Applying Second Language Acquisition Research Findings to Materials: A cognitive-interactionist perspective

Lani Freeborn

l.freeborn.14@ucl.ac.uk

UCL Institute of Education

University College London
UK

In recent years, ELT publishers have been criticised for not incorporating the findings of second language acquisition (SLA) research into the design of their teaching materials. The first aim of this article is to inform teachers of key research findings from the cognitive-interactionist approach to SLA by discussing five environmental ingredients that contribute to optimal L2 learning. The second aim of this article is to demonstrate how these research findings can be practically applied to the selection and adaptation of teaching materials. It is the author's hope that teachers will be encouraged to apply this knowledge to their teaching contexts, and be motivated to keep themselves informed of SLA research findings.

Keywords: materials development, SLA research, cognitive-interactionism

Introduction

The British council estimates that there are currently one billion people in the world learning English, with this figure predicted to double by 2020. Parallel to this growth, ELT publishers are producing a multitude of teaching materials designed and sold for mass market consumption. ELT publishing is a multi-million pound industry, and one of the only publishing sectors to see growth in the last few years. However, it has been suggested that ELT publishers are more concerned with the quantity of materials they sell, rather than the quality of the materials' design. Richards (2005: 18) points out that "Educational publication is after all, a business, and the challenge for materials writers is to meet educational objectives and standards while at the same time meeting market requirements."

Several linguists have criticised ELT publishers for not incorporating findings from Second Language Acquisition (SLA) research into their materials. Over twenty years ago in an evaluation of teaching materials, Littlejohn (1992) found no direct link between the materials and applied linguistic discussion. In 2008 Tomlinson and Masuhara (2013: 233) published a survey review of adult coursebooks, by which they were "disturbed by the apparent disregard of the findings of second language acquisition research" and "disappointed that many of the main findings of SLA research were still being ignored." It would appear that ELT publishers' lack of interest in SLA research findings has remained unchanged for over twenty years. This 'gap' between theory and practice is a cause of both frustration and concern. As Tomlinson (2011: 6) explains: "(It is) still true that we should not expect definitive answers from second language acquisition research, nor should we expect

one research-based model of language acquisition to triumph over all the others. … But this should not stop us from applying what we *do* know about second and foreign language learning to the development of materials designed to facilitate that process".

This article aims to inform teachers about what we *do* know about SLA. An overview of key research findings will be presented from the cognitive-interactionist approach to SLA. This article will also offer practical ways of applying these research findings to the design and adaptation of teaching materials, to ensure optimal L2 learning.

The Cognitive-Interactionist Approach: Five ingredients

Much of what we know about second language acquisition was discovered in the 1980s and 1990s under a cognitive-interactionist framework. Within this framework, it is supposed that optimum L2 acquisition occurs when multiple internal (cognitive) factors and multiple external (environmental) factors reciprocally interact. This approach is generally considered to be a well-established and researched field of second language acquisition. Within a cognitive-interactionist framework, Ortega (2009: 79) prescribes five environmental ingredients that contribute to (but do not guarantee) optimal L2 learning:

- Acculturated attitudes
- Comprehensible input
- Negotiated interaction
- Pushed output
- Noticing

Tomlinson (2011: 8) also includes all of these 'five ingredients' in a summary of what "any SLA researcher would agree to be some basic principles of second language acquisition relevant to the development of materials for the teaching of languages". Research findings for each of these five ingredients will now be discussed in greater detail, with examples of how these findings can be applied to teaching materials and the classroom.

Acculturated Attitudes

Since the 1990s a considerable amount of research has been conducted into the effects of motivation, self-confidence and levels of anxiety in relation to second language learning. According to Krashen (1985: 81), "The 'affective filter' is a mental block that prevents acquirers from fully utilizing the comprehensible input they receive for language acquisition". One way of counteracting this, Krashen suggests, is to provide input that is interesting and/or relevant to the learner. Dörnyei and Csizér (1998) offer similar advice based on the results of an empirical survey. In order to increase motivation, they stress the importance of making classes interesting, promoting learner autonomy and personalising the learning process.

For coursebook designers and teachers, this means that materials designed for mass market consumption with a 'one size fits all' approach are not likely to provide interesting or relevant input for the learners. Macmillan, one of the largest ELT publishers, now offers regional materials and locally-developed products. Shanghai Foreign Language Education Press (SFLEP) is able to compete with international publishing houses because its materials are designed specifically for Chinese learners. If materials are adapted and selected

according to specific contexts, the affective filter is more likely to be lowered and students will be more receptive to language learning.

Another way to lower the affective filter is by working in pairs or small groups. Results of many studies (see Ur 1996 & Hedge 2000) have shown that working in pairs or small groups can increase student motivation, foster cooperation, and promote collaboration. During a challenging writing task, for example, students are likely to produce better and more accurate work if they work in pairs.

Playing music in class is another factor which can affect students' attitudes. In Krashen's (1982: 145) view, music can be "used as a means of lowering anxiety and diminishing tension, and inducing the state of relaxed alertness considered optimal for second language acquisition". This view is supported by many other studies (see Ganschow et al. 1994 and Engh 2013) which have shown that music can make students more receptive to language learning. Playing music in the background can increase students' confidence to speak, particularly with lower level adult learners.

Comprehensible Input

The second ingredient prescribed by Ortega for optimal L2 learning is comprehensible input. According to Gass (1997: 1), "The concept of input is perhaps the single most important concept of second language acquisition". Tomlinson (2011: 6) also includes comprehensible input as a prerequisite for the development of materials to facilitate second language acquisition. There are various suggestions how to best make input comprehensible (see Krashen 1982, 1985, 2013, Gass & Mackey 2013), some of which include a low affective filter and materials that are personally interesting/relevant, as mentioned in the previous section. Additional ways of providing comprehensible input shall now be discussed.

A key concept of the cognitive-interactionist approach is Krashen's Input Hypothesis. Krashen believed that for language acquisition to occur, learners must be exposed to a sufficient amount of comprehensible input, which is slightly above the learner's ability (i + 1). Ideally, learners should be challenged by the input, but not find it too difficult. If input is too challenging for students, lowering the affective filter (for example by working in pairs) can make input more comprehensible.

It is recommended that teachers and coursebook designers use syntactic simplification as much as possible. Particularly when giving instructions or explanations, sentences should be kept short and clear. Input can also be made more comprehensible by avoiding low frequency words, as well as avoiding slang and idioms, which are more likely to impede comprehension. Recent findings from corpus linguistics can aid coursebook designers in selecting appropriate vocabulary based on frequency of use. For example, when deciding which phrasal verbs to include in a lower level coursebook, corpus linguistics research shows that 'tend to' has a very high frequency of usage (see McCarthy & Carter 1995), and so should be included in the text.

A further way to provide comprehensible input is by using non-grammatically sequenced input. Krashen (2013) argues that providing non-grammatically sequenced input is more likely to achieve i + 1 for more learners. When considering individual variation, Krashen (2013: 104) explains that "Even if the rule of the day happens to be i + 1 for some

students, it will not be for other members of the class." This aspect of the cognitive-interactionist approach will likely be the most difficult for teachers to apply to materials, given that the majority of coursebooks and curriculum follow a grammatical syllabus. Yet, research suggests that this is not conducive to optimal L2 acquisition. Research into developmental sequences also undermines the grammatical syllabus. For example, although research has shown that one of the last acquired morphemes is the 'third person –s' (see Pérez-Pereira 1989) (e.g. he learn***s***, she work***s***), most coursebooks expect students to 'acquire' this morpheme early on. Based on research findings, teachers should try wherever possible not to follow a grammatical syllabus, or place too much importance on grammatical accuracy. For most coursebook writers, this would probably involve restructuring the entire coursebook, which would of course be a demanding task, but which would also greatly benefit the learners. In Rivers' (1987: 13) opinion, learning grammar should involve "inductively developing rules from living language material and then performing rules. This process can and should be interactive". The concept of learning grammar through interaction brings us to Ortega's third ingredient.

Negotiated Interaction

The importance of interaction has been established by many research findings. Some linguists go as far as to claim that interaction is "the pivot on which language learning turns" (Burton & Clennell, 2003: 1). This claim is supported by numerous studies and as Plonsky and Gass (2001: 331) explain, "the overall effects of interaction on acquisition appear to be both statistically and practically significant". More recently, the concept of negotiated interaction has taken root, which refers to a communicative breakdown which learners need to resolve. Tomlinson (2011: 16) also favours negotiated interaction and states that "Ideally teaching materials should provide opportunities for such interaction in a variety of discourse modes ranging from planned to unplanned".

Concerning specific task types, Gass and Mackey (2013) suggest that convergent tasks with a particular outcome are better at promoting negotiation of meaning than divergent tasks with no particular outcome. Types of convergent tasks include: required exchange tasks, listing, ordering, sorting, comparing and problem solving (see Ellis & Shintani 2013). Coursebook designers and teachers should strive to include a variety of these convergent tasks in their materials.

Negotiated interaction can also be encouraged by the use of discourse strategies such as clarification requests and confirmation checks. Phrases such as 'I'm not sure I follow you' and 'What do you mean by …?' can help to resolve breakdowns in communication (see Gass & Mackey 2013). Discourse strategies can easily be incorporated into teaching materials by providing students with a list of useful phrases. Teachers should also encourage and remind students to use discourse strategies during interactive tasks. Additionally, several studies (see Nabei 1996 & Jacobs 2003) have shown that working in pairs or small groups also encourages negotiated interaction through the use of discourse strategies. This in turn focuses learners' attention on linguistic form and can engender pushed output.

Pushed Output

The importance of pushed output was first acknowledged by Swain (2000: 99), who argued that "Output pushes learners to process language more deeply". In relation to

materials development, Tomlinson (2011: 10) similarly recommends "activities which try to 'push' learners slightly beyond their existing proficiency by engaging them in tasks which are stimulating, which are problematic, but which are achievable too". For example, a dictogloss, writing and performing a dialogue, or reformulating a spoken or written text, can 'push' and challenge learners to produce output. As Brown (1991: 1) explains, "The level of challenge of a task … may be an important variable in ensuring that the learners are pushed into framing their ideas in more novel language". Therefore, materials designers and teachers are urged to consider what type of output tasks will best 'push' their learners, rather than presenting learners with tasks that are easily achievable and not sufficiently challenging. Although the role of output is not as widely researched as the role of input, several studies have shown that it can also promote noticing of gaps in learners' language, which is the last of Ortega's five ingredients.

Noticing

According to Ellis and Shintani (2013: 178) "there is little disagreement that attention is needed for acquisition to take place". The importance of attention and noticing related to second language acquisition was first acknowledged by Schmidt (in Robinson 2001: 6), who claimed that "Attention is what allows speakers to become aware of a mismatch or gap between what they can produce and what they need to produce". For the learner, noticing can be driven internally or externally, so is therefore affected by both input and output, and is also influenced by individual factors such as language aptitude and motivation.

In some ways, certain ingredients on Ortega's list should, in theory, automatically promote noticing. For example, Swain (in Gass & Mackey 2013) argues that by producing output, learners notice linguistic gaps in their knowledge. Similarly, Long (in Gass & Mackey 2013) states that learners notice 'holes' in their interlanguage as a result of negotiated interaction. Therefore, materials designed to produce output and negotiated interaction should automatically promote noticing.

However, some linguists have provided more concrete methods of promoting noticing, such as reformulation tasks and reconstruction tasks. According to Johnson (in Thornbury 1997: 328), reformulation can be conducive to learning because "learners are predisposed to notice linguistic features that they had struggled with in the first draft". With reconstruction tasks, teachers can select texts in order to promote noticing of particular vocabulary or grammatical structures. As Thornbury (1997: 332) explains, "texts can be chosen that contain examples of an item known to be unfamiliar to the learners so that errors of omission are virtually guaranteed. The cognitive comparison stage forces attention on these errors". Other specific task types can also promote noticing, such as Lai and Zhao's (2006) study which showed that text-based online chat enhanced learners' noticing of their own mistakes, and also promoted the noticing of negotiation of meaning.

A further way to promote noticing is by the use of input enhancement, such as textual enhancement. Studies have shown (see Nassaji & Fotos 2011 chapter 3 for an overview of studies) that input can be made more perceptually salient by typographical devices such as bolding, capitalising, italicising, or underlining. For example, the third person '–s' can be made more salient by using textual enhancement (e.g. he play**s**, she work**s**). Input enhancement can easily be incorporated into teaching materials and is likely to increase learners' noticing.

Conclusion

This article outlined five environmental ingredients for optimal L2 learning based on key research findings from the cognitive-interactionist approach, and provided examples of how these findings can be applied to teaching materials. It is the hope that with this knowledge, teachers will be better equipped to select and adapt their materials. The research findings presented here are by no means the only SLA findings that should be considered when it comes to materials development. The cognitive-interactionist approach is just one of many approaches to SLA which can inform the design and selection of teaching materials. Other approaches to SLA such as information processing, complexity theory, sociocultural theory, and new research into corpus linguistics, also offer a multitude of research findings which could be beneficial to learners if applied to materials development.

Until ELT publishers fully begin to incorporate SLA research findings into the design of their materials, teachers should be encouraged to inform themselves of findings, and to apply theory to practice whenever possible. The number of people in the world learning English is increasing rapidly. If teachers are better informed of SLA research findings, they will have a greater chance of providing their students with all the ingredients necessary for optimal L2 learning.

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