy of skilled v unskilled writers used frequently in writing research, and wishing also to include teaching and learning, reports an attempt to build an empirically-based model of learners' writing processes. Using both a cross-sectional and developmental design, she investigated an expert writer group (12), and a novice writer group (22) both before and after instruction. Six writing strategies were focused in the study: *global planning, local planning, thematic planning, rereading, rhetorical refining*, and *translating from L1 to L2*. The findings led to the construction of three "crude" models or representative patterns of FL writing behaviour, for expert FL writers, for novice FL writers before instruction, and novice FL writers post-instruction. The models showed the different amounts of time spent on global v local planning, on rhetorical refining and on translation from L1 to L2. Awareness of the differential needs of students at various stages of instruction would be of value in curriculum planning.

A feature of many of the more recent expositions of cognitive theoretical frameworks for writing is the acknowledgement that there is a need for complementary contextual frameworks (Roca De Larios & Murphy, 2001; Roca De Larios, Murphy & Marin, 2002: 46; Sasaki, 2002: 77). We saw above that, in different ways, both Flower and Hayes responded to the critique made by Nystrand (1982) and others that writing was not simply a cognitive act. Flower and colleagues, working in a reading-to-write study (Flower, Stein, Ackerman, Kantz, Mccormick & Peck, 1990) rethought the original model in a way that took account of both the social and the cognitive and characterised writing henceforth as the "construction of negotiated meaning" (Flower, 1994). Hayes (1996: 5) made the changes noted above and, in explaining the revisions alludes to the popular view in US L1 literacy studies that social/cultural studies are "in" and cognitive studies are "out". He rightly rejects the view, arguing for the use of *both* social and cognitive perspectives.

Social approaches to writing

Important early proponents of a contextual approach to writing were Bizzell (1982) and Nystrand (1982, 1989, 1986), who called upon the concepts of speech and discourse community to claim that whatever processes an individual writer uses in producing a text, the genre is also determined by the setting within which that text is produced. Therefore the study of writing must engage seriously with the contexts of writing. From this research perspective, writing is one among several related literacy activities. In L1 research this strand can be traced back to Heath's (1983) ethnographic study of literacy practices in three different communities in a US town, research that was proceeding at the same time as the seminal work of Scribner & Cole (1981) among

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the Vai and the work of Street (1984). Researchers (L1 and SL) into "writing as situated social practice" (see Baynham, 1995: 208–244) have used theoretical frameworks deriving from Halliday (1978) eg Christie (1998), from Bakhtin (1981) eg Ivanic (1998); Lillis (1999, 2001), from Vygotsky (1978, 1962) eg Aljaafreh & Lantolf (1994), Villamil & De Guerrero (1998), and from Freire (1985, 1994) and Freire & Macedo (1987), whose theories emphasise the liberation to be achieved by thinking critically about one's political circumstances and attempting to change them eg Belcher & Braine (1995), Clark & Ivanic (1997) and Benesch (2001). Most of this work, has so far been applied only to second language academic contexts, although Kern (2000) is making important links from the FL field, as we will see below.

Grabe & Kaplan (1996: 202–236) propose a descriptive model of communicative language processing, based on the more general model developed by Chapelle, Grabe & Berns (1993), which they adapt to integrate the cognitive, social and textual domains of a theory of writing. This model is perhaps the most accessible for those new to writing research as it is based on what should be a familiar sociolinguistic conceptualisation of language use (*context, situation, participants, setting, task, text, topic*). This is considered in conjunction with a psycholinguistic component – the verbal working memory (*internal goal setting, verbal processing, internal processing output*) – which is strongly related to the cognitive models described above. The description of the model is preceded by a useful taxonomy of academic writing skills, knowledge bases, and processes. The authors claim that the model addresses issues not commonly considered in other models. For example, it incorporates social context, cognitive processing and textual product; building upon a notion of communicative competence, it incorporates a stronger language component, allowing more options for capturing patterns of variation exhibited by different groups of writers. It is flexible enough to adapt to the much wider ranger of concerns discussed by applied linguists as compared to L1 composition researchers.

From the foreign language field, Kern (2000) attempts an important reorientation of language teaching towards *text* and, seeking to move beyond the teaching of communication, develops a new model to link the intercultural aims of language teaching, influenced by the rapidly changing global demographic and technological conditions of the 21st century, with literacy aims (Kern, 2000). He draws on the New London Group's vision of literacy education (Group, 1996)[i] to propose a literacy-based framework for FL study. The term *design of meaning* is used as a metaphor to re-orient the Hallidayan term *meaning resources*. *Design* emphasises the *construction* (not simple transfer) of meaning in communicative acts (p. 45); it also intentionally ambiguously refers to both product and process. Kern (p. 67) writes of *available designs* organised along a continuum, with linguistic resources such as writing systems, vocabulary, grammar and cohesion conventions at one end and schematic resources at the other. These *available designs* are all put to use in accordance with one's procedural knowledge (itself a kind of *available design* according to Kern) in order to produce other designs. Kern emphasises the possibly enriching effects of being able to draw on the designs of more than one language. He cites from Leki (1995) a French ESL student who excelled in her English academic writing by judiciously employing the three part, thesis-antithesis-synthesis organisational strategy she had learnt in secondary school in France. Kern is interested, too, in the effect of the larger sociocultural context upon FL writing and cites Bell's (1995) autobiographical portrait of her own experiences of becoming literate in Chinese. "The design model presents writing as a social and cultural act that involves cognitive and linguistic dimensions. Writing is thus most usefully defined not in terms of uniform, universal processes, but rather in terms of contextually appropriate practices" (Kern, 2000: 180) and as such can be related to genre studies.

Genre

Although genre studies do not aim to build models of the writing process and indeed are often seen to be product rather than process oriented (see Hyland, 2002), their place in writing research is important. The publication of Swales (1990) recognised the useful work which had been proceeding, mainly in relation to academic genres, throughout the eighties. Hyland (2002: 17) distinguishes three approaches to genre study:

1. work based on a Hallidayan Systemic Functional view of language such as that applied in the Australian school system for L1 and SL writers (Christie, 1998; Cope & Kalantzis, 1993; Martin, 2000), wherein genre is defined as a staged, goal-oriented social process which involves the interaction of participants using language in a conventional, step-wise structure;
2. work within an ESP perspective such as that of Bhatia (1993) relating to law and business, or Connor & Mauranen (1999) in an academic context, wherein genre comprises a class of communicative events linked by shared purposes recognised by members of a discourse community (Swales, 1990: 45–7). The purposes are the rationale of the genre, and help to shape the ways it is structured and the choices of content and style it makes available.

[i] The New London Group takes its name from a meeting held in 1994. It includes the following scholars: Courtney B. Cazden, Bill Cope, Norman Fairclough, James Paul Gee, Mary Kalantzis, Gunther Kress, Carmen Luke, Sarah Michaels, Martin Nakata and Joseph Lo Bianco.

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3. work within the 'New Rhetoric' perspective such as that of Berkenkotter & Huckin (1995) wherein genres are "systems of complex literate activity constructed through typified actions" (Bazerman, 1994) and are studied using ethnographic approaches.

Of these three, only the second appears frequently in the literature of L2 pedagogy and then mainly in the ESP context eg Flowerdew (1993); Weber (2001). There is undoubtedly scope for the use of both linguistic and pedagogical research approaches and findings to be used in FL contexts but apart from references to text mode or type in certain studies this is not yet the case.

The relationship between the research on writing models and pedagogy

Writing a concluding commentary for a special issue of *Learning and Instruction*, Wolff (2000: 107) comments that researchers are mainly interested in the mental processes taking place in L2 writing and that the role of instruction in that process seems to be perceived as marginal. He argues that, as it has been shown very clearly that L2 processing is different from L1 processing, a specific methodological approach should be developed for teaching L2 reading and writing skills. His suggestions are good but undeveloped – raise learners' consciousness of the highly complex strategies used by some L2 writers when formulating or revising, use pair or group thinking aloud, take more account of the learners' reading processes. We will see that there are examples of classroom-based research that attempt to implement these ideas. It is true, however, that research on L2 writing processes dominates the field and is sometimes written in ways which make it difficult for practitioners to access. Summarising such research is often misleading unless done in the kind of contextualised detail which prevents simplistic interpretation. The recent, comprehensive survey of Roca De Larios, Murphy & Marin (2002) reviews the following current issues in L2 writing process research:

- Do the writing processes of L2 writers differ from those of L1 writers?
- Do L2 writers transfer their knowledge and ability from L1 writing?
- What are the conditions under which L2 writers can use L1 cognitive strategies when producing in L2 despite the limitations imposed by their relative lack of linguistic knowledge?
- How do skilled L2 writers differ from novice L2 writers?
- What is the relationship between writing expertise and L2 writing proficiency?
- How does L2 writing develop?

Rather than summarise a summary, I have chosen to review pedagogical studies which address some of these issues. The intention has been to highlight studies which involve FL learners but it is difficult, and unwise, to do this without reference to SL studies on occasions.

Teaching writing in a foreign language

Works in English devoted exclusively to FL writing pedagogy are few. Here I draw on Scott, V. (1996), Reichelt (1999, 2001), and Kern (2000), all of which are written from the perspective of tertiary education. It is unfortunate, though understandable, that so little research is carried out in secondary school FL classrooms, this situation having changed little since the summary made by Krapels (1990: 48). Scott's purpose is to encourage FL teachers to foster an attitude to writing in learners which enables them to see writing not as grammar, not as "creative writing" but as the discovery of meaning. Inspired by work in L1 and SL writing research, she puts forward a strong case for meaning-based FL writing being essential at all levels of study.

Critically reviewing FL writing research on pedagogical issues, Reichelt (2001: 578) summarises the research topics represented in 32 studies of teaching writing in languages other than English in the US:

- the effects of various types of grammar treatment
- computer use
- task-type
- text comparison
- classroom reading and writing activities
- strategy use
- process instruction
- teacher feedback.

Reichelt comments that the research is of variable quality and her recommendations for future research include the need for (a) more familiarity with existing research and the need to contextualise current studies within it (b) adequate description of research procedures (c) inclusion of control groups, statistical tests of significance, reliable measurement (d) elimination of confounding variables (e) caution in interpretation and explanation (2001: 589). Comparison with the research topic list given in Raimes (1998), written from a mainly ESL perspective, reveals the contrast which at the moment seems to exist between these two related fields. Raimes reflects the move in SL writing research towards the study of the sociopolitical dimensions of writing within education and towards an emphasis on context, concerns which spring from the cross-curricular needs of SL students.

Kern (2000: 191ff) offers a teaching agenda based on the Available Designs model which

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incorporates 4 curricular components: *situated practice*, *overt instruction*, *critical framing* and *transformed practice*. For each of these components, he gives activity suggestions, making some reference to research, much of it from the ESL field.

Drawing on the agenda suggested by Scott and Kern, I have chosen to review firstly studies which focus on teaching writing processes and, secondly, the fast-developing field of computer-based writing as it is here that a move towards focus on both product and process can be most easily facilitated.

Process-based instruction

As Atkinson (2003a: 4) points out, there is no monolithic entity or set of practices called "process pedagogy" and it is important to try to capture some of the meanings the term may have for teachers, particularly as some of the debates in the literature assume a particular philosophy and a particular set of practices eg Cope & Kalantzis (1993). At one extreme, there is a position characterised by the work of Elbow (1981) in L1 composition teaching, and mentioned by Atkinson (2003a: 4) with reference to L2 teaching, as viewing the learner almost wholly individualistically. In this view, writing is a discovery-type activity, in which "self-expression" is highly valued, a view which Atkinson concedes is probably not representative of activity in L2 classrooms. At the other end, perhaps, is the view of teaching writing almost caricatured by Atkinson (2003b) as a set of skills (*generating, revising, peer reviewing etc*) to be learned. However, in between, I would contend, there are many examples of teachers implementing approaches which sensibly integrate a process orientation within a language curriculum eg Lueth (2001).

Susser (1994) confirms that there was an early association made by ESL professionals with an expressionist theory of writing, which was often seen as incompatible with language instruction that needed to focus on the product. Common criticisms, stemming from misunderstandings, were that process writing (a) ignores the product and (b) is relevant only to advanced "creative" writing (cf Barnes, 1983; Reid, 1984; Zamel, 1984, 1983b). Susser and Atkinson insist, rightly, that there is no contradiction between a process pedagogy and academic writing; that it may be associated with any theory of writing and that it is by its nature concerned with product. As Raimes (1991: 422) has pointed out, there are parallels between a process writing pedagogy and communicative, task-based, collaborative curriculum development.

Susser states that process writing pedagogies have two essential components: *awareness* (of how successful writers write) and *intervention* (in the sense of feedback during the process). It is important, however, that *intervention* does not become confused with error correction. Barnett's advocacy of a process-approach for French composition at tertiary level in the US begins with strong arguments against the error-correction techniques of product-based teaching (Barnett, 1989). There is obviously a need for teacher development where educational innovation is concerned; studies in the following section focus on the introduction of, and reactions to, a process-oriented approach.

Introducing a process-oriented approach to L2 writing instruction

The challenges associated with such an introduction into a transmission-based, product-focused teaching culture have been documented in the Hong Kong context by Pennington, Brock & Yue (1996); Pennington & Cheung (1995); Sengupta & Falvey (1998); Stewart & Cheung (1989) and Tsui (1996); in the Korean context by Chang (1995); Chang & Beaumont (2000); and in the Japanese context by Kamimura (2000). Positive changes as a result of innovation have been found in the US context by Kern & Schultz (1992) and Gallego De Blibeche (1993) and in Turkey by Akyel & Kamişli (1997). While these contexts may seem disparate, it is possible that there exist important similarities in the teachers' and students' initial perceptions of the primacy of linguistic accuracy.

Stewart and Cheung showed that process writing could be successfully implemented in Hong Kong secondary schools if introduced gradually, with certain modifications and adaptations to address the constraints of the writing process in relation to the educational environment. Their recommendations (1989: 42–4) are:

1. Build up a shared understanding between teachers and learners of the nature, the purposes, and the requirements of the process approach.
2. Integrate the four language skills to fit into the stages of the writing process without unduly upsetting the timetable and the scheme of work.
3. Design purpose-specific and reader-specific tasks so that learners can draft and redraft with the communicative context in mind.
4. Simplify writing tasks by removing limitations on the number of words and the required language forms, and ensure the familiarity of the subject matter.
5. Carry forward each stage in the writing process and focus on a different aspect of the writing process in each lesson, working on meaning before accuracy.
6. Allow sufficient time for learners to draft and redraft in order to discover and express their meaning appropriately and accurately, doing some activities in class and assigning others a homework.
7. Provide reader feedback from the teacher or peers, using peer reading and rewriting guidelines distributed to all students, at each stage of the writing

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process, to help students develop critical reading and revising skills.
8. Modify the teacher's role to be less of an evaluator or judge of language accuracy and more of a facilitator or consultant.
9. Grade the final draft according to how much progress the student has made in going from first ideas, to drafting, revising, and editing.

In analysing Hong Kong secondary school students' responses to the introduction of process writing, Pennington, Brock & Yue (1996) revealed a complex pattern of cause-effect relationships between students' attitudes and teachers' behaviours. Of 8 classes taking part in the project, the two who found the experience positive were taught by a teacher who integrated elements of process writing into her teaching routine and who had displayed the most positive attitudes to process-oriented writing at the beginning of the project. The class that evaluated the experience most negatively was taught by a teacher who placed the focus on traditional language exercises and grammatical accuracy with very little attempt at integration, and who had been ambivalent about the new pedagogical approach at the beginning of the project. Sengupta & Falvey (1998), also working in Hong Kong secondary schools, reveal a picture of teacher practices which might accord with practices in FL classrooms elsewhere. Questionnaire, interview and observational data showed that the teachers were preoccupied by language-related concerns at the sentence level, giving minimal attention to discourse-related or cognitive aspects of writing and that they were unable to separate teaching from testing. The concept of process writing was restricted to an emphasis on fluency rather than accuracy. Sengupta shows how contextual factors such as the inspection and examination process make it very difficult for teachers to envision other ways of teaching but looks forward to curricular change which may facilitate the development of teachers. Kamimura (2000) presents an argument, based on a small-scale study of intermediate level EFL students in Japan, that both explicit knowledge about L2 text organisation (product) and sophisticated composing skills (process) are required if learners are to become skilled FL writers. This requirement is reflected in professional articles advocating the use of a teaching/learning approach which integrates genre and process considerations (Badger & White, 2000).

Focusing on the relationship between explicit instruction on the writing process and gains in writing proficiency, Kern & Schultz (1992) report quantifiable improvement in 3rd and 4th semester argumentative essays in French as the result of a change of policy in the teaching of writing. The new teaching programme involved a "whole language" discourse-oriented course, highly integrated with the reading of texts and concentrating on the writing process as well as the final product. Four essays written over the year by 73 students (low, middle and high ability) were assessed holistically by trained raters. All three groups were seen to improve performance in a way that had not previously been the case for second year students. This whole-hearted policy change approach contrasts with the findings of an experimental study in which Gallego De Blibeche (1993) compared the post-treatment compositions of two groups of elementary level college students of Spanish. The first group engaged in prewriting discussion, free writing, pair work, drafting and peer review, while a control group received direct grammar instruction, including written grammar exercises, and wrote drafts of their compositions which were marked for grammar errors. The experimental group outperformed the control group in their improvement on composition length and quality of organisation but the groups made equal gains in content, language use, syntactic complexity and error reduction. Akyel & Kamişli (1997), in a small-scale study over 1.5 semesters in an English-medium university in Istanbul, found that after process-oriented instruction students increased the time devoted to prewriting, planning, pausing, and reorganisation, decreased the number of surface level revisions and significantly increased their composition grades; all the students reacted positively to the writing instruction. It is a truism that innovation requires careful preparation of both teachers and learners. Further studies which involve comparison of teaching approaches will be found in the sections which look at research on the various sub-processes.

Pre-writing/generating ideas/planning

While attention has been paid to these sub-processes in non-pedagogic research (Skibniewski, 1988; Wang & Wen, 2002; Whalen & Menard, 1995), only a small number of studies have focused on them in an instructional context. There are, of course, many types of pre-writing activity which could be researched (see for example, Hedge, 1988; White & Arndt, 1991). Reichelt (2001: 586) reports a study by Becker (1991) which found that adult learners of German who used associative brainstorming for five minutes before writing, produced compositions with more imagery and interesting ideas than the control group. The effect was particularly strong for the novices.

It is not clear, however, which language the learners used for the brainstorming, a question which Friedlander (1990) investigated with ESL learners and which has since been followed up by Lally (2000). Friedlander's study of 28 Chinese writers had shown that students produced better L2 essays on an L1-related topic when allowed to plan in L1

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and conversely, produced better L2 essays on an L2-related topic when allowed to plan in L2. Lally wished to test the effects when students of French were asked to compose on language-neutral topics, a more likely situation in classrooms and examinations. In a small-scale study of 12 4th semester undergraduates, Lally compared the effects of generating ideas in L1 (English) and L2 (French) over the course of the semester (10 compositions). She found very little difference between the two conditions in terms of vocabulary or expression but L1 pre-writing activities produced better scores for organisation and global impression, although the difference was not statistically significant. This confirmed Friedlander's (1990) finding that L1 pre-writing activities facilitate organisation and coherence (cf also Jones & Tetroe, 1987) and Lally suggests that this practice may be advantageous for beginning or intermediate FL students.

However, Akyel (1994) found that planning in L1 had a negative effect on the L2 texts of Turkish beginners in English who preferred to stay focused on the L2 to maximise its use. Researching a much younger group of L1 Spanish writers (11–12 years old) working collaboratively on a Catalan text in a bilingual teaching context, Guasch (1997) found that they used their L2 only when they had to ie when rehearsing the text and reading. Planning was done in their L1 and this was seen as facilitative. Only the Turkish study reports negative effects of using L1 in prewriting activities, reminding us of the importance of linguistic and pedagogical context, and of individual motivation when attempting to draw conclusions from research.

Recent ESL/FL writing process research (Woodall, 2002) suggests that switching between languages can have beneficial effects for some learners particularly for higher level operations like planning. Woodall recommends further studies on classroom based writing to help students identify when and why they use their L1.

Drafting/formulating

We have seen that little is known about the way that FL writers move between thought and language (L1 or L2) to produce a text. In process-oriented teaching, drafting is usually accomplished silently by individuals, often outside the classroom. However, research on classroom activities which focus on reviewing drafts in order to improve them (*intervention* in Susser's terms) provides data which expose parts of the formulating process as it overlaps with reviewing processes.

The classroom equivalent of the think-aloud research technique is *collaborative talk* focused on various parts of the writing process, particularly on feedback by either the teacher or peers. Peer feedback activities have become common in ESL contexts, particularly at tertiary level (Hedgcock & Lefkowitz, 1992: 257), and the same is true for FSL contexts (Gaulmyn, Bouchard & Rabatel, 2001). Such activities allow for the explicit negotiation of meaning (Flower, 1994) in a non-threatening atmosphere, for the possibility of engaging in a dialectic between content and rhetorical concerns (Bereiter & Scardamalia, 1987) and for linguistic knowledge not available to the writer to be supplied by a peer reader-listener.

Villamil and De Guerrero (1998: 494) claim that theoretically Vygotsky's (1978) work offers an ideal stance for the study of peer review with its emphasis on the social roots of higher psychological processes. While traditional interpretations of Vygotsky's concept of *zones of proximal development* (ZPD) assume the presence of a more expert partner and suggest that assistance is one-way, there is increasing interest among L2 researchers within sociocultural theory eg Ohta (1995) in mutual help in novice-novice interactions.

However, the value of peer-feedback in ESL contexts has been questioned (Santos, 1992; Silva, 1993). There is concern about cultural and social differences between members of response groups (Carson & Nelson, 1994) but perhaps more commonly there is the belief that students are not capable of detecting and correcting errors in the L2 (Nelson & Murphy, 1993). This concern has led to studies comparing teacher and peer feedback.

The relative value of teacher and peer feedback

The early assumption that one type of feedback might be better than another was soon replaced by acknowledgement that each type served different purposes and early quantitative approaches were replaced by more complex research designs including qualitative analysis.

Several studies examine students' preferences for peer or teacher feedback. Zhang (1995) found that when asked to make an 'either/or' choice between teacher feedback or peer/self-directed feedback, the majority of tertiary ESL students surveyed stated a preference for teacher feedback. This stimulated Jacobs, Curtis, Brain & Huang (1998) to examine student choice in universities in Hong Kong (upper intermediate and above) and Taiwan (lower–upper intermediate). Jacobs and colleagues felt that Zhang had misrepresented a process approach in presenting types of feedback as alternatives when, ideally, several should be employed.

The students in the Jacobs *et al.* study were L1 Chinese speakers accustomed to teacher-centred education. Over a semester the students wrote multiple drafts and received both peer and teacher feedback, oral and written. When asked whether they

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preferred to have student feedback as one type of feedback on their writing or to have no student feedback, 93% of the 121 participants preferred to have peer feedback included because peers provided more ideas and were able to spot problems they had missed. They also reported learning from *giving* feedback. Jacobs *et al*. concluded that the two types of feedback play complementary roles and this is supported in the Hong Kong upper-secondary context by the findings of Tsui & Ng (2000) who used both quantitative and qualitative approaches over a period of three months to investigate the roles of teacher and peer comments in the revision of two assigned tasks.

Students (n = 27) were introduced to a process-oriented approach to writing involving a 6-week cycle which included:

- teacher giving whole-class feedback on common problems in the first draft
- students providing written comments on a peer's first draft
- students discussing peer responses in groups
- second drafts read and commented on by the teacher
- final revision.

Data from the last two cycles in the year were analysed. These included audiotapes of peer review sessions, impressionistic and detailed analyses of incorporation of peer and teacher comments, a questionnaire, and semi-structured interviews with 6 students. The questionnaire showed that students favoured teacher comments significantly more than peer comments and liked reading peers' compositions significantly more than reading their written comments or getting their oral feedback. The students reported incorporating more teacher than peer comments into their revisions and this was corroborated by impressionistic analysis of texts. The interviews revealed that students who had incorporated both types of comment felt they had gained *a sense of audience* more from working with their peers than they did through teacher feedback. They felt they had found out *how*, not just *where*, they needed improving and had gained a sense of ownership in being able to assess whether or not to include a comment. From the teacher they had learnt more about macro-level reorganisation, supporting findings by Arndt (1993) and Cault (1994). Students incorporating more teacher than peer comments felt that the experience of the teacher was paramount but did not dismiss the value of peer comment, finding it useful in raising their own awareness. Those incorporating fewer comments did not trust their peers' ability to make judgements. The study shows that upper secondary level students are able to benefit from peer review procedures, suggesting that if more process oriented writing were to be done in schools, tertiary students would be better prepared for the writing required of them.

The impact of peer feedback

While student preferences are important, they do not necessarily reflect whether the procedure is effective. Hedgcock & Lefkowitz (1992), using an experimental design, compared the French products (2 essays) of 14 English-speaking student writers (intermediate) using an oral/aural procedure with those of a tightly-matched control group (16 students) who received only teacher's written feedback. The experimental group worked in French and read their drafts aloud to their peers. Both groups followed a two-step procedure whereby the first draft received comments on content and organisation and the second on grammatical accuracy. One important finding was that the peer oral-revision group performed on a level equal to that of the control group. The authors suggest that grammatical accuracy can be improved in ways other than by the wielding of the "red pen" (cf Truscott (1996)). They also invoke Schmidt's notion of *noticing* "those who notice most learn most, and it may be that those who notice most are those who pay attention most" (Schmidt, 1990: 144). In addition, between-essay comparison showed that while the teacher feedback group improved *grammatical performance*, the experimental group improved content, organisation and vocabulary.

Cause-effect research is useful in terms of accountability and justification for particular methods but really tells us very little about what is actually happening during feedback work. McGroarty & Zhu (1997) have attributed the apparent inconsistency of findings on peer revision in both L1 and L2 to the lack of multiple perspectives upon the technique. Working within a qualitative research design involving triangulation, with intermediate-level Spanish-speaking EFL students in a Puerto Rican private university, Villamil & De Guerrero (1998) investigated the impact of peer revisions on writers' final texts in two rhetorical modes, narration and persuasion. They addressed two questions: (1) How were suggested revisions incorporated in final versions? (2) How were trouble sources revised according to different language aspects (*content, organisation, vocabulary, grammar, and mechanics*)? Seven pairs of students were tape-recorded as they interacted on drafts for each of the modes. Writers read their texts aloud, readers focused first on content and organisation and then on language use and mechanics. Tape-recordings, drafts and final versions were analysed and trouble sources were categorised as *incorporated*, *not incorporated*, *further revised*, and *self-revised* as well as by language aspect; false repairs were also noted. The majority of revisions in both peer sessions (74%) were incorporated in the final versions, 8% were further revised and 18% were not incorporated. 39% of the revisions adopted were self-revisions.

A finding supported by other studies (Mendonca & Johnson, 1994; Nelson & Murphy, 1993) is

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the addition of self-revisions, demonstrating the writer's authorial control. Approximately a third of revisions in both modes were grammatical. The authors question whether the students focus more on grammar because at intermediate level they are still unstable in their command of language structure or because they need to 'clean' the text first before dealing with meaning or because they have a tendency learned from previous language instruction? I suggest that, from the perspective of a foreign language learner, attention to form in writing is inevitable and necessary both for its own sake and for clarification of meaning. The narrative mode resulted in longer first drafts, greater gains in length after revision, and a slightly higher number of revisions than the persuasive mode, strengthening the notion that persuasion is a more cognitively demanding genre. The authors note that organisation received the smallest amount of attention and that very few peer revision studies have looked at this aspect. The study did not aim to examine whether lasting development is achieved by the improved performance resulting from peer review; this is obviously a question that should be addressed in longitudinal research. The authors speculate, however, that the writers' reformulation of the peer suggestions and the self-revisions could be indicative of the effect that other-regulation (peer assistance) had on self-regulation (independent performance). They suggest that the value of joint activities carried out during peer-revision lies in their role as social precursors of individual processes that are necessary for independent writing production.

Procedures and training for peer feedback

A variety of procedures are employed in peer feedback sessions: pair or small group oral discussion, reading aloud, checklists (see Hyland, 2000 for critique), reflection on key-stroke logged writing sessions (Lindgren, 2002; Lindgren & Sullivan, 2003). While it is claimed that the use of peer feedback saves teachers' time, it is clear that careful training and guidance are required in order to ensure successful implementation as various practitioners have pointed out (Digiovanni & Nagaswami, 2001; Jacobs Curtis *et al.*, 1998; Keh, 1990: 296ff; Mangelsdorf, 1992; O'Bryan, 1995; Porto, 2001; Stanley, 1992). Training is not always successful, but several studies point to its effectiveness in changing attitudes. Sengupta (1998) describes a failed attempt to induct Hong Kong secondary students into peer evaluation in an examination-dominated context. Mcgroarty & Zhu (1997), in a mainly L1 context, report on the effects of training for peer revision in a quasi-experimental study combining quantitative and qualitative methods, giving useful details of training methods for teachers and students (n = 169) (see also Zhu, 1995). They found that, over a semester, training enabled the experimental group to exceed the control group in quantity of feedback, proportion of feedback related to global features and amount of specific feedback given. The experimental groups' attitudes toward peer revision, training and teacher feedback were also significantly more positive although there were no significant inter-group differences in attitudes toward writing instruction, or writing, nor in writing performance. Qualitative analysis showed that a few students in the experimental group failed to have meaningful exchanges about one another's writing and that, even without training, a few control group students engaged in genuine negotiation of meaning during revision sessions. This indicates, unsurprisingly, that the direct training of students may be only one of the factors affecting successful peer revision.

Ching (2002) claims that strategy and self-regulation instruction (*self-evaluation*, *organising and transforming*, *seeking information*, and seeking *social assistance*) equipped Malaysian ESP students with the knowledge of how to plan and revise their essays including the realisation that peer help was useful. After instruction, students responded more positively to negative feedback, recognising that they would not improve their writing unless they were able to diagnose their mistakes and more of them sought peer help.

Inevitably, good student feedback techniques depend on the teacher's own understanding and skill in the process. We look next at research into teacher feedback.

Teacher feedback

Research in this area has explored: the effectiveness of grammar correction; different points of focus – error (vocabulary, grammar), content, organisation; the use of coding schemes; student correction behaviours; teacher correction behaviours; negative v positive feedback; students' views on types of feedback; and the clarity of teacher feedback.

Grammar correction

As FL teachers tend to focus on linguistic accuracy, an appropriate starting point in this section is the debate between Truscott and Ferris: the case for and against grammar correction. The debate, straddling the FL and SL areas was initiated by Truscott (1996), who provides a meta-analysis of research on the effectiveness of grammar correction. Truscott argues, from an EFL perspective, that while grammatical accuracy is important, grammar correction of L2 writing should be abandoned because research has shown it to be ineffective and possibly harmful. Practical problems include the failure of teachers to identify errors, to explain them clearly or to be

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consistent and the strong wish of students to have their errors corrected (cf Enginarlar (1993)).

Truscott uses evidence from both SL and FL contexts (Kepner, 1991; Robb, Ross & Shortreed, 1986; Sheppard, 1992; VanPatten, 1986a, 1986b) to support his argument. Acknowledging that learner variables were not considered in this research, that there may be some students who do benefit from correction, and that it is possible that successful error correction might depend on coincidence with a natural learning sequence, Truscott is nevertheless convinced of the failure of grammar correction. While he states that SLA research suggests the immense simplicity of expecting improvement from grammar correction, he does not discuss the concept of *noticing*, which might be germane.

Truscott provoked a response from Ferris (1999) who, while agreeing that he had made some compelling points, argued that his conclusion was premature and too strong. Ferris cites evidence for *effective* error correction, which would be selective, prioritized, and clear. She takes Truscott to task for citing mainly from FL studies since "foreign language students are less motivated to revise and correct their work" as they are not required to do multiple draft work. She argues that because of key differences in subjects, research design, and instructional methods it is impossible to say anything other than "further research is necessary". However, using Truscott's insights, she also suggests lines of research which would lead to a more informed debate.

Kepner (1991), in a study which supports Truscott's argument, used an experimental design over a semester to identify types of written feedback/response which might be related to achievement and to low- or high-verbal ability in college intermediate FL Spanish writing. Two different types of written feedback to fortnightly assigned and graded journal writing were used: error correction and written message-related comments in Spanish. Grammatical accuracy and level of thinking were examined through journal entries. Students who received the message-related comments produced a significantly greater number of higher-level propositions in their post-treatment guided journal entries and did not produce significantly more errors than the students who received the error-corrections. She concludes that error corrections and rule-reminders seem to serve neither to improve students' level of written accuracy in L2 surface skills nor to enhance the ideational quality of the writing whereas message-related feedback in the TL has the potential to facilitate writing development.

Many FL teachers nevertheless correct errors and use coding schemes to do so. Kubota (2001) explores students' use of a coding scheme in the context of teaching Japanese as a FL, using observation and think aloud technique. 63 informants coming from a range of language backgrounds eg English, Chinese, Indonesian, Korean, and with a range of learning experiences, were used for the validation of a linguistically-based coding system. A smaller number of students, representing different learning experiences, participated in the think aloud observation and interview session. When the corrections made by all participants on receipt of coded feedback were analysed, a high success rate was found in terms of a decrease in all categories of error; in twelve of the fifteen categories this was statistically significant. The greatest improvements were made in missing words, particles and vocabulary. When the data from the think aloud sessions were analysed with respect to these three categories, numerous different correction strategies were identified. The data also threw light on reasons why certain strategies were unsuccesful. The value of the study lies in its multi-method research approach, the light it throws on what students actually do and the grounded explanation of unsuccessful error correction.

Using a case-study approach, Cohen & Cavalcanti (1990) set out to explore what *teachers* actually do and how students respond in three educational settings in Brazil: an EFL institute, a university department of English and a Portuguese L1 high school class. Only the first two are discussed here. Teachers were recorded thinking aloud as they provided written feedback and students (three in each setting, high, intermediate and low) were recorded giving their reactions to feedback. Influenced by the examination, the EFL institute teacher, was concerned with *mechanics*, *grammar*, *vocabulary* and *organisation* but not *content*. Her comments were biased towards problems rather than strengths although the verbal protocol revealed appreciative comments which were not used on the student script. Her marking system indicated the type of error but without correction. She was confident that her comments benefited the students although the researchers found that she had dealt with only half of the issues that needed comment. The students were aware that she paid little attention to content and would have liked more feedback of this kind.

The fit between teacher's reported feedback procedures and actual feedback was weakest in this study and best in the university EFL study where the teacher focused on the four categories mentioned above plus *content*, which she saw as developing logical reasoning. She felt that students benefit most from comments about organisation. She reported that she frequently indicated the existence of a problem, sometimes indicated the type of problem, and sometimes gave the correct form. She doubted the usefulness of her feedback in cases where the student was not interested in it. Researchers found that she varied her comments according to the writer and the particular composition. All comments except one pointed out deficiencies and the majority signalled a problem without specifying its nature.

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The students perceived her role almost equally as judge and as interested adult reader. The high and intermediate performers appreciated the feedback they received although in common with students in the first situation, they did not know how to handle all the repairs, this was particularly true of the low performer. Another common feature of the two situations was that high and intermediate performers tended to consult the teacher about their errors, the low performers did this far less, relying on previous compositions and the dictionary. Cohen and Cavalcanti note the possibility of a kind of teacher bias operating whereby comments are varied according to a perception of the student's needs eg giving more feedback on grammar and mechanics at lower levels rather than on content and organisation. They conclude that teachers need to provide more positive comments, be more aware of the weight they give to certain areas, and train students to benefit from feedback.

Student response to teacher feedback

If feedback is to be an effective tool, students need to be persuaded to act on it; effective text revision requires the engagement of the writer in applying feedback that raises awareness of the informational, rhetorical and linguistic expectations of the audience (Hedgcock & Lefkowitz, 1996; Hyland, 1990). Using both quantitative (survey and factor analysis) and qualitative techniques (interviews), Hedgcock & Lefkowitz (1996) explored differences between FL and ESL students' awareness of the functions and influences of teacher feedback on their writing, building on earlier survey work (Hedgcock & Lefkowitz, 1994). Following Leki (1991), they surveyed 192 Anglophone 2nd and 3rd year FL university students and 124 ESL students from many different language backgrounds on the helpfulness of their instructors' comments regarding the *content*, *organisation*, *style*, *lexical sophistication* and *grammatical and mechanical accuracy* of their written products.

Principal components analysis of the results reduced the total number of variables to two sets of factors, a 2-factor set for the FL sample and a 3-factor set for the ESL sample. Only one of the ESL Factor 1 variables overlapped with the FL Factor 1 variables, suggesting a very different revision schema for the two groups of students, the 2-factor FL model suggesting response patterns both distinctly idea-centred and distinctly form-focused. Revision for the FL respondents seemed to involve expressing thoughts more meaningfully as well as correcting the formal features of their texts. The 3 factor ESL model reflects a pattern of beliefs that values meaningful teacher intervention supplied according to a content then form revision sequence. A dimension common to both the FL and ESL findings is that writers expect and appreciate instructor feedback at various stages of revision.

In-depth interviews with four students provide more evidence of these differences. The objective was to characterise FL and ESL students' revision processes and the extent to which these reportedly coincided or disagreed with teachers' intervention practices. For FL writers, composing and "revision" in L2 are for grammar practice, not for trying out new ideas or for demonstrating creativity. In composing and revising L2 text, they expressed the belief that form should precede, and have priority over, expression of meaning, concepts or original ideas. They made constant use of negative terminology, eg *mistakes*, *fix*, *wrong*, and equated revision with correction of morphosyntactic and lexical matters, although aware that their teachers did have other priorities.

For both groups, interpreting teacher feedback seemed to involve playing a lexicogrammatical guessing game; lack of understanding was a consistent source of frustration. The FL students believed that a second draft was intended to raise their awareness of the linguistic weaknesses of their texts and teach them the *language*, a not unreasonable assumption in a situation where access to the target language is limited largely to the classroom. Even though the interviewees were overtly critical of the absence of attention to meaning, coherence, and rhetorical structure, they consistently reverted to grammar-based suggestions when asked how they would prefer to see their instructors respond to their writing, a reminder of the influence of the prevailing instructional context. The students' wish-list, however, was consistent with what L2 writing researchers consider to be sound educational practices. For example, they wanted more personalised and explicit written feedback from expert readers, grammatical and rhetorical feedback geared more specifically to writers' level of proficiency and degree of readiness, individualised writing conferences with instructors, and more peer interactions and response.

The important issue of comprehension of teacher feedback has been pursued in depth in an ESL context only and is reported here because it indicates a potentially fruitful future research direction. Hyland (1998) has enhanced our understanding of the misunderstandings which can occur when students are interpreting teacher feedback, highlighting the need for a better understanding of both the positive and negative aspects of teacher written feedback. Her two case studies illustrate the individual nature of student response and the intensely personal nature of writing. She comments (p. 279) that students' motivation and confidence in themselves as writers may be adversely affected by teacher feedback even when the feedback is positive. One student reported receiving positive reinforcement but not on the aspects of the text about which she felt most insecure;

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the other was irritated by unnecessary positive comments, wanting attention to be paid to the areas which needed development. Hyland recommends that future studies could make a closer examination of the relationship between the teachers' personal conception of the student and the amount and type of feedback offered (Other relevant work in the ESL field is that of Conrad & Goldstein (1999)).

Hyland, F. (2000) is concerned with the power relationship between teacher and student and the interesting mismatch she perceived between students' wish to take risks in their writing for developmental reasons and the teacher's wish to lead them towards a 'fixed up' product. Hyland & Hyland (2001) looks at the roles of praise and criticism in the work of two ESL teachers. Analysis of almost 500 feedback points revealed, contrary to L1 findings and common assumptions, that 44% were related to praise and 31% were critical. The most important finding, however, concerned the way in which teachers mitigated their feedback. Praise was presented baldly 75% of the time but was itself used to tone down the negative effect of comments. Students often did not understand teachers' mitigated comments and the study shows how indirectness in L2 can open the door to misinterpretation (p. 207). This may be a characteristic particularly of commenting in English; evidence related to other languages is at present lacking.

Finally, Muncie (2000: 51) raises the issue of feedback for longer term writing development, pointing out that mid-draft teacher feedback may have only a short-term effect especially if students respond to it non-critically. He suggests a procedure whereby mid-draft review is carried out by peers and final feedback from the teacher involves a list of writing behaviours that need to be improved over the long term, a list which is added to over time. This practical suggestion serves to emphasise the need for more longitudinal research on the interaction between teacher feedback and writing development. The potentially crucial relationship of teacher and student merits further in-depth research. We will see how this relationship changes when we look at research on computer-based writing classes.

Revising processes

Research reviewed here shares issues with that reported in the previous section. It covers revision strategy instruction and the revisions of underachieving students influenced by earlier learning experiences. A longitudinal study with a pedagogical stance is that of Sengupta (2000), who monitored the effects of revision strategy instruction on two classes of 15–16 year old L2 secondary school learners of English in Hong Kong, a context in which multiple drafting was rarely practised. The traditional practice of writing L2 composition was replaced with multiple drafts of six compositions, with the support of direct instruction in revision after the first drafts had been completed. The students' performance was compared with that of a similar class who received no instruction in revision. The focus for teaching revision was on reader-friendliness defined in terms of appropriateness, sufficiency and organisation of information. The onus for feedback moved gradually from the teacher, to a peer and finally to the students themselves. A post-test composition at the end of a year showed the two revising groups had made more progress than the traditionally taught group. Post experimental questionnaires and interviews showed the students appreciating much of what they had learned for two reasons: it had taught them about how teachers think and they felt it would help them to succeed in the Hong Kong examination system. There was evidence that the instruction had helped them to gain a new conception of what writing involved.

Much of the L1 and SL research on revision has focused on the differences between skilled and unskilled writers, finding that skilled writers are usually more aware of variables such as audience, topic and organisation and more likely to make revisions at a global level (Hall, 1990; Zamel, 1983) while less skilled writers tend to make changes affecting surface level features. Porte (1996), from a FL context, points out that very little research has addressed the reasons why the less skilled behave as they do. In two related studies (1996 and 1997) he first examined the revision strategies of 15 underachieving Spanish undergraduate students as they wrote four timed compositions (draft and final version) in English, in contrived writing sessions in class, and then conducted semi-structured interviews with 71 students of the same type. The first study confirmed SL findings in that 80% of the revisions were local, mostly word-level; text-level revisions did occur but mainly in final rather than draft versions and more frequently where there was a 3-day gap between draft and final version. When asked in follow-up interviews about the importance of specific aspects of EFL writing, 11 students saw content and vocabulary as of prime importance but thought that aspects of grammar and vocabulary would be the focus of an evaluating teacher, believing that marks would be deducted according to gravity of surface error. None of the students had previously received instruction in revision techniques; nine said they would not know how to go about revising for meaning, three said they avoided it because it was time-consuming in timed compositions. The second study focused particularly on the extent to which underachievers' observations about revision are affected by perceived teacher preferences in methodology, feedback and evaluation. The findings confirm those of the earlier study: revision was mainly regarded as a proofreading exercise, affecting the surface aspects of text, particularly vocabulary;

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many participants commented on perceived negative aspects of the writing context (insufficient time, unhelpful composition topics); revision was perceived as important because it contributed to the final grade on the text but was also seen as a high-risk activity; few participants recalled any explicit instruction in revision apart from teacher indications of errors. The students themselves seemed to consider revision of content important but saw it as of lesser importance to the teachers. While Porte acknowledges that from this research it is impossible to claim a cause-effect relationship between perceived teacher preferences and revision behaviour, he argues that there is enough observed influence available from the data to suggest that we should be wary in describing what constitutes poor EFL writing and prudent when designing all-purpose remedies for these ills. His work constitutes a plea to recognise the person- and context-specific nature of certain strategies, understanding that underachievers' perceptions may well be related to past learning experiences. He suggests that the focus of training might be on nurturing existing revision behaviours rather than imposing "expert" revision strategies.

Adopting an experimental approach, Porte (2001) focused on the proof reading behaviour of 60 students from the same underachieving population, basing his work on L1 studies that had shown that procedural facilitation of the visual perception of text may improve error recognition for less able students. The same spelling errors were embedded in four texts presented in 4 different typographical conditions with average line lengths of 75, 60, 45, and 35 characters. By externally limiting the perceptual span and therefore the number of distractors available to the student, he assumed that attention might be more easily fixed on the surface appearance of the text, thereby enhancing the initial error salience. Error recognition took place in front of a computer-generated frame which highlighted four-line sections of text for 30 seconds, simultaneously masking all surrounding lines. Students identified the highest number of errors when there were 45 characters and the lowest number when there were 75 characters to the line, suggesting that restricting the amount of distractors did indeed aid these students to identify errors. Porte's work represents an important shift towards understanding the perceptions and problems of less proficient learners in their own terms and also within a medium which is fast replacing pen and paper in the classroom.

Use of computers in the teaching and learning of FL writing

Kern & Warschauer (2000) outline the way in which shifts in perspectives on language learning and teaching (structural, cognitive, sociocognitive) have paralleled developments in technology from the mainframe, to the personal, to the networked computer. It is in the later two stages that the computer has been associated with writing pedagogy, indeed it can be argued that the computer has given a salience to writing which is difficult to achieve in a computer-less FL environment. Kern and Warschauer also draw attention, however, to the low use of computers in FL classrooms, citing a 1995 survey of 12 academic areas in the USA (Cotton, 1995) which found that 59% of foreign language programmes and 65% of ESL programmes at that time used no form of computer technology, placing language teaching at the bottom of the list of academic areas surveyed. While recognising that computer use is increasing extremely rapidly, it is probably true that non-use figures would be much higher in less technologically advanced parts of the world.

Nevertheless, it might be argued that it is in this area that the majority of innovations in FL writing pedagogy are taking place, although in some cases technology is merely facilitating the use of pedagogical approaches developed for the pre-electronic environment eg conferencing and peer editing. This review covers both networked and non-networked computer use.

A salient theme in research on the use of computers in writing instruction is the need to question the anecdotal success stories that characterise many contributions in the professional literature (Warschauer, 2000; Pennington, 1993). One frequent claim is that of raised motivation. In an attempt to investigate motivation more rigorously, Warschauer (1996) analysed the motivational benefits of L2 uses of computers for writing and communication in a survey of 167 ESL and EFL students in 12 university academic writing courses in Hong Kong, Taiwan, and the U.S. He found that a wide range of language students (male, female, with/without typing expertise, experienced/inexperienced in computer use) had positive attitudes towards using computers for writing and communication in language classes. He also found that motivation was enhanced in those classes where computer activities were integrated in the regular structure and goals of the course. Factor analysis showed which aspects influenced these positive attitudes: the benefits of computer-mediated communication (CMC), the feeling of personal empowerment, the enhancement of learning opportunities, and a sense of achievement.

However, just as we have seen with the introduction of process approaches to writing, technologies can be implemented in classrooms in different ways. (Warschauer, 2000) carried out an ethnographic study of four different language classrooms in which all the students were marginalised in some way. He found that the way new technologies were implemented in the classroom was influenced by the general institutional context and by the particular beliefs of each individual teacher. He

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stresses the importance of the students' understanding of purposes and lists the conditions and results of strong-purpose and weak-purpose activities. Two important conditions of strong-purpose activities are that students

- understand the purpose of the activity and find it socially and culturally relevant
- find the electronic medium appropriate for fulfilling the purpose.

The element of communication loomed understandably large in the students' responses in Warschauer's 1996 study, revealing that they had the benefit of a networked classroom. Computers are not yet universally networked, however, and we look first at non-networked computer use.

Word processing

It is common to assert that the word processor is the ideal tool for a process writing approach allowing "many different kinds of modifications to written text before or after saving, such as deletion, insertion, and movement of pieces of text" (Pennington, 1996: 31). However, this presupposes that students actually have good keyboarding skills and understand all the functions of the word processor, suppositions challenged by Bisaillon (1997); Carpenter & Slater (2000); Pennington (1993: 37); and Susser (1998: 350) among others.

Pennington (1993), in a critical review, warns that research has not always supported the positive claims made for word processing. She examines the contextual variables which might account for contrasting findings: the students; the abilities, attitudes and goals of the teachers; the setting; the time span of the implementation; quantity and quality of instruction in writing and computer use; the software and hardware; ways of measuring effects. With reference to instruction, she suggests there may be a reciprocally beneficial relationship between word processing and process-oriented instruction. She reports a small scale study contrasting two English L2 students exposed to a combination of word processing and process-oriented tutorial input with 2 students exposed to a combination of word processing and text analysis feedback. The former were found to make more deep- than surface-level revisions, to substantially increase the number of words in non-initial drafts, to internalise tenets of the process approach and increase their independence in editing (Pennington & Brock, 1992). Pennington stresses the importance of the teaching context, of a teacher experienced in a process orientation, and of time, in producing the positive attitudes that might lead to better quality products.

Susser (1998) points out that from about 1989 the computers and writing field moved its focus of attention from word processing to computer-mediated communication, hypertext, and other innovative forms of writing technology as confirmed by the rapid fall in the number of articles and presentations devoted to word processing. He argues that its use has almost disappeared from accounts of writing with computers in spite of the fact that most student writers have never used word processing "in a meaningful sense" (p. 347). Claiming that experimental research has provided little basis for establishing any effects of using word processing, he advances four possible reasons other than the intrinsic value of word processing to explain the beneficial and detrimental effects reported in practitioner research. These are (1) the "Hawthorne" effect (any innovation in a work situation initially raises productivity and morale); (2) technological problems; (3) the design of particular word-processing packages; (4) the changed learning environment and teaching practices.

Citing many L1 and L2 studies from the eighties eg Strickland (1989) and from the nineties eg Kehagia & Cox (1997); Phinney & Khouri (1993), Susser emphasises the lack of expertise of many of the student writers and the lack of attention given to the functions of word-processing packages. He considered his own attempt to raise awareness in college English classes in Japan, by requiring the students to complete word processing function checklists after writing sessions, to be a failure. The majority of students, while not technophobic, did not report use of the more advanced functions. He concludes that there is a need for more thorough student training before research examining the effects of word-processing can be seen as valid. Like Pennington, he suggests that training should include a pedagogy that overtly links revision operations with word processing functions.

Broady (2000: 3), also highlights the importance of experience in word processing in mediating its positive potential for developing FL writers. Likewise Bisaillon (1997) in a study of 4 advanced FSL writers found that a threshold of keyboarding skills must be reached before benefits can accrue. Carpenter & Slater (2000: 37) report that where typing speeds are below 15 words a minute the benefit of a word processor is questionable. Al-Hazmi & Schofield (1997) also found that Arabic-speaking school pupils writing in English generally felt handwriting was quicker and facilitated the organisation of ideas, valuing the computer only for presentation purposes. It is possible that some findings may be script-dependent. Kubota (1999), for instance, reports that 3rd year college learners of Japanese found that word-processing made writing in Japanese easier. What is clear, as Bisaillon, and Susser, argue, is the need to develop student writers' strategies for exploiting word processing.

Li & Cumming (2001) present findings from a study, the design of which was intended to overcome

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the limitations of much previous short-term research in (a) being longitudinal, (b) studying both process and product in depth, and (c) including training. This was a case study of an intermediate, adult, Mandarin-speaking ESL learner, thinking aloud while writing 14 compositions, 7 using the word processor and 7 using pen and paper. All keystrokes were recorded electronically and all text changes in the pen and paper writing were recorded. The findings showed the value of the long term approach. The frequency of revisions in the student's computer assisted writing was consistently greater than that of his pen and paper revisions at the discourse level; it was greater at the syntactic and lexical levels in most sessions and rose steadily higher at the morphological level. He performed more frequent local planning, reasoned more about linguistic choices and appropriacy, and referred to procedures for writing more often in the computer sessions. The analytic scores of the computer written essays were invariably higher than, or the same as, those written with pen and paper in terms of content, slightly higher in terms of organisation, and higher in most sessions in terms of language use.

However, the student had been slow to use the editing possibilities of the computer until he had received tuition in these functions in the early stages of the project and only began to revise in pen and paper condition after he had begun to revise in computer-assisted condition. The move towards a case-study approach facilitates the development of better founded research questions which can then be explored through quantitative approaches allowing more generalisability.

In summary, the research in this area points to the need for students to have adequate keyboarding and word-processing skills, and for word-processing activities and instruction in editing functions to be carefully integrated into process-oriented learning. Effects are unlikely to be discernible in short term studies.

Grammar and spelling checkers

Two particular facilities of word processing – the grammar/style and spellchecker – have been found to be problematic when used by L2 writers (see Burston, 1999; Mogilevski, 1999; Pennington, 1992). Pennington (1992) criticises grammar checkers and style analysers for offering feedback which is (a) not generalisable, (b) does not train the editing process, (c) has no direct link to writing quality, (d) presents no clear educational rationale and (e) is highly inaccurate. She describes the parameters of an alternative type of software, giving examples of existing programmes. Broady (2000: 5) reports that practitioner research suggests that automatic checkers need to be integrated into teaching programmes and learners need to be taught the limitations of the tools, which can then be used to direct their attention to errors.

Software for teaching and research

Two studies which are not directly pedagogical illustrate the use of software which can be used by students and teachers for both teaching and research purposes. New (1999), in a small-scale baseline study, investigates the use of computers in the revising process using the computer programme *Système-D* (Noblitt, Pet & Sola, 1992) for students of French. This functions as a reference tool as well as a word processor, containing a bilingual dictionary, a verb conjugator, a reference grammar, a vocabulary and a phrase index. It also includes a query tracking device that generates a computer printout, or log, of all the information accessed by students during the writing session. By comparing the final text with the log, researchers and teachers can observe what the student has chosen to incorporate (or not) into the text, how the student has transformed (or not) the information, and what actions the student has taken while writing.

Five upper intermediate English speaking university students of French with no prior training in revising or using the computer as a resource, wrote a two-part magazine article about a film they had seen recently, in two sessions during which the screen was videotaped. The tapes were transcribed and coded using a version of the system described by Faigley & Witte (1984) for L1 revising, modified to include a grammar category to take account of the extra linguistic demands of FL writing. Data analysis showed that students focused almost entirely on revision at the graphic and word levels, occasionally effecting local meaning-preserving changes (usually additions), supporting ESL findings that surface-level revisions increase when writing on a computer (Phinney & Khouri, 1993). There were few grammatical revisions.

Although three students depended very heavily on the English-French dictionary and one used the vocabulary and phrase indexes successfully, they did not use reference sources to the full potential. The students did not revise for content as much as they did for form in spite of subtle invitations in the rubric to so do. New concludes (a) that the task did not sufficiently invite reader-based prose which might have induced more revision; (b) the software itself is orientated more to product than process; (c) the students needed explicit instruction in revising strategies or using the computer as a writing resource.

Thorson (2000) also used computers in her comparative study of the L1 and L2 composing processes of 18 English L1 learners of German (intermediate level). Students wrote 2 letters and 2 newspaper articles directly onto the computer in timed sessions (30 and 40 minutes respectively) with dictionary and textbooks available. The programme

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J-Edit was used, which creates a log of each individual writing session, for later exportation to the program *Trace-It* which tracks all keyboard and mouse movements, providing researchers with a detailed record of the entire writing process. It sorts and summarises the quantitative data in terms of the frequency of revision, the revision type (whether it was an insertion or a deletion), the range of revision (how much text was inserted or deleted), and the distance of the revision (how far the cursor moved to make the revision). The data produced can be analysed using descriptive and inferential statistics but also provide material for case studies. (For more details and another example of the use of these tools in L1/ESL context see Spelman Miller (2000) and in an L1/EFL setting Lindgren & Sullivan (2002, 2003)).

In Thorson's study, logs were used to compare the writing processes in terms of language, L1 vs L2, genre, and to discover whether language or genre had a statistically discernible effect on the writing process. Results are reported in extremely helpful detail with careful explanation of statistical procedures. An effect was found for German, the students revising more in German than in English, regardless of genre. When writing in English, however, students tended to revise more in the article than in the letter. Students wrote more in English than in German in both genres. There was, however, high variation between students; this was explored in two case studies selected because they were representative of the results from the statistical analysis. The interest of this study for the current review lies in its clear exposition of research methods for FL teachers wishing to explore the writing processes of their own students.

Network-based language teaching (NBLT)

This is language teaching that involves the use of computers connected to one another in either local or global networks (Kern & Warschauer, 2000). It can be thought of as the human-face of CALL where human-to-human communication is the focus. We look first at the relationship between NBLT and a process-oriented pedagogy, then more specifically at e-mail projects before turning to the role of writing in developing oral skills.

NBLT and process-oriented pedagogy

We have seen suggestions above that integration of computer use in a process-oriented classroom is likely to have beneficial effects on writing. Writing improvement, however, can be operationalised in different ways, with a focus on attitudes, on elements of the process, the product, or both, and, as Schultz (2000) has pointed out, in some pedagogically-oriented articles it is often ill-defined eg (Armstrong & Yetter-Vassot, 1994).

Three studies have made comparisons between computer-based and "traditional" classes but each is differently focused and none of them is able to provide evidence of written text improvement. The study of Sullivan & Pratt (1996) exemplifies some of the strengths and weaknesses of this research. In a quasi FL situation (Puerto Rico) they compared students in a networked classroom and a traditional oral classroom in order to investigate (i) attitudes toward writing with computers, (ii) writing apprehension, and (iii) growth in writing. Half of the 38 intermediate level Spanish-speaking students of English used *Daedalus*[ii] software (Daedalus, 1989), which includes the electronic discussion program *InterChange*. The 15-week study was controlled in that both classes were taught by the same teacher, using a process approach and dialogue learning logs. They were all, however, unused to this approach and were given only one seminar on how to respond to writing. There was little control over the four compositions they wrote: they chose their own topics although the final one was required to be argumentative/persuasive.

Quantitative methods were used to study attitudes and writing performance (although no details are given of how work was scored), complemented by a qualitative analysis of participatory patterns and discourse. Post-test scores were significantly higher within each class on the attitude measures but the computer-assisted classroom showed a greater overall change. Holistic writing scores, although they had been higher (although not significantly) at the beginning of the semester, decreased in the oral classroom but the reasons for this, strangely, are not explored. The qualitative analysis gives potentially more convincing results for the beneficial effects of the computer environment but these are indirectly related to writing. In whole class sessions, 50% of the oral class students participated and the teacher took 65% of the turns. In the computer-assisted class all students participated and the teacher took only 15% of the turns, frequently becoming just another voice in the discussion, an important change of role. In small group discussions, more talk occurred in the oral class groups but it was less focused on the task of evaluation and often involved a one-word assent to another student's evaluation.

[ii] Daedalus software consists of several modules (Sullivan and Pratt, 1996: 494): a word processor, two heuristic programmes (one for invention and one for revision); a message system (Mail) and a real time electronic discussion programme (InterChange). In this module, a student types her message and then "sends" it to the rest of the class. Messages are appended chronologically and appear on every student's screen. The sender's name is automatically attached to the message. It differs from e-mail in that comments are responded to immediately, resolving the time-lag issue. Braine (2001) reports that this programme was being used at more than 575 secondary and tertiary institutions in the US and at 35 two- and four-year tertiary institutions in other countries.

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The authors view positively the fact that similar responses from 2 or 3 students in the computer-assisted discussions were often sent at the same time, reinforcing the fact that there was a problem. These students also gave more suggestions for revision than students in the oral class but the incorporation of revision into final texts was not examined. We will see other evidence that learners gain confidence from the opportunity to write evaluative feedback in their own time avoiding the embarrassment of having to make an oral contribution; this is the strongest finding emerging from this small-scale study.

Schultz (2000), in a more detailed study, tested the assumption of the superiority of computer-aided process work by comparing computer-based (experimental) and face-to-face (control) process approaches in intermediate level university French classes in the US. A complex design involved the comparison above for 3rd semester students but for the 4th semester a comparison between a control group and a group of students who alternated between the two modes of teaching was made. Peer editing had long been integrated into the course, students working in threes on essays on literary texts. Again, the *Interchange* component of the *Daedalus* integrated writing environment[iii] facilitated network-based peer editing. The data consisted of 42 semester 3 essays, 51 semester 4 essays, *Interchange* transcripts, face-to-face transcripts, and an attitude questionnaire. Improvement was conceived as the number of changes made between rough drafts and final papers on the assumption that this correlated with a positive effort on the students' part to take peers' suggestions seriously and improve their essays; holistic scores were not considered.

The findings suggest that oral interaction is both preferred by the students and economical of time, the computer-mediated discussion focused attention on matters other than content and gave valued practice in writing. Schultz suggests that different cognitive processes are involved in the two modes. The face-to-face mode is non-linear and interactive which, he argues, feeds into the networking cognitive processes essential for formulating interpretations. The results point to the importance of the unconstrained digressive and recursive characteristics of speech for the idea-generating process that forms the foundation for writing. The computer fosters a linear form of discussion. Ultimately, he claims, both the verbal and the visual interact to produce superior results in writing development.

Support for some of the Schultz findings comes from a study in a Hong Kong university context with Cantonese-speaking students of English. Braine (2001) compared the holistic scores of first drafts and final versions of papers written in Local Area Networked (LAN) classes with those written in traditional classes. Papers in the LAN classes showed a mean improvement of 0.2 while papers in the traditional classes showed a mean improvement of 0.42; in both cases the difference was statistically significant. However, first drafts in LAN classes were of a higher quality than in traditional classes. Possible reasons for this include: lack of turntaking encouraging all to participate, the non-threatening environment, elimination of accent anxiety, extra time for articulation of thought, larger quantity of writing. But Braine is interested in why, in this context, this advantage is not sustained in the final product. He focuses on the potentially confusing nature of LAN peer review discussion, in contrast to the oral peer review session is which is more orderly.

It is likely that maturity and experience are important variables in this type of research and that complementary procedures are preferable to an either/or approach. These were important elements in Lueth's (2001) small-scale qualitative action research project which successfully introduced a computer-based peer review writing scheme alongside oral peer review and teacher feedback into an advanced level (Cambridge Proficiency) EFL class of 18 adult students in Switzerland. Training ensured that students functioned well as an interested audience. The feedback of 16 of the learners contained comments on content, the majority used the assessment checklist well, including comments on all categories, written comments were found to be clear and well understood, and 92% of the comments were incorporated into final versions. There were some shortcomings in the student feedback but only one example of incorrect feedback was incorporated. Written and oral feedback complemented each other. As has been found in other studies, students' involvement with giving and receiving feedback increased their understanding of the teacher's feedback.

E-mail projects

Hungarian English students are probably typical of all university students in listing writing e-mail messages as one of their most important perceived needs for future occupations (Kormos, Kontra & Csolle, 2002). Student motivation is important but perhaps even more so is the growing role of e-mail in increasing and enhancing social interaction in FL classrooms. The lively Linguanet Forum (information at www.cilt.org.uk) provides regular evidence of the enthusiasm with which FL teachers in Europe have set up electronic intercultural exchanges; Kern (2000: 249ff) gives examples from the US, raising issues born of experience: the potential levelling of social status may raise problems cross-culturally, the absence of paralinguistic cues may make decisions between public and private topics, and about register, difficult.

[iii] For details of synchronous conferencing programmes for local area networks see Kern (2000: 261) and Hyland (2002: 226).

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He also comments that it is too early to know exactly what effects intercultural e-mail projects will have on student learning. He lists descriptive accounts eg Barson, 1991; Cononelos & Oliva, 1993; Kern, 1996; Soh & Soon, 1991, and we can add Meskill & Ranglova (2000), whose project was based on response-based literature teaching and learning and was carried out within severe technical constraints, Massler (2001) in the context of teaching German, and Fedderholdt (2001) who paired Japanese and Danish students of English.

Kern comments that there have not yet been any in-depth data-based investigations of what students actually learn in these projects although a number of potential benefits seem apparent: contact with real people, motivation, metacommunicative awareness, critical thinking, better understanding of one's own culture. It seems that the connection with writing development is likely to be indirect. Liaw & Johnson (2001) found that cross-cultural e-mail correspondence between Taiwanese English university students and pre-service ESL teachers in the USA not only sensitized the participants to cultural differences but also provided opportunities for extended language practice. While this practice is likely to involve less formal genres (although see Warschauer (1996) below), in being purposeful and content-oriented, it offers opportunities which have hitherto been difficult to manage in FL classrooms. The hybrid nature of e-mail with respect to written and spoken language has been documented, eg Baron (2000, 1998) and its fluidity in terms of technology, usership and genre maturation noted (Baron, 1998: 144). It is perhaps impressing upon new generations of teachers what older ones knew – writing has a role in language learning.

Several studies illustrate the importance of a careful introduction to the use of e-mail communication. Kelm's (1998) case study of semester 4 students of Portuguese at a US university describes how students were required to write at least 50 lines of email messages in Portuguese every week, to anyone, about anything, but copied to the teacher. The teacher was then able to give tactful feedback on language issues. Kelm claims that the student work became less passive, more participatory and imaginative, and recommends further research focusing on which L2 skills students acquire while using email and which level of proficiency is needed to gain benefit. Aitsiselmi (2001) introduced first year French students in a UK university to electronic communication by inviting them to write to her voluntarily. Students evaluated the experiment positively after a semester, appreciating the learner-driven quality of the exchanges and some later joined French internet discussion groups.

One research thread examines the linguistic features of e-mail writing. Gonzalez-Bueno (1998) inducted her first year students of Spanish by inviting them to write to her whenever they liked on any topic. Analysis of the resulting data revealed characteristics of written Spanish which were absent from regular in class assignments, and from the written performance of other students using paper and pen dialogue journals. Many of these characteristics were associated with spoken language eg a variety of topics and language functions, personal and expressive language, and use of questions and spoken discourse markers. Other characteristics fed into writing development (eg longer texts, a higher level of accuracy in the early stages) although this changed towards the end of the year as students confidently wrote longer messages about more varied topics.

Li (2000) compared 132 e-mail texts produced by newly arrived ESL students in response to four different pre-writing task demands and rhetorical purposes – narrative, informative, persuasive, expressive – two involved interaction with peers, two did not. Text analysis was computer-based, using *Wordsmith* (Scott, M., 1996) and *Grammatik* (WordPerfect 7). The texts with audience interaction had longer sentences, a consistently higher level of syntactic and lexical complexity but also a higher frequency of error (cf the "trade-off" between linguistic complexity and accuracy noted by Foster & Skehan (1996).

There is some interest in testing out whether the medium affects the message. Biesenbach-Lucas, Meloni & Weasenforth (2000) in an ESL context, compared the use of cohesive features in essays written on e-mail and on a word-processor. Twelve cohesive features were examined, two of which were not used at all, the remaining ten being used with equal frequency across the media; this is hardly surprising given the genre required. The main difference was in text length, word-processed texts being on average significantly longer, contrasting with the findings of a Finnish study (Tella, 1992b). The research design was probably responsible for this difference. While it will be useful to know which aspects of language are best developed by which medium, future studies need to compare genres which are appropriate to the different media.

NBLT and the development of oral communicative competence

One of the welcome paradoxical effects of a technology which involves more writing is increased opportunity for hitherto silent students to contribute to discussion, thus producing more language than they would otherwise, indirectly leading to both oral and written development (Beauvois, 1992, 1998).

Chun's (1994) longitudinal study of 14 first year German students using *Interchange* in computer assisted class discussions involving teacher and students focused particularly on their acquisition

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of interactive competence. She found that students interacted more with each other than with the teacher, took the initiative, constructed and expanded on topics and took a more active role in discourse management than is typically found in classroom discussion. They also showed that they were able to give feedback to others and exercise sociolinguistic competence in greeting and leave taking, requesting confirmation or clarification and apologising.

Warschauer (1996) reviews L1 and L2 studies (Kelm, 1992; Tella, 1992a) that have found a strong equalizing effect for electronic communication, benefiting groups often perceived by themselves or others as of lower status. His own small-scale study (1996) of advanced ESL students compares small group electronic discussion with small group face-to-face discussion in which one might assume different dynamics from whole class discussion. This was a controlled experiment and Warschauer admits that the students concerned were not used to being taperecorded. Three of the four groups showed greater equality of participation in the electronic discussion. In general, students reported feeling that they could express themselves freely, comfortably and creatively in electronic discussion, that it assisted their thinking ability and was not stressful. Importantly, electronic mode encouraged more production from quiet students but did not impede the production of the more vocal students. The study also found that syntax and lexis (coordination index and type-token ratio) were significantly more complex in electronic mode, aided by the fact that students took longer turns and used more formal language.

Kern (2000: 226) in his overview of computers, language, and literacy, comments that there are significant limitations to using computers for writing that we are only beginning to understand, and that have not yet been incorporated into theories of writing. There are surely opportunities also that we are only beginning to understand.

Conclusion

This review has focused on work related to the teaching of writing processes in FL classrooms in the belief that, at each developmental stage, writing can contribute to the development of linguistic and sociolinguistic skills of value in the more general development of the individual.

Work is now proceeding on the construction of models of the writing process which pay due attention to the linguistic processes involved in L2 writing (Chenoweth & Hayes, 2001; Zimmerman, 2000) and to the role of instruction in the process (Cumming & Riazi, 2000; Sasaki, 2002). In Kern's (2000) work, we see a new conceptualisation of language teaching which gives an important role to literacy and incorporates the use of the multiplicity of texts which are now involved in the construction of our lives.

Research approaches

The research reviewed represents the full spectrum of research approaches found in applied linguistics but the majority of studies adopt either a qualitative approach or one which combines quantitative and qualitative approaches. While there are examples of surveys, eg Hedgcock & Lefkowitz (1994); Jacobs *et al*. (1998); Pennington, Brock & Yue (1996), and of experimental and quasi-experimental studies eg Hedgcock & Lefkowitz (1992); Kepner (1991); Porte (2001), it is much more common to find a combination of research techniques drawn from quantitative and qualitative approaches. A common combination is that of "think aloud" with interview and/or questionnaire, recently updated and improved with the aid of keystroke-logging software, removing the time-consuming task of transcribing and analysing data from the researcher.

Leki (2000) has contrasted the contexts and focal interest of L2 writing research in Europe and N. America. She sees research in Europe (excepting that in the UK) as taking place mainly in FL contexts where writers' characteristics are sufficiently homogeneous to allow for large-scale, experimental studies. In contrast, the North American SL context is characterised by the heterogeneity of its learners and therefore leans towards longitudinal research and case studies. She maintains that research on composing processes has nearly disappeared from the pages of scholarly journals, and has been replaced by research which takes a broader view of the L2 writing context "including factors relative to both the learners and to institutional and social settings where the learning takes place" (p. 102).

It is true that there is a vibrant research culture in Europe, represented by the *Studies in Writing* series published by Kluwer, in which psychology plays a major role, but even here, as we saw in the Roca de Larios *et al*. (2002) study, there is an acknowledgement that writing must be studied as a "situated act" (p. 45). While case studies are represented, eg Cohen & Cavalcanti (1990), there is a tendency for these to be of short rather than long duration. FL research lacks at present case studies of the length and depth of Spack's (1997) ethnographic study of a university SL writer through the three years of her degree course.

Future directions – writing and Second Language Acquisition

Just as writing research is moving towards a sociocognitive approach, so too, it appears, might SLA research if the arguments of Atkinson (2000)

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are taken seriously. Influenced by pedagogically-oriented research in situated cognition, eg Lave & Wenger (1991), he presents implications of taking a sociocognitive view of SLA. These include the notions that teaching is valuable and teaching and learning go hand in hand, that teaching is often incidental, learning often occurring through interactions between participants in a "community of practice". He recommends harnessing more of the range of teaching situations that take place outside the classroom in order to utilise more fully the teaching and learning potential of all human beings.

This, I would argue, is what some of the computer-based writing projects are able to do, rather more easily than those non-computer-based projects which have prepared the ground (cf the work of Legutke & Thomas (1991)). He also suggests that this view of SLA would see language learners as real people doing something they naturally do and that this would have implications for research methods. "Individual-aggregating statistical and experimental methods have a place in SLA" but "studying real humans in real human contexts and interactions, including classrooms, entails methodologies that do not denature phenomena by removing them from their natural environments and breaking them down into countable component parts" (p. 539).

Were Atkinson's views to be embraced by the applied linguistics "community of practice", the equally convincing arguments of Harklau (2002) would receive a sympathetic hearing. Although writing from a SL stance, her views placed beside Kern's reconceptualisation of FL teaching, would lead towards a richer understanding of the role of writing in the classroom. She would like to see reading and writing researched together rather than separately and to see all writing tasks, not just composition, viewed as worthy of research interest. Harklau's research expertise is based on secondary classrooms, situations which have not yet been adequately studied. It is perhaps for this reason that she does not make any mention of the potential we have seen in this review for researching SLA through computer-based writing.

Another fruitful future direction is represented by the work of Kobayashi & Rinnert (2002). This work explores the L1 literacy instruction of Japanese learners of English and points to ways in which teachers can draw on students' L1 literacy strengths to help them bridge the gap between their L1 and L2 literacy skills.

Post-process theory

There are links between Kern's position and that of Atkinson (2003a) and others writing in a recent issue of *JSLW*. Atkinson introduces the issue by referring to work in L1 composition studies which has taken *the social turn* – "a post-process, post-cognitivist theory and pedagogy that represent literacy as an ideological arena and composition as a cultural activity by which writers position and reposition themselves in relation to their own and others' subjectivities, discourses, practices, and institutions" (Trimbur, 1994: 109). Atkinson examines these concepts as they relate to current theory and practice in second language writing. The debate springs very much from the L1/ESL interface and from academic writing contexts where it is possible to speak of the L2 writing classroom. As Reichelt suggests, it is unlikely that FL teachers see themselves as in a writing classroom. Nevertheless, it is important to note the direction being taken by ESL writing scholars as we look forward to a less compartmentalised academic world. Leki's coda to the same volume asks whether L2 writing research is being by-passed by the most interesting intellectual trends of our times by focusing too single-mindedly on such functional and practical issues as peer response, rhetorical strategies etc. (Leki, 2003: 103).

This review suggests, however, that there is still much that we do not know about the role of writing in the foreign language learning process as it is facilitated in instructional contexts. I close by listing some pedagogically-oriented questions that arise from the selection of studies seen here:

1. What is the role of classroom writing in the acquisition of a foreign language?
2. What can FL students learn from different types of written task?
3. What can FL students learn from practising different genres of writing?
4. Are process-oriented writing approaches fruitful in all FL teaching contexts, including secondary schools?
5. Is the interest in studying the sociopolitical dimensions of writing relevant to FL teaching contexts?
6. How can Kern's reconceptualisation of teaching FL literacy be implemented?
7. When and why is it useful for FL writers to use their L1?
8. Are there grammar correction procedures that are beneficial to FL learners?
9. What is the relationship between teachers' writing experience and expertise and the writing development of learners?
10. What is the relationship between previous FL learning experiences and writers' attitudes and development?
11. What is the relationship between computer-mediated writing and the development of oral competence?
12. What are the contributions of face-to-face and computer-mediated feedback to the acquisition of writing skill in a FL?

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