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Tasks, experiential learning and meaning making activities: a functional approach

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Abstract

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Tasks, experiential learning and meaning making activities: a functional approach.

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It is important for task-based learning and teaching research to focus on academic content tasks that involve form and meaning, language and content, and academic discourse and disciplinary knowledge. This is needed to address problems such as low academic achievement by English language learners. We argue that the SFL approach to language, particularly in the area of 'field' and ideational meaning, can support a rich model of experiential learning in the wider context of socio-semantic meaning-making activities that can illuminate issues regarding the analysis and development of language as a means of learning. We will illustrate this model with two contrasting examples: young children learning about magnetism, and college-level students learning about marketing.

Introduction

This paper argues for the importance of researching academic content tasks in the wider context of socio-semantic meaning-making activities**.** A significant amount of work in TBLT has rightly explored the role of tasks for promoting language skills, for instance in terms of linguistic fluency, accuracy and complexity (see for example chapters by Robinson and Skehan, this

volume). This chapter however starts from the assumption that learning language centrally involves engaging with its meaning-making potential, and that consequently the meanings implicated by tasks are also an essential facet of any task-based pedagogy. Hence the importance of considering tasks in terms of their meaning-making potential. In this paper we argue particularly for the importance of researching academic content tasks from the perspective of its potential contribution to the learning of English language learners (ELLs) across the curriculum.

Large-scale U.S. national educational assessments of K-12 students show that there is a significant, persistent and disturbing achievement gap between English language learners (ELLs) and native speakers. For example, in the 2013 National Assessment of Educational Progress (NAEP) just under one-third of ELL students (31 percent) scored at the basic level or above in reading at fourth grade, compared with more than two-thirds (72 percent) of non-ELL students. Similarly, just under one-third of ELL students (31 percent) scored at the basic level or above in math at eighth grade, compared with three-quarters (75 percent) of non-ELL students (NAEP, 2013). What might explain this poor performance of ELL students?

Kieffer et al. (2009) undertook a meta-analysis with respect to the effectiveness and validity of offering test accommodations for ELLs taking large-scale assessments, such as providing English dictionaries or glossaries, with the intention of reducing the impact of limited English proficiency on the assessment of the target construct. In their conclusion, the authors stress the importance of academic content tasks, stating:

We argue that the poor performance of many ELLs on large-scale assessments is largely because of their limited control of academic English—those academic language skills that are not irrelevant to content knowledge but rather central to performing *the sophisticated tasks that serve as the goals of math, science, social studies, and language arts instruction* [our italics]. The key implication is that educators must not only refine how they assess ELLs but also dramatically improve how they teach these learners. To meet high standards for academic success, these learners require targeted, explicit, and intensive instruction in the complex and specialized language that lies at the heart of each content area. (p.1190)

A research approach to academic content tasks will require attention to academic discourse (see Haneda, 2014, and the special issue of *Linguistics and Education* it forms part of). Instead of attending to language and ignoring content, such a research approach will need to recognize both and focus on the relation between language and content. It cannot be limited to examining the learning of items of language form, but needs to follow the learning of large units of meaning, such as learning through a series of tasks. It will also need to recognize common elements that occur across content areas, such as 'thinking skills' like causal reasoning. Finally, researchers need to be alert to questions of the agency of the learner. In a review of identity, agency and SLA, Duff (2012) states: "reaching advanced levels of L2 proficiency arguably requires concerted effort, sustained and strategic practice, and opportunity—all manifestations of personal and social agency (p. 417)." To provide theory and analysis for the linguistic nature of content area disciplines, academic content tasks will require a model of language that goes

beyond a structuralist model, provides a linguistic theory and analysis of meaning-making in texts and tasks, and includes the concept of the register of a content area.

In Belgium, Bogaert, Van Gorp, Bultynck, Lanssens, & Depauw (2006) report on research on a long-term nationally supported implementation of TBLT in Flanders that specifically examined the potential of task-based teaching to overcome some of the linguistic problems that content teaching poses for second language learners. One of the points the authors make concerns transmission-mode teaching. They note that many subject teachers engage in transmission-mode, teacher-dominated teaching that is difficult for second language learners to process, and they endorse task-based learning as an alternative and a remedy, seeing it as an opportunity for learners to engage actively in learning as a constructive process. Another point the authors make concerns learning by experience. They claim that "task-based science education capitalizes on the basic idea of learning by experience" and assert that: "In task-based science teaching learners gradually move from concrete experiences to abstract insights at a higher level" (Bogaert et al., 2006, p.121). They describe a task-based science class where the students built models of medieval siege catapults and tried them out. The technological principles of 'weight', 'power' and 'fulcrum' were discussed and the pupils then looked for concrete household applications of these principles. One might expect that they would access the language of these technological principles more readily than in a transmission mode class. The authors further report that the teachers involved in task-based experiments saw much potential profit in terms of raising the pupils' Dutch academic language proficiency, without however offering a detailed explanation of how tasks can develop abstract insights or increased academic language proficiency. This is an important item for the research agenda.

The idea of learning by experience should not be accepted uncritically. A widely known model is Kolb's experiential learning model which describes the acquisition of knowledge as a cycle of learning of four successive phases: (1) "Concrete Experience, (2) "Reflective Observation", (3) "Abstract Conceptualization", and (4)"Feedback or Active Experimentation" (Kolb, D. 1984:21). Kolb holds that in the Concrete Experience phase learners must be able to involve themselves fully, openly and without bias.

However, Miettinnen (2000) argues that Kolb's model of experiential learning is inadequate. Kolb claims to be building on the work of John Dewey but he fails to satisfactorily incorporate Dewey's theory of experience, reflection and action. Two points of Miettinnen's critique are particularly important for our purposes. Taken together, we suggest, they point towards a more adequate, contextual model of the experiential learning cycle.

The first critical point is Kolb's concept of experience, his view that in concrete experiences learners must be able to involve themselves *without bias* in new experiences. Miettinnen points out that contemporary philosophers of science have showed that the idea of objective, unbiased observation of facts is not tenable and that observations are necessarily guided and laden by prior conceptualizations and cultural expectations (in our terms, *frames of meaning*).

Observation necessarily takes place in a certain activity, context or thought-community, using the concepts, instruments and conventions historically developed in that context. They steer the observations, and with them the observer interprets and generalizes what is

seen and regarded as problematic and important. (Miettinnen, 2000, p. 62.)

The second critical point is that Kolb's model provides no reasons why one phase should lead to another,. Miettinnen contrasts this with the way Dewey relates experience and reflection to practical, material life activity." The reflective experience, mediated by intelligence and knowledge grows out from the inadequacy and contradictions of the habitual experience and ways of action" (ibid. 66). Rather than incorporating Dewey's contextual view of activity into his model, Kolb ignores it. We can add a third critical point. Kolb's model does not include language.

Our case study below of children learning about magnetism shows the need to recognise these critical points: the children are familiar with manipulating magnets in their everyday activities (e.g., playing with fridge magnets); they enter the classroom with frames of meaning of magnetism which may resist change; the experiments they engage in need to be designed to challenge these frames of meaning (e.g., that magnets attract all metals) and lead to a scientific frame; they need to express and discuss their reflections in language.

The theme of learning by experience in TBLT is elaborated on by Long (2015) in his methodological principle of "promote learning by doing":

Choice of task as the unit of analysis goes naturally with learning by doing. …Hands-on, personal experience with *doing* (initially less-complex versions of) real-world tasks – 'through the eyes *and* the hand to the brain' – increases the likelihood that abilities learned in the classroom will transfer to the world outside, that what is learned is understandable,

because it is context-embedded, better integrated into long-term memory, and more easily recalled (p. 306).

Like Bogaert et al,, Long (2015), too, makes mention of 'abstract insights':

…practical hands-on experience with real-world tasks brings abstract concepts and theories to life and, because fully contextualized, makes the language involved more understandable and memorable (p. 68-69)

These are important claims and are central to the characterization of TBLT and to how it might relate to the learning of the discourse of academic content tasks. In particular, they implicate our understanding of the distinction between more experiential context-embedded discourse and more abstract context-reduced discourse. For us, then, a research agenda needs to explore the following questions: How is learning by doing related to the concepts of more experiential context-embedded discourse and more abstract context-reduced discourse? How can it foster academic language development? What would count as linguistic evidence for these questions and how should it be analysed? These questions guide the argument developed in this chapter.

The last question —specifying the linguistic evidence for learning by doing— is particularly important. Learning by doing is itself not a simple concept and has more than one aspect. For example John Dewey's account highlights a different aspect than Long's:

Why is it that, in spite of the fact that teaching by pouring in, learning by passive

absorption, are universally condemned, that they are still so entrenched in practice? That education is not an affair of "telling" and being told, but an active constructive process, is a principle almost as generally violated in practice as conceded in theory. (Dewey, 1916, p.38)

This is an early statement of Bogaert et al's (2006) theme distinguishing transmission learning from learning as a constructive process but expressed in terms of whether the learner is passive or active. This is a question of learner agency, and we understand agency as the ability of persons to act independently and to make their own free choices (Barker 2005). The linguistic evidence for learner agency (such as the learner discussing choices) is quite different from the linguistic evidence for context-embedded versus context-reduced discourse, and we start by exploring this issue by drawing on systemic functional linguistics.

Systemic Functional Linguistics

To discuss tasks, context-embedded discourse, context-reduced discourse, and academic language development we will draw on the Systemic Functional Linguistics (SFL) model of language and discourse/text, in which language is a resource for making meaning and language form is related to meaning. SFL relates the language system to discourse/text and values both. Discourse/text makes meaning by using language resources in context. In the SFL view, language learning is seen as extending resources for making meaning in context, and can be assessed by judging how the learner's discourse/text makes meaning with resources in context. Indeed, following Halliday (1993), the SFL model can be seen as central to a theory of learning

in general: "The distinctive characteristic of human learning is that it is a process of making meaning, a semiotic process, and the prototypical form of human semiotic is language" (p. 93).

SFL views language as operating in context. It is an 'ecological' theory of language in which "language is always theorized, described and analysed within an environment of meanings" (Halliday & Matthiessen 2014, p. 32). To put this in other terms,

> the systematic description of language is theoretically linked to a systematic description
> of the social contexts in which language is used…the focus is on how people use
> language to make meanings with each other as they carry out the activities of their social
> lives. They do this through their selections from the sets of choices that are available in
> the language systems (Christie and Unsworth, 2000, p.3).

This means that SFL views tasks contextually and sees that learners and teachers who are engaged in tasks are not only using language, but also making meaning in the context of wider activities which develop dynamically as a result.

SFL describes social context at two related levels: context of culture and context of situation. Context of culture is the broader context of "the overall contextual potential of a community" (Halliday & Matthiessen, 2014, p. 32). Members of a cultural community share common beliefs and assumptions which enable them to know what to expect in the activities they are mutually engaged in, such as shopping, dealing with bureaucracy, and eating together. Context of situation is the more local or immediate context of people interacting on a particular occasion and using language to do so. A context of situation

can be characterized in terms of field, tenor and mode: **field** – what is going on in the situation: (i) the nature of the social and semiotic activity; and (ii) the domain of experience this activity relates to (the 'subject matter' or 'topic'); **tenor** – who is taking part in the situation: the roles played by those in the socio-semiotic activity[.]; **mode** – what role is being played by language and other semiotic systems in the situation […]The combination of field, tenor and mode values determine different uses of language – the different meanings that are at risk in a given type of situation. (Halliday & Matthiessen, 2014, p. 33-34)

A register is a functional variety of language determined by a particular contextual combination of field, mode, and tenor values. For example, we can describe the register of a recipe in a cook book by describing its **field** (the topic is how to prepare food), its **mode** (written instruction) and its **tenor** (providing accurate and helpful instructions but at the same time aiming to interest and engage the reader). It is very important to note that a register is characterised in terms of "meanings that are at risk" and not simply in terms of lexis and grammar. In this paper we will mainly focus on field, but without totally excluding tenor and mode. Field is associated with ideational meaning.

Gibbons (2015) uses four short science texts to illustrate links between discourse, context, and academic language development. We will show how her illustration relates to the questions we have posed about tasks. The four texts are arranged in a continuum from spoken to written language, from implicit to explicit meanings, from the particular and concrete to the abstract and general and they constitute what Jim Martin (1984) calls a 'mode continuum'. They move from context-embedded discourse to context-reduced discourse:

Text 1: (spoken by three 10-year-old students, with accompanying action). This ...no, it doesn't go...try that…That won't work. It's not metal….these are the best.

Text 2: (spoken by one student about the action, after the event). We tried a pin... some iron filings...the magnet didn't attract the pin.

Text 3: (written by the same student) Our experiment was to find out what a magnet attracted. We discovered that a magnet attracts some kinds of metal. It attracted the iron filings, but not the pin.

Text 4: (taken from a child's encyclopedia) A magnet...is able to pick up, or attract, a piece of steel or iron because its magnetic field flows into the steel or iron, turning it into a temporary magnet. Magnetic attraction occurs only between ferrous materials.

(Gibbons, 2015, p.80)

Text 1 shows students engaged in the task of a magnetism experiment, testing objects against a magnet to find out what substances a magnet attracts. They are face-to-face and can all see what is happening in the immediate particular situation, the 'here and now'. The discourse coordinates the actions of the student group as they do the task. This is action discourse. It is deeply embedded in this supportive 'here and now' context. Meanings are implicit: it is not clear to outsiders what 'this' or 'that' specifically refer to or what is meant by 'doesn't go'.

Text 2 has less contextual support, being after the task and away from the objects and magnets. The student has to reflect on what happened in the task. To report what happened in the

task, the student must develop and use more explicit language ('pin', 'iron filings', 'magnet', 'attract'). This is a report, a discourse of reflection.

Text 3 has even less contextual support and needs to be more explicit because it is a written text for an audience that is not present. So, at the beginning the student adds an explanation of the purpose of the experiment (the task) for the reader. This is also a report, a discourse of reflection, recounting the particular events of the task. However, notice how it begins to move into generalization, necessitating the use of some of the academic language of magnetism ('a magnet attracts some kinds of metal').

Text 4 is about magnets in general, written by an author who has developed the ability to create academic discourse for a young readership. It does not refer to the experimental task at all, or to particular persons, things or events, and it is not dependent on the context of a task. It is a general explanation or exposition, a general reflection discourse. It explains the abstract theory that accounts for the results of the task and refers to it as "magnetic attraction," using a nominalization to refer to this phenomenon.

Thus the mode continuum helps us to see the relations between tasks, context-embedded discourse, context-reduced discourse, and academic language development. As students move from the highly context-embedded communication situation of a shared task with its particular, immediate events and implicit meanings, and move towards more context-reduced situations, they need to make meanings more explicit and to begin to deal with the general abstract meanings of the academic register of the topic.

Action discourse, as in Text 1, is always a possibility when an academic content task is done by a group of cooperating students. A general aim in the development of academic discourse is to support students to produce Reporting texts (Texts 2 & 3) and Expounding texts (Text 4) in the register of a disciplinary area. Gibbons shows how teachers scaffold students' academic language development from engaging with a task in action discourse to reporting and expounding their knowledge in writing. This suggests a general path that could be followed to build upon task research and to develop the discourse potential of academic content tasks. Note that there is a reverse movement from Expounding to Action discourse in certain circumstances. This occurs when students read their textbooks (which are typically expounding discourses) and apply the information therein to their academic tasks.

The movement between action discourse and reflection discourse is clearly of major importance for task research and classroom research. Teacher-guided reporting (TGR) is a form of reflection that has been found to be notably valuable with young students (Gardner, 2002; Gibbons, 2002). TGR refers to

> "those times when a student is asked to report to the whole class about what he or she has done or learned.... In teacher-guided reporting, the teacher provides scaffolding by clarifying, questioning, and providing models for the speaker, so that the learner and teacher together collaboratively build up what the learner wants to say"(Gibbons, 2002, p. 34).

Texts 1-4 illustrate a progression of discourses: action discourse, reporting (particular reflection), expounding or explaining (general reflection). How do we tell them apart linguistically? We begin with the difference between discourse of action and discourse of reflection. This is the difference, for example, between "try that" in Text 1, which is a speech act of requesting or suggesting to the students who are working on the experimental task, and "We tried a pin" in Text 2, where the student is reporting on what was done in the past in the experimental task. In discourse of action, the focus is on enacting and supporting what is going on *in* the socio-semantic activity. In discourse of reflection the talk is *about* the socio-semantic activity; its 'subject matter' or 'topic' is the socio-semantic activity. This distinction reflects the difference between the two aspects of field mentioned above: (i) the nature of the social and semiotic activity (what is being done), and (ii) the domain of experience this activity relates to (the 'subject matter' or 'topic').

Discourse of reflection can be divided further into specific reflection (e.g., reporting, when a teacher or students talk about what happened in a specific experiment) and general reflection (e.g., expounding or explaining, when a teacher or students talk in general terms about the theory of magnetism). Halliday and Matthiessen (2014) describe "a contextual taxonomy of text that is based on field in the first instance, and more specifically on the variable of socio-semantic activity…that constitutes a situation" (p. 35). Of their seven primary text types of meaning we will use reporting and expounding: "'Reporting' is reporting particular phenomena, chronicling the flow of events, surveying places or inventorying entities, while 'expounding' is expounding knowledge about the world – about general classes of phenomena, categorizing them or explaining them." (p. 35).

The discourse contrast between particular and general reflection, between particular phenomena and general phenomena, is illustrated in the contrast between "the magnet didn't attract the pin" and "a magnet attracts some kinds of metal." This difference can be tracked by the contrast of particular versus generalized subjects in the clause ('the magnet' versus 'a magnet') and of single-occasion versus habitual events in the process (verb) ('didn't attract versus attracts') (see Cloran, 2000, pp.169-171). In the text analysis in the rest of this chapter we will mark general reflection by enclosing the clause or clause complex in square brackets and labelling it thus: [a magnet attracts some kinds of metal GEN].

Table 1 below relates these types of discourse to the examples of the Magnetism texts. The table also includes the socio-semantic activity of learning magnetism. The students in text 1 are learning magnetism through experiments. The experiment in text 1 is the first in a series of experiments that the students experience in the unit on magnetism. These experiments are designed to extend their knowledge of magnetism. When students work successfully through the series of experiments they build up an understanding of magnetism theory which they can use to interpret new cases of magnetic attraction and unfamiliar kinds of magnets. We can summarise this by saying that as they engage in the activity of learning magnetism through experiments they build up magnetism theory and apply it in practice to cases.

Table 1. Basic types of discourse within a socio-semantic activity.

SOCIO-SEMANTIC ACTIVITY: Learning magnetism through experiments	DISCOURSE TYPE	MAGNETISM EXPERIMENT TEXT
Theory	General Reflection: Expounding	Expounding (Text 4)
	Particular Reflection: Reporting	Report of Experiment (Texts 2 & 3)
Practice	Action	Action discourse of Experimental Task (Text 1)

Our next comment on these four texts will focus on ideational meaning. In texts 1-3 the students make three kinds of meaning using three kinds of processes (verbs):

1) They identify and classify things using 'relational' processes of being **(**marked in **bold):** "It**'s** not metal….these **are** the best."

2) They represent events and activity sequences using 'material' processes of doing and happening **(**marked in italics): " it *doesn't go…try* that… the magnet *didn't attract* the pin."

3) They talk about human consciousness using 'mental' processes of thinking, perceiving, feeling or saying **(**marked with underline): "Our experiment was <u>to find out</u> what a magnet attracted. We <u>discovered</u> that a magnet attracts some kinds of metal."

Our previous paragraph gave examples of ideational meaning. We will now describe ideational meaning in more detail. Ideational meaning is the resource for interpreting and constructing as meaning our human experience of the world around us and inside us. Ideational

meaning provides a grammar of experience that covers three main realms of experience and three main classes of process (verb). The realm of the world of abstract relations covers being and having, and the identification and classification of things, qualities, or events; it relates to relational and existential processes. The realm of the physical world covers the representation of events and actions, of happening and doing; it relates to material and behavioural processes. The realm of the world of consciousness covers human consciousness, of sensing and saying; it relates to mental and verbal processes.

There are six main process types arranged in three pairs: 1.*material* & 2. *behavioural;* 3. mental & 4. verbal; 5. **relational** & 6. **existential.** As above we will italicize *material* and *behavioural* processes, underline mental and verbal processes and bold **relational** and **existential** processes. We will also write the first two letters of the name of the process type. Thus *material, behavioural,* mental, verbal, **relational** and **existential** will be coded *(Ma), (Be),* (Me), (Ve), **(Re)** and **(Ex)**.

Table 2 below relates realms of meaning and discourse types in a socio-semantic activity. This represents the notion that socio-semantic activity is a large unit of meaning that includes all three realms of ideational meaning. This is intentional on our part. When we examine discourse data below of young students interacting and learning magnetism through experiments, we will look to see whether all three realms are represented.

Table 2. Discourse types and realms of meaning in a socio-semantic activity.

SOCIO-SEMANTIC ACTIVITY: Learning magnetism through experiments	DISCOURSE	World of abstract relations: being & having	Physical world: doing and happening	World of consciousness: sensing and saying
Theory	General Reflection: Expounding			
	Particular Reflection: Reporting			
Practice	Action			

In the rest of the paper we will illustrate a rich model of experiential learning based on Table 2 with two contrasting examples: young children learning about magnetism, and college-level students learning about marketing. We wish to show how the model applies across very different examples. At a superficial level it might seem that we are simply following Kolb's model of four phases: (1) Concrete Experience; (2) Reflective Observation; (3) Abstract Conceptualization; and (4) Feedback or Active Experimentation. However, as noted earlier, Kolb's model is not related to language evidence. Therefore our model defines Kolb's phases in terms of discourse. This involves re-defining Kolb's phases 1)-3) linguistically as the three discourse types of Table 2: 1) *Action discourse*; 2) *Particular Reflection: Reporting*; 3) *General Reflection: Expounding*. In this way, the phases can be investigated using language data. In Phase 4, new concepts are tested against experience. In both of our examples this is done in a final assessment process, where learners are asked to apply their newly developed frame of meaning to an unfamiliar case. We analyse this process linguistically. Further, Kolb's model

does not include Dewey's contextual view of activity. But the magnetism tasks are not isolates: they are related together through their relevance to the activity of learning magnetism. Similarly the marketing tasks are related through their relevance to the activity of learning marketing. Thus Table 2 shows activity as a holistic unit of meaning with a theory and a practice. Kolb does not recognise that observations are necessarily guided by frames of meaning. In our study of the two cases of classroom learning, we will therefore analyse frames of meaning using the realms of meaning in Table 2.

Learning Magnetism

The following example, 'Learning Magnetism', is provided by a grade one/two (6/7 year old) science class in which most of the students were ESL learners. They were learning about magnetism by engaging in a series of hands-on experiments (see Mohan & Slater, 2005). We only have space to discuss the initial and final experiments. In all, there were ten experiments, which we can identify by their experimental questions (in this chapter we will only consider experiments 1, 9 and 10):

Experiment #1 Which things will a magnet pick up? **#2** What are the strongest parts of a bar magnet? **#3** Which magnet will pick up the most paper clips? **#4** Which things will the force of magnetism pass through? **#5** How many magnetic marbles can you suspend in a chain? **#6** How can you use a magnet to make a magnet? **#7** How can you make a compass by magnetizing a needle? **#8** How can you make the invisible force of magnetism visible? **#9** What can you find out about the poles of a magnet? **#10** How can we show that the invisible force of magnets is real?

These young learners, guided by their teacher, engaged in a series of academic content tasks that were intended to work cumulatively. We aim to illustrate how they made meaning through action and reflection, built their understanding of a simple theory of magnetism in a scientific register, and thereby developed a frame of ideational meaning which they applied to cases of magnetic phenomena and simultaneously made progress in developing their academic discourse of the register of the discipline. As in Gibbon's illustration above, the general pattern is that the learners move from more context-embedded discourse to more context-reduced discourse in a mode continuum from implicit to more explicit meanings, from the particular and concrete to the more abstract and general. The experiments support repeated cycles of experiential learning.

Following the pattern of Table 2, in investigating these data, we will consider five questions:

1. Is 'learning magnetism' a socio-semantic activity of field and ideational meaning?
2. How do the learners engage in action discourse?
3. How do the learners engage in reflection discourse?
4. How do the learners develop a frame of meaning for magnetism and apply it to a case?
5. How do they simultaneously develop their academic discourse of the register of the discipline?

1. Is 'learning magnetism' a socio-semantic activity of field and ideational meaning?

In an encyclopedia entry entitled: 'Activity ; Logical Theory and Educational Implication of', Dewey (1911) first defines activity more narrowly as: "For educational purposes this concept may be defined as a series of changes definitely adapted to accomplishing an end" and then gives a richer definition in terms of purposive action done for its own sake rather than being

dictated by others: "all types of directed action in which the purpose, choice, and reflection of the individual take a part" (pp. 33-4). Even this second definition leaves out the social dimension. of 'active occupations' which are prominent in Dewey (1916). We will interpret his definition broadly in the light of his approach to education.

Dewey's first, narrower definition of activity is close to Jim Martin's linguistic characterization of 'field of discourse', and we will use 'field of discourse' analysis to connect Dewey's first definition of activity to SFL. Martin (e.g. 2013) starts by defining a 'field of discourse' as "a set of activity sequences oriented to some global institutional purpose, alongside the taxonomies of entities involved in these sequences (organised by both composition and classification)" (p. 23). Activity sequences are then "series of events that are expected by a field" (Martin & Rose, 2007, p.101). For example, Martin considers tennis to be a field of discourse. In tennis, game, set and match would be examples of activity sequences, and game point and break point would be part of a taxonomy of points,

Learning magnetism through experiments is an activity (following Dewey) in terms of field and ideational meaning (following Martin).The ten experimental tasks relate to each other as a series. The series is a sequence of events, and each task is a series of events. Each experiment has an experimental question whose resolution gives purpose to the events. The results of the experiments build up simple taxonomies, such as north and south poles. The same holds for each experimental task. Below we will describe our analysis of Task 1, for which the instructions were as follows:

Task: Experiment #1. Which things will a magnet pick up?

1. Prediction: Sort the objects into two groups. In one group, put the things you think the magnet will attract. In the other group, put the things you think the magnet will not attract.

2. Test each object using the magnet….Write the results in your booklet.

3. Conclusion: What did you notice about the objects that the magnet attracted?

In this task-as-workplan, the sequence of events is obviously indicated by the numbering of the parts and by the order of the imperatives of the instructions (sort, put, test, write). The purpose is answering the question "Which things will a magnet pick up?" and the instructions serve to guide the learner to answer it systematically. With regard to taxonomies of entities, the experiment guides learners towards developing a taxonomy of things that the magnet will attract (ultimately, ferrous metals) and things that it will not. As we will see below, students engaged in this task do indeed test objects, group them, and discuss the results.

2. How do the learners engage in action discourse?

Extract 1 Group work. Action discourse in task #1 for learning magnetism**.**

[*Action in the activity***.** The students are *doing(Ma)* the first magnetism experiment]

Student1: Oh it's *doing(Ma)* it.… Look, it's *doing* it.

Student2: It *sticks(Ma)*. *Look(Ma)* at that.

Student3: Yeah.

Extract 1 above shows the students doing the first magnetism experiment task, testing an object

using the magnet in "hands-on" fashion. It illustrates student action discourse in learning magnetism, and its features are very similar to Gibbons' Text 1. It is highly contextualized discourse: The physical 'entities' (magnets or objects) that are the subjects of the clauses are co-present, and the personal 'entities' (the group members) that are subjects in the imperatives are co-present; the events spoken about are concurrent with the moment of speaking. The students use imperatives to direct each other's attention ('Look at that'). Deictic reference to the immediate situation (e.g. 'it', 'that') has the result that the things referred to are not explicitly specified. Transitivity analysis shows that the processes ('it's doing', 'sticks') are all material processes of doing and happening. Action is going on, but the discourse only very partly explicitly indicates what the action is.

In sum, the learners engage in action discourse to do the experiment cooperatively. Their action discourse is context-embedded, particular, concrete and implicit. It is by no means fully-formed academic communication. However, it builds implicit meanings which can be articulated and which form an important basis for later development of academic communication,

3. How do the learners engage in reflection discourse?

In action discourse the students make things happen; in reflection discourse they talk about what happened. Extract 2 below shows the teacher guiding the students to reflect on and discuss what happened in the magnetism task. The discourse is more explicit than Excerpt 1. The processes are mainly relational processes of being; the focus is descriptive, on what things are, or are like. The deictic reference to the immediate situation (e.g., 'it', 'this', 'that') is combined with more explicit description ('It's a penny'). From an earlier discussion the teacher knew that

some learners believed that a magnet attracts all metals, and her questions asked not only for the results of the experiment but also for the learners' explanations for the results. She thus brought to light, made explicit, that they did indeed hold this belief.

Extract 2. Group work. Teacher guided *reflection* discussion with a 'hands-on' group:

Joan: It'**s(Re)** a penny. It'**s going(Re)** brown.

Teacher: Is it *attracted(Ma)* Joanie?

Joan: No.

Teacher: No? Why not? Why Annie?...

Annie: It'**s(Re)** not metal….

Teacher: This **is(Re)** something like it. Because this **is made(Re)** of metal. This **is made(Re)** of metal and this **is made(Re)** of metal.

Annie: Yeah.

Teacher: But only this one *is attracted(Ma)*.

Annie: That'**s(Re)** kind of big and this one'**s(Re)** kind of small.

Here Joan and Annie recognize that the penny is not attracted to the magnet. One might expect them to see this as a challenge to their belief that magnets attract all metal things, and therefore a problem that calls for reflection. Instead they abandon their belief that the penny is metal. So in their contextual world there is no problem to inquire into. The teacher then attempts to reinstate the problem by identifying two metal objects and showing that one is attracted and the other is not. But Annie explains this away by suggesting that the size of the objects is a factor.

There is a long-standing body of research in science education that shows how children's interpretations of scientific phenomena may differ substantially from the scientific view and may persist despite counter-evidence. As Driver, Squires, Rushworth, and Wood-Robinson (1994) say "Children have ways of construing events and phenomena which . . . may differ substantially from the scientific view" (p. 165). As here in Extract 2, this means that students may interpret scientific learning tasks in ways that differ from the intentions of task designers. To put the point in terms of SFL contextual theory, the meaningful contextual interpretation of a task cannot be read off from the material situation, but depends on how the task is construed by the learner. We cannot therefore speak of a *task* as being fully contextualized, we can only speak of a task being contextualized by its participants, possibly in different ways.

But Joan and Annie did not only interpret the task in a different way, they failed to learn from it. The designers of the task not only aimed for the experiment to be understandable to the learners, they also aimed for the learners to learn from doing the experiment, to add to their frame of meaning for magnetism in a theory-practice cycle. Unlike Joan and Annie, some of the other children did, as we will see.

The learners' difficulties in Extract 2 point to an issue with Dewey's claim that education is not an affair of "telling" and being told, but an active constructive process. What if the active construction is scientifically wrong? This raises the question of appropriate teacher strategies in guiding student learning-by-doing in academic content tasks. The teacher in Extract 2 does not attempt to tell these students the "correct answer." Instead, she uses magnets and objects multi-modally to provide empirical evidence for an alternative view and thus models good practice in

learning-by-doing experiments. In her turn, Annie provides empirical evidence for her view, even if her view is considered 'unscientific'.

Extract 3 exemplifies teacher-guided reporting as defined by Gibbons (2002), where a student is asked to report to the whole class about what he or she has done or learned. This was a regular feature at the end of each experiment in this classroom.

Extract 3 *Reflection*: Teacher-guided reporting (TGR) after the experiment with the whole class.

Teacher: What did you learn(Me) about what *was attracted(Ma)* to the magnet and what *was not attracted(Ma)* to the magnet?

Student: It *attracted(Ma)* metal.

Teacher: Hands up… Jack?

Jack: Some metals *could stick(Ma)* to… things and [other metal *can'(Ma)t*. GEN]

Teacher: [Some metals can *stick(Ma)* and other metals *can't(Ma)*. GEN] What else did you learn(Me)?

Extract 3 begins with the teacher's question asking for a student report, and a response which provides a very brief (and scientifically inaccurate) answer: "It [the magnet] attracted metal." The answer nevertheless meets the definition of a report "on a particular phenomenon in the past." What happens next is of interest because it shows the teacher scaffolding a student's statement to move it from reporting to expounding, and thus to a general statement. Jack's

answer to the teacher's question (which provides a more scientific statement than the answer by the previous student) begins as a report in the past ("Some metals could stick"), and ends as a general statement ("and other metal can't"). Then the teacher makes a functional recast (see Mohan & Huxur-Beckett, 2001) of Jack's past statement to create an 'expounding' timeless general statement ("Some metals can stick and other metals can't").

To sum up, the discourse of Extract 2 is a reflective, descriptive, and relatively explicit teacher-guided discussion of the experiment, talking about the particular case. The discourse of Extract 3 is Teacher-Guided Reporting with the whole class that works towards generalization. In Kolb's model, action is naturally followed by reflection, but it cannot be assumed that this happens automatically. Nor can it be assumed that student reflection leads to scientific understanding. In Extract 2 the learners retain their incorrect explanation of magnetism by explaining away the evidence against it. The task is interpreted by the learners in their own unexpected way. In Kolb's model, reflection is naturally followed by generalisation, but it cannot be assumed that this happens automatically, either. In Extract 3 the teacher recasts a student's statement into a timeless generalization.

4. How do the learners develop a frame of meaning for magnetism and apply it to a case?

In Experiment 9, working with bar magnets, long rectangular bars with a pole at either end, marked with N or S, the students worked out the rule of magnetism that like poles repel and unlike poles attract. Most of these students understood it in a longer form: north and south poles attract, north and north repel, south and south repel. The rule of magnetism summarized their results in this experiment. For them it was a 'frame of meaning', a general statement that they

used to interpret their results. It builds upon what students have learned from previous tasks (attract, repel, north pole, south pole).

Extract 4: Experiment 9. Attracting and repelling.

[Starting the experiment with the whole class.]

Teacher: Your experiment today **is(Re)** to <u>discover(Me)</u> which sides of the bar magnet, the norths and the souths, which ones *repel(Ma)* and which ones *attract(Ma)*. You're *going to put(Ma)* the two south poles together. Then you're *going to put(Ma)* the two north poles together, and then you're *going to put(Ma)* the north pole and the south pole together and <u>observe(Me)</u> what they *do(Ma)*. What'**s(Re)** the rule of when things are *attracted(Ma)* and when they are *repelling(Ma)*?

Later, in a working group:

Teacher   What'**(Re)s** the rule? S S <u>means(Me)</u>?

Student: *Repel(Ma)*.

Teacher: *Repel*. N N <u>means(Me)</u>?

Students: *Repel(Ma)*.

Teacher: N S <u>means(Me)</u>?

Students: *Attract(Ma)*.

In Experiment 10, the teacher then assessed their understanding of this general frame of meaning by seeing if they could apply it to interpret the location of the poles in the very different and unfamiliar *case* of ring magnets, where the poles were unmarked. A ring magnet is a thick ring of metal with a hole in the middle like a doughnut. Its poles are located on the upper and

lower surface of the ring. If two ring magnets are stacked on an upright pencil with opposite poles facing, and therefore repelling, the upper magnet will appear to float (the teacher demonstrates this). The key to solving the problem was for the students to note when the two ring magnets attracted or repelled each other and to use the rule of magnetism to work out where the poles would be. We want to show the connection between this data and the model of discourse in Table 2 above. As with our earlier data, we italicize the *material* and *behavioural* processes, underline the <u>mental</u> and <u>verbal</u> processes, and bold the **relational** and **existential** processes. We have also marked general theory in brackets followed by GEN.

Extract 5: Experiment 10

(1) Teacher: <u>Have</u> any of you ever <u>questioned(Ve)</u> that maybe there **is(Re)** a north and south [on ring magnets]? *<demonstrates the two ring magnets repelling each other>* So… what *happened(Ma)* here?

(2) Students: It *repelled(Ma).*

(3) Teacher: They're *repellin(Ma)g*. Right. They were *repelling(Ma)* and I'm *going to turn(Ma)* this one over. What do we <u>call(Ve)</u> this? North or south?

(4) Students: North.

(5) Teacher: North. It doesn't <u>matter(Me)</u>. I'm *turning(Ma)* it over. *<demonstrates the two ring magnets attracting each other>* What…

(6) Student: *Attract(Ma).*

(7) Teacher: So if it's *attracting(Ma)* what **is(Re)** underneath here? North or south?

(8) Students: South.

(9) Teacher: South. Right. The bottom **is (Re)**probably north and this part **is(Re)** south. … Why? Because?

(10) Student: Because north and south.

(11) Teacher: Because north and south and [what do north and south always *do(Ma)*? GEN] What **is(Re)** the rule?

(12) Students: *Attracts(Ma).*

(13) Teacher: That's**s(Re)** right. [North and south always *attract(Ma)*. GEN] [What *repels(Ma)*? GEN]

(14) Student: [North and north or south and south. GEN]

(15) Teacher: Okay. So tell(Ve) me about these magnets? Do they **have(Re)** a north and south?

(16) Students: Yeah….

(17) Teacher: How do we know(Me)?

(18) Jack: Because we tried it out(Me).

(19) Teacher: And? What did we discover(Me)?...

(20) Jack: Because if you *turn(Ma)*it around it won't *attract(Ma)* and if you *turn(Ma)* it around [again] it'll *attract(Ma).*

(21)Teacher: So it **has(Re)** a north and south? Yes it **does(Re)**.

The teacher assesses inductive evidence that this group of learners can understand and apply the frame of meaning of the 'rule of magnetism' to the case of ring magnets in this basic register. In particular, she assesses (1) the causal relations of attract and repel, (2) the taxonomy of north and south poles, and (3) student choice of answers to the experimental question and the evaluation of evidence. The first realm relates to material processes of doing and happening (italicized), the second realm relates to the relational processes of being and having (bolded), and

the third realm relates to mental and verbal processes of human consciousness, 'sensing' and saying (underlined). Broadly speaking, lines 1-6 deal with the causal relations of attract and repel, realized through material processes of doing and happening; lines 7-14 deal with the taxonomy of north and south poles, realized through relational processes of being (and of having in line 15); lines 15-21 deal with student choice of answers and the evaluation of evidence, realized through mental and verbal process of human consciousness. In this way, the teacher assesses the three realms of the ideational frame of meaning of magnetism that is central to both language and science in this teaching unit.

5. How do the students simultaneously develop their academic discourse of the register of the discipline?

Are the students simultaneously making progress in developing their academic discourse of the register of magnetism? Progress in academic discourse can be demonstrated through improvement in understanding or through improvement in production. The interaction above is evidence of improvement in understanding; the students have extended their frame of meaning of magnetism to include ring magnets. But there is also evidence that the interaction has potential for improvement in production. Notice how line 20 is a very complex utterance for a young learner: "Because if you *turn* it around it won't *attract* and if you *turn* it around [again] it'll *attract*." This is a purpose clause that includes two coordinated conditional statements.

So, in our example above, the students began by learning about magnetic attraction by doing an experimental *task* with magnets and objects. They did the experiment together and talked in order to cooperate (*Action discourse*). Later, with teacher guidance, they talked about

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what happened in the experiment (*Particular reflection discourse, report*), and next, still with teacher guidance, they talked about explanations of what happened (*General reflection discourse, expounding*). Thus, there was a *learning cycle from Action to Particular Reflection to General Reflection* (see Table 2**)** that moves from more *context-embedded discourse* to more *context-reduced discourse*. The core of what the students needed to learn was the 'Rule of magnetism' (North and South attract, North and North repel, South and South repel). They acquired this knowledge by doing experiments and talking about them in the discourse learning cycle. The rule is a tiny *frame of ideational meaning*. When they had learned the Rule, they were shown the ring magnet (the case) and asked to work out where its poles were. They did this successfully by making inferences from their frame of meaning.

How is it possible to learn something about a field of knowledge and simultaneously learn the academic discourse of the field? Take the Rule as an example. Using it to make sense of the Ring magnet is using it for knowledge purposes. But if you look at the Rule from the language perspective the Rule relates together *North* (pole), *South* (pole), *attract* and *repel*, which are four *technical meanings of the magnetism register*. As the students worked through the magnetism experiments, they learned to understand these meanings. A register is made of meanings, not simply of words.

Learning Marketing

Our second example is provided by a group of bilingual (Cantonese/English) students in a marketing course in a community college in Hong Kong. The course aimed for students to learn about marketing theory and techniques and apply them through projects and case studies. As before, we will use this example to illustrate how a task can guide learners to act and reflect and

develop a general frame of ideational meaning for the 'field' of an activity which they apply to a case. We will also illustrate how a task can guide learners simultaneously to make progress in developing the academic discourse of the register of the discipline.

The students engaged in a marketing project which required them to work collaboratively. The *task* for the project was for the students to write a report in which they were expected to select a company, apply in-depth theory of marketing analysis to it, and make recommendations. The main sections of the report were: 1.The Nature of the Business and its Background, 2. Competitor Analysis, 3. Customer Analysis, 4. Product Analysis, and 5. Recommendations. Thus Section 1 described the specific company or case selected, Sections 2, 3, and 4 each explained a general type of marketing analysis and applied it to the company, and on this basis Section 5 recommended a specific new product for the company and outlined a marketing plan for it.

Their resources for the task included the textbook for the course (in English), the course and assignment notes supplied by the instructor (also in English), and the members of their discussion group, with whom they could speak Cantonese. The students attended classes, read the course materials and textbook, and held regular meetings in the discussion group (in Cantonese) to work on the report. The group delivered an in-class oral presentation (in English) based on a rough draft of the report. They then completed the final version of the report (in English) and handed it in.

In what follows, due to limitations of space, we will concentrate mainly on data that relates to Part 1 and Part 3 of the report. We will again follow the model of activity and discourse outlined in Table 2 above, and we will consider the same five questions as for the previous example, the last two conflated:

1. Is 'learning marketing' an activity of field and ideational meaning?

2. How do the students engage in action discourse?

3. How do the students engage in reflection discourse?

4. How do the learners develop a frame of meaning for marketing and apply it to a case, and simultaneously develop their academic discourse of the register of the discipline

1. Is 'learning marketing' an activity of field and ideational meaning?

To answer this question we will examine the course textbook for linguistic evidence relating to marketing and activity. The textbook for the course was Kerin, Hartley, Rudelius, and Lau (2009), *Marketing in Asia*. To provide some context about marketing for the reader**,** up to the 1950s, many firms had a production orientation, producing as much as possible of a given product or service. But now many firms, like Pringles, the one that the students chose to study, follow a marketing orientation that aims at supplying products to suit customer needs and wants, and thus aims at deciding which products will be directed toward which customers.

Is marketing an activity/'field of discourse' in the sense defined by Martin (2013) as "a set of activity sequences oriented to some global institutional purpose, alongside the taxonomies of entities involved in these sequences (organised by both composition and classification)"(p. 24)? The textbook states that "the strategic marketing process integrates the chapters in this

book" and discusses how its chapters are organized around the strategic marketing process (SMP) "whereby an organization allocates its marketing mix resources to reach its target markets. This process is divided into three phases: planning, implementation and evaluation" (Kerin et al. 2009, p. 46). It is clear from this that the SMP process can be considered as an activity sequence with three successive phases and with a global institutional purpose of allocating resources to reach markets.

For instance, the textbook 'expounds' the SMP process in terms of general classes of phenomena rather than particular cases. When it says "an organization allocates its marketing mix resources," it refers to "an organization" generically, meaning organisations in general. At the same time, as might be expected, it refers to particular examples or cases of organisations engaging in the SMP process. "The strategic marketing process is so central to the activities of most organisations that they formalize it as a marketing plan…Appendix A …presents a sample marketing plan for Paradise Kitchens Inc… a firm that produces and distributes a line of spicy chilies..."(ibid., p. 46).

Each of these phases of the SMP themselves contain activity sequences. To support our later discourse analysis, we will give special attention to the activity sequence of 'segmenting and targeting markets' which is part of the planning phase. The following three quotations from the textbook provide a brief general explanation of the activity of segmenting and targeting markets of potential customers, including its market-product focus, its 'five key steps', and its goals. We have used the same coding system as earlier.

Extract 8

Market-Product Focus and Goal Setting.

Determining(Me) which products will be *directed(Ma)* toward which customers… **is(Re)** essential for *developing(Ma)* an effective marketing program. This decision **is(Re)** often based on market segmentation, which **involves(Re)** *aggregating(Ma)* prospective buyers into groups, or segments, that (1) **have(Re)** common needs and (2) *will respond(Ma)* similarly to a marketing action. Ideally a firm can *use(Ma)* market segmentation to *identify(Ma)* the segments on which it will *focus(Ma)* its efforts – its target market segments – and *develop(Ma)* one or more marketing programs to *reach(Ma)* them. (Kerin et al. 2009: 48)

The five key steps in *segmenting(Ma)* and targeting(Me) markets that link*(Ma)* market needs to a firm's marketing program: 1. *Group(Ma)* potential buyers into segments; 2. *Group(Ma)* products to be *sold(Ma)* into categories; 3. *Develop(Ma)* a market-product grid and *estimate(Ma)* the size of markets; 4. Select(Me) target markets; 5. *Take(Ma)* marketing actions to *reach(Ma)* target markets. (Kerin et al. 2009: 248)

A business firm *goes(Ma)* to the trouble and expense of *segmenting(Ma)* its markets when … it expects that this will *increase(Ma)* its sales, profit and return on investment. (Kerin et al. 2009: 251)

In the passage above the activity of segmenting and targeting markets is a general procedure which can be applied to the case of a particular business organisation or company. The transitivity processes in these quotations include all three realms of meaning and serve to build a general picture of the activity, which broadly appears to follow a familiar pattern of gathering relevant information ("*aggregating(Ma)* prospective buyers into groups, or segments, that (1) **have(Re)** common needs"), deciding on goals ("Determining(Me) which products will be *directed* toward which customers"), and taking appropriate action ("*Take(Ma)* marketing actions to *reach(Ma)* target markets"). There are also similarities to the semantic structure of the earlier example of magnetism activities: If we look more closely at the 'five key steps', it is clear that

marketers are expected to "group" or *classify* potential buyers and "group" or *classify* products, then to make a market-product grid which displays *a conditional relation between classes* of potential buyers and *classes* of products (e.g., 'if potential buyers are in group A, they are likely to buy products in group X'). (Then marketers are *to choose or decide upon* ("select") some combination of potential buyers and products as a target.

As might be expected, at its broadest level, the activity of segmenting and targeting markets is specifically aimed at customers buying more of *the firm's products or services*. Note that the mention of "Market-Product Focus" and "market-product grid" indicates that the activity is targeted at *customers-and-products* (i.e., customers as a market *for certain products*), not simply at customers alone. We will find below that the students did not communicate this important point as clearly as they might have.

What are the likely objectives of an introductory course based on Kerin, Hartley, Rudelius, and Lau (2009)? One of the co-authors, G.T. Lau, teaches an introductory course at the National University of Singapore. The course description states: "Course Objectives. This is an introductory course in marketing. It seeks to acquaint participants with an understanding of the principles, concepts, theories and techniques in marketing. It also attempts to provide participants with opportunities to make simple applications of these marketing principles, concepts, theories and techniques through exercises, case studies and projects." (Lau, 2015, p. 1) The introductory marketing course we are examining similarly aims to provide participants with opportunities to make simple applications of marketing theory through case studies. The task of writing the report required them to apply theory of marketing analysis to the case of a business.

To state this in linguistic terms, the course aims to develop a general frame of ideational meaning for the 'field' of the marketing activity which they apply to cases. In other words, there is a very close parallel between the course objectives and the linguistic processes which we are aiming to illuminate.

2. How do the students engage in action discourse?

We will now examine the students' out-of class discussion for evidence of action discourse. Recall the difference between discourse of action and discourse of reflection discussed in the previous example. There, we pointed out the difference between "try that" in Text 1, which is a speech act of requesting or suggesting to the students who are working on the experimental task, and "We tried a pin" in Text 2, where the student is reporting on what was done in the past in the experimental task. In discourse of action, the focus is on enacting and supporting what is going on *in* the socio-semantic activity. In discourse of reflection the talk is *about* the socio-semantic activity; its 'subject matter' or 'topic' is the socio-semantic activity. We described how Gibbons shows how teachers scaffold students' academic language development by engaging them in a task in action discourse and moving them to reflection (i.e., reporting and expounding their knowledge), and we noted that this suggests a general path that could be followed to build upon task research and to develop the discourse potential of academic content tasks. In our case study of magnetism we showed how the teacher followed the general path and scaffolded the students from action discourse to oral reflection (reporting and expounding). In the extract below, from marketing, we will investigate how the students engage in action discourse to enact and support the task they are involved in. Then we will consider

whether there is potential to scaffold the students to reflect (report or expound). If that proves problematic we will inspect the problem and consider alternatives.

The excerpt below shows the project group's discussion about how to do a 'customer analysis' of Pringles. Most of the students soon came to realise that initially they did not understand the marketing theory of customer analysis. For readers who cannot immediately recall their marketing theory it may be helpful to explain what a 'customer analysis' is, according to the course textbook. A customer analysis is a critical section of the planning stage of the strategic marketing process which helps a company to group its potential buyers into meaningful segments (i.e. groups) based on their characteristics and their buying responses, so that it can determine the specific segments, that is, the target markets, on which it will focus its marketing efforts and take corresponding marketing actions to reach them. Market segmentation involves "aggregating prospective buyers into groups, or segments, that (1) have common needs and (2) will respond similarly to a marketing position" (Kerin et al., 2009, p. 48).

The students worked in their discussion group outside of the classroom to construct each part of the Written Report. In the example below, the students had already discussed how to write Part 1 "Background of the company" and Part 2 "Competitor analysis," They now had to discuss Part 3: "Customer analysis" (the English translation will clarify implicit meanings in the transcript by providing glosses within square brackets). In the discussion the students were trying to coordinate their work on the task of gathering information about Customer Analysis from the textbook in order to produce their report. We have analysed the data drawing on the analysis of speech functions in casual conversation from Eggins and Slade (2005). Codes are shown in bold.

Rather than transitivity analysis, we chose speech function analysis because it gave a sharper focus on how the group coordinated its efforts to make progress with difficulties.

We judge the discussion to be action discourse on the basis of the speech function analysis. Four of the fourteen utterances or utterance groups coded are broadly coded as commands, the most frequent category. All the commands urge the group to read the textbook. With the young children earlier, commands are typically realised "congruently" as imperatives; here commands are mainly incongruent, realised by declaratives, with one exception: "Let's read it first!" The two questions in the data are aimed at getting help with understanding the textbook information for example "Segmentation! What's <u>that</u>?" Responses to these questions take up much of the remaining data.

The group's strategy for gathering information about Customer Analysis was to read the textbook and discuss it. But the group ran into difficulties. At least one student had no prior knowledge about Customer Analysis, not knowing whether it was different from the previous topic of Competitor Analysis (see utterance 1), and even after reading the textbook section, most of the group did not understand the information (see utterance 8), presumably because they found the expounding textbook discourse difficult. In the circumstances, it is natural to ask the more knowledgeable members of a group for help and one group member had apparently been helpful in previous group work ("[we] all rely on you [Student N]").

But student N did not help in this session. Asked a direct question for explanation of a term (utterance 4), student N replied, but non-compliantly (utterance 5 **Reply:non-comply**), and even when challenged in a way that invited him to change his response (utterance 8 **Rejoinder:challenge:rebound**), N did not reply. Ultimately the impasse was resolved when

Student A suggested that the group focus their reading on identifying Pringle's target market (Utterance 11 **Resolve**), and Student J elaborated on the suggestion (Utterance 12 **Resolve**). We suggest that the issue here is the theme mentioned above of transmission versus learning as a constructive process: Student N was avoiding "telling others the answer" and Student A and J were suggesting scaffolding strategies of reading focus that might enable others to discover "the answer" for themselves.

Extract 9 *Out of class group discussion*

(1)J:　我哋而家第三part呢**就係講**customer analysis 其實-呢一個好似同-我覺得-你哋

-有無分-別？[自己睇番, 我哋睇吓, 你睇番先啦-自己睇番。

Statement:fact　*Translation:* Now our Part 3 is talking about customer analysis.
(*reading the assessment guidelines*) This part seems to be –
Question:closed:fact　are they [customer analysis and competitor analysis] different?
Command (incongruent) [We need to] read it by ourselves; you read it first, by
ourselves *(referring to the textbook and course notes).*

(2)M:　[有

Respond:support:answer　*Translation:* Yes [customer analysis and competitor analysis
are different].

(3)J:　我哋睇番先啦

Command　*Translation*: Let's read it first! *(referring to the textbook and course notes)*
(The group read the course notes about customer analysis silently).

(4)J: seg x 呢個係咩呀?

Question:open:fact *Translation:* Segmentation! What's <u>that</u>?? *(feeling puzzled about*

the term)

(5)N: **Reply:non-comply** Segmentation (unhelpfully merely correcting J's

   pronunciation).

(6)J: **Acknowledge**   Segmentation *(repeating after Student N).*

(7)N: **Affirm** 係 *Translation:* Yes *(reaffirming Student J's pronunciation of this new*

   term).

(The group continue reading)

(8)M: 嘩， 指意曬你呀 我哋**仲未好了解**果D資料 佢哋已經[查過。

Rejoinder:challenge:rebound   *Translation*: Oh no, [we] all rely on you [Student N].

We don't quite understand the information. They [other members in the group except

Student N] have already checked [it].(*rejecting N's unhelpful reply as she and some other*

members in the group have already read the relevant information yet they still could not

grasp the meaning of the concept of customer analysis).

(9)J: [所以我哋**應該要**-係囉- 睇番D資料

Command (incongruent) *Translation:* So we have to read the information [again]

   (urging the group to read the information again).

(10)M: 係囉, 我哋**要**睇番一次資料先得

Command (incongruent) *Translation:* Yes, we need to read the information [again]

   (showing his agreement with Student J's suggestion)

(11)A:　　　　即係睇番- 佢個target market 係咩嘢。

Resolve *Translation:* [For Customer Analysis] That means [we need] to read -
[Customer Analysis] is to identify what its [Pringles'] target market is. *(helpfully
suggesting that the group's reading focus should be on identifying what Pringles' target
market is)*

(12)J:　Er- 呢一個就**係**target market啦，　呢一個就應該例如-er- current segmentation

strategy就係呢一個, **例如**佢用-佢**係**er佢-佢多個- 佢係多元化，　**例如**咩one

product and multiple market segments 啦定係multiple products and multiple market

segments囉。

Resolve *Translation:* This one is the target market *(pointing out where in the course
notes the group can find more information about the concept of target market)* This
one should be—for example—the current segmentation strategy is this one *(pointing
out where the group can find more about the concept of current segmentation
strategy).* For example, it is diversified, [whether it is] one product and multiple
market segment or multiple product and multiple market segment.) *(explaining the
new concept)*

The above extract appears to be a clear case of action discourse for the focus is certainly

on enacting what is going on *in* the socio-semantic activity, on gathering information about

Customer Analysis. The group finds the reading difficult, appeals for support are not really

heeded, there is a moment of tension around N's refusal, but it is resolved by the last two moves. Would it make sense for the students to write a reflection on the above discussion as part of the report they have to write? There seems little point in doing so. Although the above discussion of how to do customer analysis is action discourse and is a sub-task of doing an evaluation report in marketing, it is nevertheless different from our example of action discourse in magnetism in very important ways. In magnetism the students were learning magnetism experientially *by doing* magnetism experiments. But in marketing the students were not learning marketing by doing marketing. In order to do the evaluation report, the students paradoxically found themselves in the position of needing to learn marketing by reading the course textbook and listening to course lectures in English, that is, to learn from exposition in their second language. In the marketing course, students are learning *about marketing* in the standard way, starting with theory and using lectures in English and the course textbook in English. This, of course, is the very situation that Bogaert et al. (2006) identified as problematic with subject-area teaching for second language learners, and which they aimed to address by tasks and experiential learning/learning by doing.

Why is this so, and what can be done about it? The Marketing course is more complex than the Magnetism unit and deals with subject matter of greater scope and scale: Asking young children to do a brief experiment attracting objects with a magnet is one thing; asking adults to do a sustained marketing campaign over months is quite another and its greater scope and scale raises feasibility questions about learning marketing by experiential learning/learning by doing.

However, this type of problem has long been recognised in business education research, where it is possible to learn marketing by doing marketing simulations, and where simulations (as

'contrived experiences') are a well-known part of experiential learning in business education. Research on simulation games in business emphasises the need for group discussion and debriefing in simulation gaming experiences, seeing them as requiring special attention to the stages of reflection and generalisation in the Kolb learning cycle (Jaques 1995).

Would it be possible for second language learners to have success with academic content tasks and discourse and learn marketing or other content areas experientially through simulation gaming with attention to the stages of reflection and generalization? Would this enable them to be scaffolded from action to reflection through the mode continuum? Would it enable them to learn through practical, material life activity, as Dewey recommends? We know of no TBLT studies which have addressed these questions, but this could be a fruitful direction for future research.

3. How do the students engage in reflection discourse?

As mentioned above, in reflection discourse the talk is *about* the socio-semantic activity; its 'subject matter' or 'topic' is the socio-semantic activity. Table 2 above presents discourse types and realms of meaning in a socio-semantic activity and summarises the main semantic dimensions we will be commenting on: between particular and general reflection (reporting and expounding), and between three realms of meaning (world of abstract relations (being and having), physical world (doing and happening), and world of consciousness (sensing and saying)). We will comment upon these dimensions of meaning, so that we can give the reader a broad sense of their role in the reflection discourse. As before, we will italicize *material* and

behavioural processes*, underline <u>mental</u> and <u>verbal</u> processes and bold **relational** and **existential** processes.

When we looked at these processes in the magnetism data, we were mainly analyzing brief utterances in dialogue, but the marketing theory reflection discourse is a multipage project report written by the marketing students. Matthiessen(2014) writes that he selects and analyses texts "to illustrate the contribution made by different process types in the construction of experience in discourse" (p. 218). In a much simpler and limited way, our aim is to illustrate how the students have used process types in constructing reporting discourse and expounding discourse. The fundamental point is that process types are a vitally necessary element for creating ideational meaning. We will first examine the report for evidence of reporting discourse and expounding discourse. As we will see, the reporting discourse introduces the case of the business that will be studied, and the expounding discourse introduces the marketing theory that is relevant to it.

The role of the first section of the student report is to introduce the case to be studied. Section 1 is an example of the text type of reporting, where reporting focuses on "reporting particular phenomena, chronicling the flow of events" (Halliday & Matthiessen, 2014. P. 35). The phenomena it is reporting are the "nature of business and background." This excerpt from the first section introduces the case of Pringles and relates it to Hong Kong. It is a description of a particular firm rather than of general entities: ("Pringles is," "It is," "Pringles became," "Pringles aims at," "Pringles monitors.")

Extract 10

"Section 1. Nature of Business and Background. (1) …Pringles **is(Re)** one of the Household products [of Procter & Gamble]. (2) It **is(Re)** a brand of potato snack which *was born(Ma)* in 1966 along with Mr. Pringles icon. (3) Pringles *became(Ma)* a global business in 90's and *sold(Ma)* in over 30 countries, including *launched(Ma)* in Hong Kong in 1998. (4) Pringles aim(Me)s at delighting(Me) consumers, *providing(Ma)* them with a unique and most enjoyable snacking experience in the context of an active, healthy and balanced lifestyle. (5) To *achieve(Ma)* the goal, Pringles monitors(Me) market, consumer and product trends in Hong Kong…"

All three realms of meaning are represented. One strand of the meaning of the paragraph describes what the nature of Pringle's business is. The processes are relational: "(1) …Pringles **is** one of the Household products [of Procter & Gamble]. (2) It **is** a brand of potato snack…". A second strand gives background about the ways in which Pringles developed over the years and entered the Hong Kong market. The processes are material: "which *was born(Ma)* in 1966 along with Mr. Pringles icon. (3) Pringles *became(Ma)* a global business in 90's and *sold(Ma)* in over 30 countries, including *launched(Ma)* in Hong Kong in 1998. A third strand mentions some of the company's aims and information-gathering actions. The processes are mental: (4) Pringles aims at delighting consumers... (5) … Pringles monitors market, consumer and product trends in Hong Kong…" Note how sentence (4) appears merely to report neutrally on Pringles aim, but may be conveying endorsement of it. If they had written "Pringles state that they aim…", they could have used a 'saying' process to distance themselves from endorsement. Note also how the writers move sequentially from relational to material to mental, perhaps adding to an orderliness of description.

Extract 11

Section 3a. Customer Analysis: Customer Characteristics.

(1) [In the market, different customers **have(Re)** different kinds of needs and wants GEN]. (2) [In order to satisfy(Me) customers' needs and wants more effectively, we *need to use(Ma)* the strategies of market segmentation which **is(Re)** the process of *dividing(Ma)* a large market into smaller groups or clusters of customers GEN]. (3) The customer characteristic **is(Re)** the way of the current segmentation of Pringles *used to segment(Ma)* consumer markets, including Demographic segmentation, Geographic Segmentation and Psychographic Segmentation.

The third section of the report is an example of the text type of expounding, where expounding is expounding knowledge about general classes of phenomena, categorizing them or explaining them (see Halliday & Matthiessen, 2014). The phenomena it is expounding is market segmentation. This excerpt from Section 3 is centrally concerned, in the first two sentences, with explaining and defining the market segmentation as a *general* strategy ("different customers have," "we need to use" in the sense of "one needs to use"). The third sentence, however, is *particular* in that it identifies (not very clearly) the particular type of market segmentation (customer characteristics segmentation) that Pringles uses ("The customer characteristic **is(Re)** the way of the current segmentation of Pringles").

All three realms of meaning are represented. One strand of the meaning of the paragraph deals with the nature and definition of market segmentation and the taxonomy of its subtypes.

The processes in this strand are all relational. Sentence (1) describes a general feature of customers in markets that motivates market segmentation ("customers **have** different …wants"). Sentence (2) defines market segmentation ("which **is** the process of dividing a large market…"). Sentence (3) identifies the type of market segmentation that Pringles uses ("the customer characteristic **is** the way (i.e. the type) of the current (market) segmentation of Pringles") and states that it includes subtypes of market segmentation ("**including** Demographic, Geographic and Psychographic Segmentation"). The second strand of meaning deals with making use of the strategies of market segmentation and what results from them. The processes in this strand are material: "we *need to use(Ma)* the strategies," "*dividing(Ma)* a large market," "*used to segment(Ma)* consumer markets." A third strand of meaning is the role of human needs and wants in market segmentation. The processes in this strand are mental. Marketers aim to satisfy customers: "In order <u>to satisfy</u> customers' needs and wants more effectively." We note that the students write that "customers **have** different …wants" rather than "customers want different things." In other words, rather than use the process 'wants', they use the nominalization 'wants', which acts as a technical term in marketing discourse.

Extract 12

Section 3b. (1) [Demographics Segmentation *divides(Ma)* the market into groups based on demographic variables such as age, gender, income, life stage and so on GEN]. [(2) An example of demographic segmentation **is(Re)** the age distribution of the population GEN]. (3) [Children aged 8 to 12 years old <u>may don't like(Me)</u> the spicy & hot or Salt & Vinegar flavors GEN], so the original or BBQ flavors of Pringles' potato chips **are(Re)**

more suitable for them. (4) [Teenagers and adults <u>are more willing to try(Me)</u> the new or special flavors GEN], so the latest Pringles Extreme Flavors <u>are catering(Me)</u> for them.

Having discussed the general process of market segmentation in the previous paragraph, the student writers now lead up to an example where Pringles has successfully used "the strategies of market segmentation" to "<u>satisfy(Me)</u> customers' needs and wants more effectively." They begin with expounding and move to reporting. They start with a definition of Demographic segmentation (Sentence 1), and then narrow their focus to demographic segmentation based on age distribution (Sentence 2). Finally, drawing a contrast between the flavour wants or preferences of children and those of teenagers and adults, they assert that Pringles original or BBQ flavours suit the former (Sentence 3) and that "the latest Pringles Extreme Flavors are catering for" the latter (sentence 4).

All three realms of meaning are represented. A first strand of meaning deals with the definition of Demographic Segmentation. It is defined using a material process rather than a relational one: "Demographics Segmentation *divides* the market." However, note the parallel with the earlier definition which used a relational process: "market segmentation which **is** the process of *dividing* a large market…" A second strand of meaning deals with subgroups of Demographic Segmentation and uses a relational process: "An example of demographic segmentation is**(Re)**…." The third strand of meaning deals with differences between human groups in food preferences. The processes in this strand are mental. The first two 'mental' clauses in this paragraph set up the contrast in human consciousness between market segments: What the children "don't like." the older people are "willing to try." The third 'mental' clause,

"the latest Pringles Extreme Flavors are catering" is seemingly paradoxical. How can potato chips have human consciousness? But we interpret it as a personification. The Extreme Flavors potato chips are not doing the catering; Pringles is doing the catering, by means of their Extreme Flavours products.

To sum up, the students appear to be constructing ideational meaning in reporting and expounding discourse in English with a reasonable amount of control over the resources to do so. At the level of the selection of individual instances of process types, we have noted the question of whether they intended to endorse Pringles' aim, but generally they appear to be able to select the individual instances of process types to suit their purposes. At the level of the organization of process types in each excerpt, we have noted the 'orderliness' of Excerpt 10, and the way they have drawn on all three realms of meaning and organized them in strands, which seems to suggest that they have related the ideational elements of their excerpts in a fashion that suggests balance and order. Beyond our discussion of the present data, our main concern has been to illustrate the fundamental point that transitivity analysis helps to show how process types are a vitally necessary element for creating ideational meaning.

4. How do the learners develop a frame of meaning for marketing and apply it to a case and simultaneously develop their academic discourse of the register of the discipline

In this section we will concentrate on a particular aspect of academic discourse: the theory to case connection problem. Crucial to our argument is that tasks simultaneously engage students in the relevant discourse as they work with the knowledge frame that they are studying,

here marketing. That is, language is focused on for purposes of mastering the content, and applying the content knowledge necessitates attention to language. As noted earlier, the central content objective for this marketing course is that the students will be able to apply marketing theory to practice. Students produce written evidence that they can connect theory to practice, theory to case, when they write their project report. In this section we will analyse that evidence and show how the connection is constructed in relevant discourse.

In paragraph 3a, the students have given an account of segmenting and targeting markets. In paragraph 3b they have described an example of how Pringles has acted to segment and target markets. They have connected marketing theory to an example from their case study. How well have they made this connection between theory and case? How well have they satisfied the broad course objective that they will apply marketing theory to their chosen case? Close inspection shows that this connection is incomplete, and their application is flawed.

The students' account of the theory of segmenting and targeting markets is incomplete because it focuses on customers only, mentioning customers' needs and wants. It does not mention products, products which suit these needs and wants. It does not explicitly convey what the textbook describes as the "Market-*Product* Focus" of the activity, the aim of "determining which *products* will be directed toward which customers" (our italics). With respect to the 'five key steps in segmenting and targeting markets', their account addresses step 1 ("Group potential buyers into segments"), but it fails to get as far as step 2 ("Group products to be sold into categories"). This creates a mismatch between their exposition of marketing theory and their example of Pringle's marketing of different products to different groups, for their discussion of their example does mention products. It indicates how one Pringle's product ("the original or

BBQ flavors") is preferred by one group of customers and a different kind ("Extreme Flavors") is preferred by another group.

Why is this mismatch a problem? Because it raises the question whether the students truly understand the application of marketing theory to the case. Consider also our Magnetism case, where we noted that it was not sufficient for a student to correctly identify a pole on a magnet without also giving their reasoning based on magnetism theory, as evidence against lucky guesswork. We view this mismatch as analogous to situations in mathematics, where a student may arrive at the 'right' answer to a mathematics problem, but may fail to get credit for it if they have used the wrong formula to work out the answer, because that puts in question their understanding of the problem.

From a business education perspective, this mismatch is a threat to the vital course objective of applying marketing theory to relevant cases, though it may be that it is excusable for students who are taking their first marketing course. From our linguistic perspective, the issue is to show how this mismatch is realized in discourse, and more generally to show how linkages are made (or not made) in discourse between a frame of general theory and an example from a particular case being studied.

We will use 'taxonomic lexical relations analysis' (see Martin & Rose 2007: 73-90) to examine the ideational connections in discourse between a frame of meaning and a case. Lexical relations are "semantic relations between the particular people, things, processes, places and qualities that build the field of a text." (ibid.: 75). Taxonomic lexical relations are those which

progressively construct taxonomies of people, things, processes, places and qualities. Martin and Rose (2007, p. 73-90) give an example of taxonomic lexical relations from a story of injustice in South Africa: "My story begins in **my late teenage years** as **a farm girl**…" Here Helena, the writer, builds a picture of herself lexically in her narrative, using the descriptions "**my late teenage years**" and **"a farm girl"** to classify or taxonomise herself by age and background. Her story unfolds into an account of her relations with her first love and with her second love, each of whom becomes a **secret policeman** who commits crimes against **black South Africans** during apartheid and is deeply disturbed by his guilt.

In taxonomic lexical relations analysis, these descriptions of Helena are entered into a table in the order they unfold in the text, their relation to each other is categorized, and the relationships are analysed as strings of taxonomic lexical relations. Martin and Rose (2007) explain the main taxonomic lexical relations:

> "Relations between classes and members, and between parts and wholes, make up two types of taxonomies by which we construe fields of experience. People, things, and places belong to more general classes of entities, and at the same time they are parts of larger wholes, and are composed of smaller parts. These are known as classifying and compositional taxonomies respectively…These taxonomies give rise to several types of lexical relation in discourse, including class-member and co-class, whole-part and co-part" (p. 80).

 Other types of taxonomic lexical relations include repetition, synonyms, and contrast (e.g. antonyms).

For our taxonomy analysis of the Customer analysis paragraphs we have highlighted in bold some of the key lexical items which build links between the frame of marketing theory and the example from the particular case of Pringles. As above, we mark general reflection by enclosing the clause or clause complex in square brackets and labelling it GEN.

Customer analysis:

Customer characteristics

[(3a) In the market, **different customers have different kinds of needs and wants** GEN**].** **[**In order **to satisfy customers' needs and wants** more effectively, we need to use the strategies of **market segmentation** which is the process of dividing a large market into smaller groups or clusters of customers GEN]. The **customer characteristic** is the way of the current segmentation of Pringles used to segment consumer markets, including **demographic segmentation**, Geographic Segmentation and Psychographic Segmentation.

[**(3b)Demographics segmentation** divides the market into groups based on demographic variables such as age, gender, income, life stage and so on. GEN] [**An example of demographic segmentation** [development] is the **age distribution of the population**. GEN] [**Children aged 8 to 12 years old** /// may **don't like the spicy & hot or Salt & Vinegar flavors** GEN]/// so **the original or BBQ flavors of Pringles' potato chips are more suitable for them**. [**Teenagers and adults**/// **are more willing to try the new or special flavors** GEN]///, so **the latest Pringles Extreme Flavors are catering for them.**

Table 3. Taxonomic lexical strings in paragraphs 3a and 3b which link the 'frame' of marketing to the case of Pringles.

DIFFERENT CUSTOMERS/ MARKET SEGMENTATION	HAVE …needs and WANTS	DIFFERENT KINDS of needs and WANTS	[MISSING: …with PRINGLE'S PRODUCTS.]	To SATISFY customers' needs and wants
Different customers *<synonym>* **market segmentation** *<class-member>* **customer characteristic** *<class-member>* **demographic segmentation** *<repetition>* **Demographic segmentation** *<class-member>* **age distribution of the population**. *<whole-part>*		**Have different kinds of** needs and **wants**		to **satisfy** customers' needs and wants
	<class-member> **don't like**	*<class-member>* **the spicy & hot or Salt & Vinegar flavors**	*<class-member>* **the original or BBQ flavors of Pringles' potato chips**	*<class-member>* **are more suitable** for them*<co-class>* **are catering** for them
Children aged 8 to 12 years old *<co-part>* **Teenagers and adults**	*<co-class>* **are more willing to try**	*<co-class>* **the new or special flavors**	*<co-class>* **the latest Pringles Extreme Flavors**	

Let us see how Table 3 helps to show how the lexical strings in paragraphs 3a and 3b link the frame of marketing theory to the example of the contrast of children versus teenagers and adults. The example divides into five strings: the two groups of customers, how their wants differ, the flavours they prefer, the relevant Pringles' products, and how they are more satisfying to them. Each string has a column in the table and each string is linked to lexical items at the

beginning of the text, mainly through class membership. Thus 'market segmentation' includes (is in a *<class-member>* relation to) customer characteristic segmentation which includes demographic segmentation which includes age distribution, part of which (*<whole-part>* relation) is children 8 to 12. Similarly, 'different kinds of wants' includes the flavor preferences of the age groups. Likewise, '**satisfy** customers' needs and wants' covers '**are more suitable** for them' and '**are catering** for them'. However, the beginning of the text is missing the essential lexical item of 'products' and therefore does not explicitly cover 'the original or BBQ flavors of Pringles' potato chips' and 'the latest Pringles Extreme Flavors'. In this way, taxonomic lexical relations analysis reveals how the mismatch between frame and case shows up in discourse. A mismatch between frame and case means a failure to connect frame and case, and connecting frame and case is the main focus of this section.

How do students develop their academic discourse while applying a frame of marketing? The left-hand column of Table 3 provides examples. The connection between market segmentation (at the frame or theory end) and 'teenagers and adults' (at the case or practice end) is made through customer characteristic, demographic segmentation, and age distribution of the population. It is necessary to know the meaning of all of these taxonomic technical terms and phrases to understand the connection, and to read and write about it. They are part of the register of marketing. One of the advantages of taxonomic lexical relations is that they enable communication to move between frame and case, theory and practice more easily.

Our purpose in using taxonomic lexical relations analysis here is by no means limited to showing how mismatches can be identified. Rather, we have shown how taxonomic lexical

relations analysis can trace the discourse relations between frame (or theory) and case. This form

of analysis is thus an important lens for future linguistic research in this area. Further, we have

brought to greater attention the demanding linguistic work in discourse that students are expected

to do in order to demonstrate explicitly that their analyses of cases are related to relevant theory

and that they are not simply offering an answer but also making explicit the theoretical reasoning

that supports their answer. This then is an area of common ground between the teaching and

learning of language and content, which would have implications for both formative and

summative assessment, and thus suggesting a direction for future research and cooperation.

Conclusion

This paper has argued for the importance of having a richer model of experiential

learning and of researching it in the wider context of meaning-making socio-semantic activities.

Learning magnetism and learning marketing are socio-semantic, meaning-making activities that

are consistent with Dewey's view of activity and Martin's definition of field . Both are

associated with a range of different discourse types, containing action discourse, reporting

discourse and expounding discourse, and both include all three realms of ideational meaning.

Both have a theory-practice structure that connects the general with the particular and it is this

that enables researchers to explore how learners apply general theory (or 'frames of meaning')

to particular cases, and even to assess their ability to do so. Using the resources of ideational

meaning, we have shown how it is possible to trace these aspects of socio-semantic activities and

the content tasks they contain and note relevant form-meaning relations. Going beyond the study

of individual tasks to the study of experiential learning in the context of activities opens up the

possibilities of seeing how series of academic content tasks can support each other and make

meaning cumulatively.

The examples of learning magnetism and learning marketing thus illustrate a much richer view of cycles of experiential learning that explicitly incorporates discourse. We hope this view leads to a much greater recognition of the meaning-making potential of tasks and the ways in which they provide many opportunities for academic discourse development that is grounded in experience.

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