Assessing Language and Content: A Functional Perspective

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Abstract
This chapter will discuss the integrated assessment of language and content (IALC), with particular reference to second language learning and use. We will address the central question of IALC: what does it mean to assess language and content in an integrated way? To put the question more specifically: what does it mean to assess how wording constructs meaning (and particularly content meaning) in text in context?

Disciplines
Bilingual, Multilingual, and Multicultural Education | Curriculum and Social Inquiry | Educational Methods

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Chapter 11

Assessing Language and Content: A Functional Perspective

Bernard Mohan, Constant Leung, and Tammy Slater

This chapter will discuss the integrated assessment of language and content (IALC), with particular reference to second language learning and use. We will address the central question of IALC: what does it mean to assess language and content in an integrated way? To put the question more specifically: what does it mean to assess how wording constructs meaning (and particularly content meaning) in text in context?

Three recent trends at all levels of education in different world locations have made this chapter’s discussion of functional second language assessment particularly relevant and necessary. First, for reasons of equality of access and entitlement, linguistic minority students in Australia, Europe, North America, and many other places are placed in the mainstream curriculum where they study a range of subjects and learn the language of education (e.g. English) at the same time (Leung, 2007). Second, the content and language integrated learning (CLIL) approach has been gaining popularity in second/foreign language education in many places, including Europe. Third, increasing numbers of students in India, Pakistan, China and other countries study science and other subjects through English, which is not their first language (L1). We believe the functional approach we discuss here provides the best fit for language assessment among curriculum demands, student tasks, and pedagogic uses.

In these situations, second language learners are expected to learn subject content and the language associated with it at the same time. Accordingly, in an increasing number of education systems, an integrated approach to language and content instruction for second language learners is mandated policy. However, in a striking inconsistency, policy for integrated language and content assessment is essentially absent. For example, NCATE TESOL Standards (2005) promotes integrated instruction, but its guidelines for assessment do not discuss how to assess
language and content in an integrated way. They do not change the standard practice of assessing language and content separately. Yet, when a learner writes an essay in social studies or science for example, language and content are integrated. The wording of the essay constructs the content of the essay. A teacher reads and assesses the content using the evidence of the wording. Indeed, the same is true in the language class, though there one might talk of the meaning of the essay rather than the content. The question of assessing how wording constructs meaning in text is fundamentally important, not just for IALC, but also for a great deal of assessment in general; however, it has attracted very little research attention. Why? We will argue that the question requires a view of text as making meaning with language resources rather than the traditional view of text as a display of linguistic forms.

What are our criteria for examining the quality of assessment? We are talking about assessment in a broad sense, which includes situated classroom assessment processes; we are not talking about ‘tests’, so we are not assessing with reference to the CEFR of the International English Language Testing System (IELTS) or any other foreign language performance criteria. We aim to examine the quality of the validity of IALC. We follow the view that validity is appropriately conceived as a validity argument (Chapelle et al., 2008). Part of the validity argument is a domain definition, which is based on a process of researching ‘the nature of knowledge in [the relevant] arena, how people acquire it and how they use it’ (Mislevy et al., 2003: 18). Central to our domain definition is the concept of meaning in text, particularly ‘field’ and ideational meaning, through which learners build knowledge (‘content’) and we rely upon systemic functional linguistics (SFL) for a theory and analysis of how wording constructs meaning in text. In addition, this theory provides insights into learner development and the demands of academic discourse, which are key to the judgment of individual language performance. Moreover, the theory provides tools to analyze situated processes of formative classroom assessment and teacher judgment, which would otherwise go unrecognized.

How do our criteria relate to previous work in language testing and assessment? An example of a validity argument approach is provided by Chapelle et al. (2008), who discuss how to build a case for validity using an ‘interpretive argument approach’ for the Test of English as a Foreign Language (TOEFL). Some of the inferential reasoning adopted in that approach is relevant to this discussion, particularly in terms of the way in which we construe student meaning making in context (learning to evaluating) and curriculum knowledge (language and meaning (as
Understood in terms of field and ideational meaning. The concepts of field and ideational meaning are discussed in great depth in Halliday and Matthiessen (1999) and our particular focus on causal explanation is detailed in Slater and Mohan (Chapter 13, this volume). Situated processes of formative classroom assessment are examined by Low (Chapter 12, this volume).

In what follows, we will discuss recent thinking in second language assessment, summarize the state of research on IALC assessment and illustrate classroom dilemmas of IALC. Then we will describe a systematic approach to IALC, identifying relevant theory and providing detailed examples.

**Second Language Assessment Research**

Up to the late 1970s, second language assessment regarded language ability as a body of discrete knowledge (e.g. vocabulary and grammar) and skills (e.g. reading and writing), the measurement of which was context-independent. From this viewpoint, student writing was seen as a display of grammatical forms and lexical items. Meaning and content were not valued. This traditional ‘language as rule’ approach thus eliminates IALC.

Three recent developments in second language assessment bear on IALC (see Alderson & Banerjee, 2001, 2002; Bachman, 2000). First, concerned that large-scale standardized formal testing may penalize linguistic minority students, proponents have argued for classroom-based teacher assessment because, *inter alia*, it allows use of teacher knowledge and insight (e.g., Huerta-Macías, 1995). From the IALC viewpoint, classroom-based formative assessment is important, and inextricably tied to learning content, but the actual assessment criteria operated by teachers are not necessarily based on a content-language integrated view.

Second, researchers have promoted models of communicative competence assessment, which aimed to broaden assessment goals beyond the production and comprehension of grammatically correct sentences and the language code to knowledge of how to use the code appropriately in social contexts (Bachman, 1990; Bachman & Palmer, 1996; Canale & Swain, 1980). However, Widdowson (2001) points to a known fatal defect in all of these models: they do not say how the competences relate to each other in actual communication. To remedy this defect, he recommends that knowing a language be conceived in terms of
Halliday’s concept of meaning potential rather than the idea of competences. From the IALC viewpoint, then, these models do not say how meaning in text is constructed and they lack the concept of meaning potential. We will discuss these issues further below.

Third is testing languages for specific purposes, where researchers have developed assessments and tests that relate to specific fields or domains of knowledge and skills (e.g., testing oral proficiency for non-native teachers of English or health professionals). Reviewing extensive research in the area, Douglas (2005: 860) recommends that assessors view specific purpose language ability as including ‘both specific purpose language knowledge and field specific content knowledge’. From the IALC viewpoint, Douglas’ recommendation for relating language and content is a very significant development, and one that underlines the importance of providing a linguistic analysis of how language in context constructs meaning or content.

There is little research on IALC assessment because appropriate theory, analysis and practice are not widely known. In a recent comprehensive and penetrating review of research on IALC, Byrnes (2008: 46-47) notes that ‘the assessment of content requires a language-based theory of knowing and learning that addresses characteristics of literate language use in all modalities’, but a major difficulty ‘lies in the fact that the L2 community cannot as yet readily draw on a theory of language that places meaning and content in the center of its interests’. Consequently ‘to date only sporadic work exists that explicitly targets the implications of that reorientation for assessment’. This has made it problematic to describe the link between language form and content. That said, we suggest that the integrated content-language arguments adopted in this section offer a communicatively more adequate view of language in use. At the same time, our treatment of IALC is nomologically consistent, albeit from a different epistemological position, with current debates on the centrality of ‘content’ in the conceptualization of validity (Lissitz & Samuelson, 2007).

While standard second language assessment research hardly addresses IALC, teachers struggle with IALC problems. Our first case study (Low, this volume) presents a detailed picture of teachers facing IALC dilemmas between language and content and having difficulty relating wording to meaning. Low studied teachers as they mark their students’ writing about topics of the content curriculum, articulate the decisions they make and struggle with the dilemmas they feel as they reflect on their students’ work. They mark wording and meaning separately (‘five marks for language and five marks for content’), and
there is little relation between their judgments of wording and their judgements of meaning: they do not address systematically how the student uses wording to construct the meaning of the text. However, the teachers are also deeply uncomfortable and wish to give credit to their students’ achievements in discussing complex matters of meaning. The voices of these teachers thus provide invaluable insights into IALC issues in the classroom.

A Functional Approach to the Integrated Assessment of Language and Content

We will now explore a functional approach to language form and content in IALC. Systemic Functional Linguistics (SFL) provides a language-based theory of knowing and learning. It sees language as a resource for making meaning. It aims to describe ‘meaning potential’, the linguistic options or choices that are available to construct meanings in particular contexts. It studies the whole text as a unit of meaning, not decontextualised sentences. SFL provides tools to investigate and critique how wording constructs meaning in text and context: register theory relates social context to text through three meaning components of the language system, ideational, interpersonal and textual, which are described in detail in a semantic grammar (see Halliday & Matthiessen, 2004).

SFL sees language as a means for learning about the world. It models learning as a process of making meaning, and language learning as building one’s meaning potential to make meaning in particular contexts. Knowledge is viewed as meaning, a resource for understanding and acting on the world. All knowledge is constituted in semiotic systems with language as the most central (Halliday & Matthiessen, 1999:1-3).

Halliday considers language as the primary evidence for assessing what a person has learned. If language is the primary evidence for learning, then assessment is primarily assessment of text or discourse, and of how wording constructs meaning in text. Thus Halliday’s theory of learning opens the way towards a linguistic theory of the assessment of learning. Drawing on this SFL perspective, we model assessment as a language process.

The SFL framework offers two complementary entry points to IALC: the assessment of genre and the assessment of register. The assessment of genre can draw upon SFL work on the types of genres that are prominent in education and their typical progression through the curriculum inspired by genre theory (Christie & Martin, 1997). For example, Veel (1997) provided an analysis of the main genres in secondary science
textbooks. In addition he showed that texts work to construct certain kinds of
meaning and argued that these texts construct an “idealized knowledge path”
(Veel, 1997:189) that apprentices students into the social practices of
science. According to Veel (1997:167), this knowledge path progresses from
the genres related to “doing science” (procedure, procedural recount) to
“organizing scientific information” (descriptive and taxonomic reports) and
“explaining science” (sequential, causal, theoretical, factorial, consequential
explanation and exploration), to “challenging science” (exposition and
discussion, which try to persuade a reader by presenting arguments for or
against an issue). This progression shifts from the grammar of speaking to
the grammar of writing, and an increasing use of grammatical metaphor. In
part, it moves from specific sequences of events in specific places at specific
times, to general sequences of events in a timeless setting to cause-effect
sequences involving abstract phenomena. Coffin (1997:196) mapped a
similar pathway that apprentices students into the written text types or
genres of school history. The pathway moves from narrative genres to
argument genres. There is a move from the past as story (with particular
concrete events) through the genres of explanation to constructing ‘history
as argument’ (Coffin, 1997:198). The pathway moves towards abstraction:
from mainly human participants to participants that are generic, from
specific to general, and from concrete to abstract. It moves from temporal
links to causal links and the resources of appraisal for evaluation.

Taking such L1 work on subject-specific literacies (see Unsworth,
2000) into collegiate FL education, Byrnes et al. (2006) discuss a project in
the German department at Georgetown University which designed an
integrated genre-based and task-oriented curriculum, identified the genres
that instantiated the content areas it addressed and developed elaborated
statements about their language features. Byrnes (2002) reports on three
assessment criteria for writing development: breadth of obligatory and
optional genre moves, depth of content information provided in each of
these moves, and the quality of language use at the discourse, sentence and
lexicogrammatical level in line with genre expectations.

The shift in the knowledge path from the grammar of speaking to the
grammar of writing is expanded by the concept of a ‘mode continuum’ from
language as action to language as reflection, and from casual conversation to
planned written monologue (Martin, 1992). Taking up this concept, Gibbons
(1998, 2002), in a series of classroom studies, has researched how
elementary teachers scaffold second language learners’
oral statements about subject matter into more literate and less context-
dependent discourse, in a process which can be seen as an example of
classroom formative assessment.

**A Register Approach to Assessment**

We now turn to a register approach to IALC, which is the approach we will focus on in this chapter. A field of educational knowledge such as science education is a semiotic system. The register of that field is a system of meanings that realizes or encodes the field in language. The register is a resource for creating meanings, a ‘meaning potential’, which can interpret and produce the texts of the field in context (see Halliday, 1999).

A register approach enables us to directly target the vital meaning-wording relation, and to trace the role of content by means of language analysis of ideational meaning. Halliday (1985:101) has long asserted that ideational meaning in everyday terms is ‘meaning in the sense of content’. *Ideational meaning therefore offers essential tools to analyse the integration of language and content*. Ideational meaning constructs our knowledge of the world from our experience, and so is vital to education. The register of a knowledge discipline, for example, includes complex systems of ideational meaning. A register is associated with an ‘ideation base’ (Halliday & Matthiessen, 1999), which includes ideational semantic resources for construing our experience of the world relevant to the register. Underlying Veel’s ‘idealised knowledge path’ is a claim about the development of ideational meaning, particularly causal meaning (see Slater and Mohan, this volume).

Ideational meaning provides language resources to make sense of three main realms of experience: the identification and classification of things, qualities or processes, the representation of events and activity sequences, and human consciousness, including mental and verbal processes. Mohan (1986; Mohan & Lee, 2006) argues that a human activity or social practice has a coherent ‘frame of meaning’, which includes all three main realms of ideational meaning in a theory-practice dynamic and summarizes this claim in a ‘knowledge framework’ heuristic.

We will focus on causal relations because they link with all three of these realms and illustrate the semantic process of reasoning. As Painter (1999:245) says, ‘the ability to infer cause-effect relations is fundamental to notions of “logical” and “scientific” thinking, and the fostering of the abilities to reason and hypothesise are prominent educational goals throughout the Western world.” She notes that SFL analysis of cause
includes reason, purpose and condition and distinguishes between the ‘external’ sense of cause as in ‘I love him because he gives me flowers’, and the ‘internal’ sense of cause as in “he loves me because he gives me flowers’, meaning “Because he gives me flowers, I know he loves me’. This internal sense of ‘reasons for belief’, of proof, evidence or reason for a knowledge claim occurs throughout academic disciplines and classrooms.

The nature of assessment provides a further motive for tracing cause-effect relations: asking for student reasoning should be an intrinsic part of a ‘meaning assessment strategy’. To guard against rote memorization, a wise assessor checks that learners actually understand the ‘wordings’ they are saying and the meanings they appear to be constructing, and therefore needs to ask for relevant semantic inferences and reasoning to provide inductive evidence of these meanings (see Mohan, 1972).

In the remainder of this chapter we will examine how register theory provides a basis to assess the relation between meaning and wording in text and context. We will show how this has major implications for standards of validity in assessment and for IALC. Using the example of causal discourse, we will show how a register approach applies to the assessment of written discourse, and then how it applies to formative assessment interactions between teachers and learners.

**Functional Assessment of Text: A Standard of Validity**

In this section we will discuss the functional assessment of meaning and wording in text and context. We will begin with the assessment of written text. Later we will concentrate on the strategically important case of formative assessment in classrooms and examine spoken interaction. We will discuss functional assessment with particular reference to (second) language learning and use.

Macken and Slade (1993) provide a general perspective on functional assessment, stating that assessment should be a linguistically principled procedure; it should be explicit about the language resources learners need to perform tasks in different disciplines; and it should provide specific criteria that recognize the difference between different tasks.

As we noted earlier, both content teachers and language teachers assess the meaning of texts in context on the basis of their wording. This common ground underlies and is presupposed by the different evaluations they make. It is therefore a fundamental responsibility of IALC assessment research to provide a linguistically principled account of this common ground.
There are many reasons why it should do this. We would expect an evaluator who was responsible and not arbitrary to be able to explain or justify his or her judgment of the meaning of the discourse by pointing to wording in the discourse that expresses that meaning. Responsible assessment is judgement based on evidence. Furthermore, an evaluator who formatively assesses 'for learning' and aims to help the writer learn to write better also needs to explain how the meaning of the discourse is created by its wording and to be able suggest alternative ways to convey meaning by wording. As Macken and Slade (1993) suggest, assessment should communicate explicitly about the language resources needed to perform tasks. All these considerations argue towards a central standard of validity for an assessment of text: that an assessment should assess how wording constructs the meaning of the text as a whole in its context on a linguistically principled basis. This standard applies to the productive work of writing or speaking a text, as well as to the receptive work of reading or listening to a text. The standard is a main basis of responsible assessment.

In what follows, we will argue that it is both feasible and essential to assess meaning and wording in discourse, showing how a functional approach to language can provide the theory and analysis needed to relate meaning and wording systematically, and how this approach can inform language assessment practices. We will use two instances of causal explanations, discourse that is found across academic subject areas, to illustrate our argument.

**Relating Meaning and Wording in Causal Explanations**

Discourse assessment of causal explanations is important since they are a central part of academic discourse in general. We have chosen to use the water cycle in our argument because it is a widely known topic for causal explanations. We will show how the difference in meaning between two explanations of the water cycle is realized by a difference in wording.

The following two explanations, from Mohan and Slater (2004), were elicited using a diagram of the water cycle. Explanation A was written by a secondary school teacher whose first language is English, and Explanation B was written by a university student who speaks English as a second language (ESL).

**Explanation A:**
The water cycle.
What are the processes that ‘water’ goes through?
(1) Initially, the water cycle begins as snow melts from the glaciers.
(2) The water then meanders through various water sheds until it reaches rivers and lakes. Water eventually reaches the oceans.
(3) Water, then, becomes water vapour (it evaporates into the air) and accumulates in what we call clouds.
(4) The ‘clouds’ then distribute water in the form of rain, snow, or sleet back to the mountains where the cycle begins again.

Explanation B:
The water cycle: The sun is the source of our water. The water, or hydrological, cycle begins when the sun heats up the ocean to produce water vapour through evaporation. This water vapour mixes with dust in the atmosphere and forms clouds. Cool air causes condensation of water droplets in the clouds, bringing about precipitation, or rain. This rain then falls into rivers, streams and lakes and eventually returns to the ocean, where the cycle begins again.

These two texts differ in interesting ways in terms of discourse meaning and wording. In terms of discourse meaning, each explanation constructs a line of meaning that runs through the discourse (Longacre 1996). Explanation A constructs a time line of events in time sequence (Event A is followed in time by Event B). Explanation B constructs not just a time line but a line of actions and events in causal sequence, in a cause-effect relation (A causes B).

In terms of wording of the text, Explanation A constructs its time line using time conjunctions (initially, then, eventually), dependent clauses of time (as snow melts, until it reaches), lexical verbs of time (begin), and a series of event verbs (melts, meanders, reaches, becomes). There is only one explicitly causal feature (clouds distribute water). Explanation B constructs its causal line using causal dependent clauses (to produce water vapour), cause/means as circumstance (through evaporation), lexical verbs of cause (produces, causes, brings about), nominalization of causal processes (evaporation, condensation, precipitation), action verbs (the sun heats up the ocean) and a causal metaphor (the sun is the source of our water).

A competent assessor of these two texts should be able to recognise the difference in lines of meaning between the two explanations and how this difference is realized by a difference in wording. If the aim of the assessment is to see which of these explanations is a causal explanation, the evidence clearly points to Explanation B. Thus, the assessor can justify the claim that Explanation B is the better causal explanation by pointing to the evidence of the wording, and can explain to learners the
language aspects of causal explanation by showing the difference in wording between the two explanations. The assessor’s claim is based on the way Explanation B has used the resources of the language to create meaning in discourse, in this case a causal explanation. The claim is not based on whether Explanation B is more factually correct than A or whether B violates fewer grammar rules or discourse conventions than A.

In SFL, the more precise compound term ‘lexicogrammar’ is used to refer to what we have been describing as ‘wording’. This term signals that the meaning of the wording is realized both in lexis and grammar and has to be traced through both. In Explanation A, a time line is constructed using both lexical verbs of time (begin) and time conjunctions (initially). In Explanation B a causal sequence is constructed using both lexical verbs of cause (produces) and cause/means as circumstance (through evaporation).

The resources to express causal meanings are an aspect of language development both in the culture and the individual speaker. Halliday and Martin (1993) discuss the historical development of Scientific English and find that causal discourse has taken the following developmental path:

from A happens; so X happens
   because A happens, X happens
      that A happens causes X to happen
         happening A causes happening X

   to happening A is the cause of happening X

(Halliday & Martin 1993:66)

Our second case study (Slater and Mohan, this volume) explores this developmental path in individuals by examining how students who are native speakers of English and ESL students develop their resources to express causal meanings. Extending VEel’s ‘idealised knowledge path’ as a frame for the development of causal meaning and wording, Slater and Mohan apply it to the oral data of interviews about science learning in school with English language learners (ELLs) and native speakers of English from two different grade levels. They show the developmental trajectories of the learner in the construction of causal discourse and the associated use of lexicogrammatical resources. Through a combination of description and analysis, they vividly demonstrate how grade 9 English L1 speakers can draw on causal language resources when needed much more readily than ELLs.
How does SFL support the standard of validity for an assessment of discourse that addresses the meaning ('content') of the text and relate it to the wording of the text? SFL recognizes the importance of text or discourse as a construction of meaning rather than as a display of features of the language system. This meaning is technically termed ‘discourse semantics’ (see Table 11.1). In our example above, we analysed temporal and causal lines of meaning as the discourse semantics. (Another possibility would be to analyze the more complex discourse semantics of a register or of a genre of discourse.) SFL recognizes that the discourse semantics of a text are realized by the lexicogrammar of the text. SFL analyses grammar as ‘semantic grammar’, as form related to meaning, a very different analysis than traditional grammar, and organizes grammatical meaning under three ‘metafunctions’: Ideational (construing experiences), Interpersonal (enacting social relationships), and Textual (creating discourse). These three metafunctions co-occur in all texts. Our analysis of causal meaning here foregrounds the Ideational metafunction.

Our example of the two explanations showed that it was not difficult to explore informally the relation between discourse semantics and lexicogrammar in two contrasting texts. However, pursuing the relation systematically requires knowledge and application of the relevant literature (see Halliday & Matthiessen, 2004).

Relating discourse and wording, as is done in SFL, requires certain assumptions about language that are very different from many traditional beliefs about language. Broadly there is a contrast between an SFL view of language as resource and a traditional view of language as rule. Our analysis of explanations A and B depends on a view of language as resource. A view of language as rule would not be capable of producing

Table 11.1. The relation between meaning and wording in text.

<table>
<thead>
<tr>
<th>Language functions in register</th>
<th>Ideational</th>
<th>Interpersonal</th>
<th>Textual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discourse Semantics (meaning of a discourse)</td>
<td>Construing experiences</td>
<td>Enacting social relationships</td>
<td>Creating discourse</td>
</tr>
<tr>
<td>Lexicogrammar (wording of a discourse)</td>
<td>e.g. Transitivity (verbal processes)</td>
<td>e.g. Mood</td>
<td>e.g. Theme</td>
</tr>
</tbody>
</table>
the same analysis, as shown in Mohan and Slater (2004) and discussed later in this chapter. If we contrast traditional beliefs about language with those of SFL as in Table 11.1 (see Derewianka, 2001), one can see that the traditional view eliminates the meaning-wording relation. We suggest that the general failure of second language assessment to deal with the meaning-wording relation can be traced to such traditional beliefs about language.

Traditional grammar sees language as a set of rules for the form and structure of language, and language form is not related to meaning in context. It sees written or spoken text as a display of sentence grammar forms, as evidence of competence in the language rules. Language learning is acquiring rules that result in correct form, and the role of evaluation is to judge this correctness of form. Assessments of meaning are judged independently of form and lack a basis in theory or specific evidence. In this view, the meaning of the text as a whole is not of interest, and nor is the question of how that meaning is realized in the wording.

From an SFL perspective, how text makes meaning through its wording is a central question for language assessment. SFL sees language form in relation to meaning, and sees language as a resource for making meaning. It does not privilege the language system over the text but

**Table 11.2. Assumptions of SFL and traditional grammar (after Derewianka, 2001)**

<table>
<thead>
<tr>
<th><strong>Systemic Functional Linguistics</strong></th>
<th><strong>Traditional Grammar</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Language as a resource for making meaning</td>
<td>Language as a set of rules</td>
</tr>
<tr>
<td>Language form related to meaning</td>
<td>Form unrelated to meaning</td>
</tr>
<tr>
<td>Text makes meaning using language resources in context</td>
<td>Written or spoken text as a display of sentence grammar forms</td>
</tr>
<tr>
<td>Relates language system to text and values both</td>
<td>Values language rules (competence) rather than text (performance)</td>
</tr>
<tr>
<td>Language learning as extending resources for making meaning in context</td>
<td>Language learning as acquiring correct forms</td>
</tr>
<tr>
<td>Evaluate text as making meaning with resources in context</td>
<td>Evaluate correctness of form; judge meaning independently from form</td>
</tr>
</tbody>
</table>
values them both. It does not consider the text as a display of language resources, but sees it as making meaning using the resources of the language system in context. Language learning is seen as extending resources for making meaning in context. Evaluation can judge how the learner has made meaning in a text and how the learner has used the resources of the language system. For example, our analysis noted how Explanation B constructed a causal line of meaning and used many more lexicogrammatical resources for causal meaning than did Explanation A. Notice how the analytic emphasis is on what the learners can do, and not simply on what they cannot do.

Much of second language assessment research appears to assume a traditional language as rule perspective, with its emphasis on error, and fails to deal with meaning-wording relations. Mohan and Slater (2004) explored this issue in two ways. The first was to examine models for assessing communicative competence (Bachman, 1990; Canale & Swain, 1980). These appear to be simple extensions of the assumptions of traditional grammar with a strong emphasis on competence. Canale and Swain took grammatical competence (the knowledge a speaker has about the rules of grammar) as their base model and added sociolinguistic and strategic competences, independently of meaning making in context (Leung, 2005); Bachman added textual and illocutionary competences, all of which appear to be conceived of as a matter of generalized rules or conventions. The learner’s discourse becomes a display of correct or incorrect forms of these rules. Assessing grammatical competence means assessing the language learner’s discourse for grammatical errors, and assessing for the other competences appears also to be a matter of checking for relevant errors. There is no evidence of a conception of language as a resource for meaning, of a text as a construction of meaning or of the role of lexicogrammar. There is, therefore, no evidence that these models can recognize meaning in a text as a whole or deal with meaning-wording (i.e. discourse semantics-lexicogrammar) relations.

The second way that Mohan and Slater (2004) explored the issue of meaning-wording relations in causal discourse was by using Explanation A and Explanation B as test cases to see if their differences could be recognized by second language assessment instruments. The first instrument was a locally developed test for assessing the communicative competence of potential second language teachers based on Canale and Swain (1980), and the second was the scoring guide for the Test of Written English (Educational Testing Service, 1990). In both cases, the raters looked for errors across a range of categories and assessed the two explanations as equal, judging them on the basis of error. In both cases,
the raters intuitively judged Explanation B as more advanced, but could not recognize this in their assessment because there was no matter of error. In other words, when presented with explanations A and B, assessors working with these communicative competence models assessed the texts in terms of perceived errors only. While they recognized intuitively that B was a better explanation than A, they felt that their models did not allow them to express that recognition in any articulated way. These assessors thus reinforced the notion that these models do not recognize discourse as a construction of meaning realized in wording; instead, the models extend grammatical competence to a taxonomy of textual, illocutionary, sociolinguistic, and strategic competencies, and judge discourse as a display of correctness or error in these competencies.

This is consistent with the traditional view of language, which separates meaning and wording, and consistent with some specialists in second language assessment who believe that meaning and wording (content and language) should be assessed separately; judgments of meaning are thus separated from the evidence of wording that could justify them.

As we have argued thus far using the water cycle explanations, a functional approach to the assessment of discourse should judge the meaning (‘content’) of a text and justify or explain this judgment by relating it to the wording of the text. This should be a central standard for validity. We have noted, however, that much work in second language assessment operates under assumptions that make judging the meaning of a text in relation to the wording difficult if not impossible to do. It is therefore essential to draw on a functional approach like SFL to provide the meaning-wording relation with theory and language analysis that will support this standard of validity.

**Functional Assessment in Classroom Interaction: Functional Recasts**

The Assessment Reform Group helpfully describe classroom formative assessment:

> tasks and questions prompt learners to demonstrate their knowledge, understanding and skills. What learners say and do is then observed and interpreted, and judgements are made about how learning can be improved. These assessment processes are an essential part of everyday classroom practice. (Assessment Reform Group, 2002:2)
One type of formative assessment is provided by formal recasts of learner errors of grammatical form:

1. NS: When does your father work?
2. ELL: My father **work** at night.
3. NS: [RECAST] Your father **works** at night?
4. ELL: Yes, he **works** at night.

The ELL’s grammatical error in (2) is correctly recast by the NS in (3), who thereby assesses (2) as grammatically incorrect and provides detailed feedback to the ELL, who corrects the error in (4), showing evidence of learning. Thus the participants have interacted to construct a brief formative cycle of utterance, feedback, and uptake.

Formal recasts (as in 1-4) are associated with a traditional formal view of language that sees assessment as judgment of the correctness of utterances and learning as movement from error to correct form. *Functional* recasts are associated with a functional view of language that sees assessment as judgement of the functional appropriateness of the expression of meaning, and learning as expanding the learner’s resources for making meaning.

An example of the formative assessment of *functional integration of form and meaning* is provided in a functional recast by a teacher of ELLs’ causal explanations during a project on the human brain in a content-based language learning classroom at the university level (see Mohan & Beckett, 2003):

5. S: We can relax our brain by wave.
6. T: We can relax our brain by wave? How does that work?  
   [RECAST] How does a wave help us relax our brains?
7. S: Because … the cerebral wave of the stable type appears when the mind relaxes, and it improve the centering power.

This example shows T using a recast as part of a larger strategy for scaffolding causal explanation by formatively probing for an explanation. S offers a causal explanation in (5). In (6), T assesses (5) as needing causal elaboration, and uses the recast to pose a guiding question, making ‘wave’ the agent of the explanation, not the means, as it is in ‘by wave’, and offering ‘help’ as a causal process. S’s uptake in (7) offers a much more elaborated causal explanation, making ‘wave’ the agent, using ‘improve’ as a causal process, and adding a causal nominalization ‘the centering power’. As a causal explanation, as scientific discourse, and as academic discourse generally, (7) is more elaborate and ‘developed’ than (5).

As with the formal recast above, the participants in the functional recast situation have interacted to construct a brief formative cycle of
utterance, feedback and uptake. The difference here concerns the focus of the assessment, whether on form independent of meaning as in the formal recast, or on adjusting the form to elaborate on the meaning and thus help expand the student’s language resources in context.

Further evidence of causal functional recasting includes Mohan and Luo (2005), who studied online computer-mediated communication in a graduate language education course, where ESL students skillfully functionally recast their peers’ discourse as part of the normal practice of online academic discussion. Early (2001) contains examples of formative interactions in elementary social studies and elementary literature classes where teachers can be seen to causally recast student statements. Slater and Mohan (this volume) conveys the pervasiveness of causal discourse in science and ways to make functional formative assessment sustained and systematic.

Given the dominant view of second language assessment, and the IALC dilemmas that teachers experience (Low, this volume), it is remarkable to discover that teachers functionally assess their ELL students’ utterances in classroom formative assessment, and therefore show an intuitive understanding of functional assessment. We do not suggest that this is done consciously and systematically. However, we do suggest that intuitive functional formative assessment may be a very widespread phenomenon, and that it offers teachers a major opportunity to reflect on their intuitive practices and build on them systematically.

**Functional Assessment of Register in a Unit of Teaching**

We now move to a broader level: functional analysis of the assessment phase of a unit of classroom teaching, to illustrate assessment of a very simple register and its meaning potential. The field of knowledge is beginning level magnetism. The teacher is one who knows the field and has already constructed the meaning potential of magnetism. The learners, however, have to build up this meaning potential, or frame of meaning, learning the discourse of magnetism. What register meanings are the learners expected to develop? How can one assess that they understand these meanings, and have not simply memorized register wordings?

To explore these questions we will discuss a study of a Western Canadian grade one/two ESL science class on magnetism (see Mohan & Slater, 2005). In the teaching and learning phase of the unit, the children learned a simple ‘theory’ of magnetism in experiments with bar magnets, whose poles were marked. Then, in a formative assessment phase, the teacher aimed to assess the children’s understanding of magnetism by
having them extend their ‘frame of meaning’ to the new case of ring magnets, whose poles were not marked and which looked very different. They were to find out if the ring magnets had north and south poles. Thus knowledge of the theory was developed in the practical situation of bar magnets and was formatively assessed in the practical situation of ring magnets.

A general functional question is: how is the register ‘frame of meaning’ realized in the three main realms of ideational meaning? The core of the theory was: A bar magnet has two poles—north and south. North and south attract. North and north repel. South and south repel. In terms of ideational meaning, the theory constructs a taxonomy of ‘poles’ (north and south) and of two causal relations (attract and repel). The children investigated the theory through simple experiments where they pondered answers to experimental questions and evaluated experimental evidence for those answers.

Thus, the children’s frame of meaning should include examples of the three main realms of ideational meaning mentioned earlier: the identification and classification of things, qualities or processes (taxonomy of north and south poles), the representation of events and activity sequences (the causal relations attract and repel), and human consciousness (the children investigated, tried things out, discovering or coming to know answers).

To indicate when the teacher was assessing examples of these three realms of ideation, we have highlighted processes (verbs) in the formative assessment discourse below. The first realm of ideation relates to the processes of being and having, which have been bolded, the second realm relates to processes of doing and happening, which have been italicized, and the third realm relates to processes of human consciousness, which have been underlined.

A second general functional question is: what meaning assessment strategies are used to gather inductive evidence that learners actually understand register meanings, and have not simply memorized register wordings? We argued earlier that, to guard against rote memorization, the wise assessor asks for student reasoning, including causal reasoning. To highlight causal meanings in the formative interaction below, we have capitalized some explicit causal elements.

At the broadest level, the teacher’s register assessment strategy was to pose the experimental question and to scaffold the students to gather and evaluate the experimental evidence to answer it. This included getting the students to infer descriptions of the case based on their prior
knowledge, asking the semantic inferences about the case and asking for reasons for these inferences.

First, having posed the experimental question of whether the ring magnets had north and south poles, she demonstrated repelling and attracting to guide the learners to describe the unfamiliar case:

Teacher: So… what happened here?
Students: It repelled.
Teacher: They’re repelling. Right. They were repelling and I’m going to turn this one over. What do we call this? North or south?
Students: North.
Teacher: North. It doesn’t matter. I’m turning it over. What...
Student: Attract.

Having got the students to label one pole hypothetically, the teacher next asked for a semantic inference about the ‘attract’ situation and then for their reasons for it.

Teacher: SO IF it’s attracting what is underneath here? North or south?
Students: South.
Teacher: South. Right. The bottom is probably north and this part is south. … WHY? BECAUSE?
Student: BECAUSE north and south.
Teacher: BECAUSE north and south and what do north and south always do? What is the rule?
Students: Attracts.
Teacher: That’s right. North and south always attract. What repels?
Student: North and north or south and south.

By mentioning ‘repel’, the teacher encouraged the learners to make the corresponding inference about the initial ‘repel’ situation by themselves and work out the answer to the experimental questions. Next, the teacher asked the learners to infer the answer and then asked for their reasons:

Teacher: Okay. SO tell me about these magnets? Do they have a north and south?
Students: Yeah.…
Teacher: How do we know?
Jack: BECAUSE we tried it out.
Teacher: And? What did we discover?...
Jack: BECAUSE IF you turn it around it won’t attract and IF you turn it around it’ll attract.
Teacher: SO it has a north and south? Yes it does.
The teacher is not assessing language form in isolation, she is assessing language meaning and wording. She is not treating the assessment of language separately from the assessment of science. Rather, she assesses the magnetism register, the frame of meaning, the ideational meaning potential that is central to both.

The teacher assesses examples of the three main realms of ideational meaning: the taxonomy of poles (‘do they have a north and south?’), the causal relations of attract and repel (‘what’s happening here?’), and human consciousness (‘how do we know?’). These different kinds of ideational meaning are a first step in meaning analysis, and they suggest how the register frame of meaning constructs a coherent domain of human consciousness of the things and events of magnetism.

The teacher’s ‘meaning assessment strategies’ are asking for inferred descriptions of new practical contexts, semantic inferences and justifications of semantic reasoning. The strategies appear appropriate to provide evidence that learners can understand and use the meaning potential of this simple register. Meaning assessment strategies are likely to be an important aspect of future research on formative assessment.

Many of the inferences and justifications depend on causal meaning. For example, Jack’s statement illustrates both the ‘external’ and the ‘internal’ meaning of cause. The external sense is shown by ‘IF you turn it around it won’t attract’. The internal sense (‘causes me to know’) is shown by ‘How do we know… [We know] BECAUSE…’. Requests to provide reasons for inferences are natural contexts for use of the internal sense of cause.

This example of assessment of a simple register has general implications. All academic disciplines and subject areas are registers. All registers are complex frames of meaning. To understand and appreciate formative assessment interactions in these disciplines and subject areas, we need to trace their frames of meaning and their meaning assessment strategies.

**CONCLUSION**

IALC is the linguistically principled assessment of how wording constructs the meaning of a text in its context, which is the common ground presupposed by language assessment and content assessment of text.

IALC is disabled by a language as rule view of language. Standard second language testing and assessment does not provide an IALC assessment of text, and does not draw on a theory of language and meaning/content that would support it. Lacking this, teachers find it
difficult to systematically assess, diagnose and help learners in their construction of meaning (Low, this volume).

IALC is enabled by a language as resource view of language. SFL provides a language-based theory of knowing and learning, and a theory and analysis of how wording constructs meaning, and therefore a foundation for validity in integrated assessment. On this basis, we have shown how texts can be systematically functionally assessed for IALC on the evidence of their meaning-wording relations, using the example of ideational meaning and causal discourse, an important area of functional discourse development (Slater & Mohan, this volume).

On the same basis, we have described cases of IALC formative assessment at the micro-level and the macro-level of classroom interaction where teachers intuitively functionally assess how wording constructs meaning. Meaning-wording analysis illuminates functional assessment processes such as causal recasting and aspects of meaning assessment strategies that would otherwise go largely unrecognized. These are also clear cases where we are dealing not just with the assessment of discourse, but with the discourse processes of assessment — analysis of assessment as discourse. These cases are steps towards a linguistic theory of assessment.

We believe that intuitive functional formative assessment may be a very widespread phenomenon. Formative classroom assessment is a strategic area where teachers can take the initiative when larger scale assessment has been found wanting. We believe that functional formative classroom assessment could become a major force to address learners’ needs more adequately. We strongly recommend that where teachers are working formatively on IALC, they be given adequate recognition and research support for that work, and adequate resources to pursue it.

A great deal of assessment of all learners, not just second language learners, evaluates the meaning of written or spoken texts on the evidence off their wording. A functional analysis of meaning and wording such as SFL offers a seeded basis for validity, as we have shown. We strongly recommend that it be more widely recognized that systematic and principled IALC is not only possible, but necessary, and on a very wide scale.

References


