Activity theory, imitation and their role in teacher development
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This article uses activity theory to consider how teacher learning and development occurs. It aims to show that imitation and orienting activity, both of which make use of the analysis of actions into means and goals, can help explain how a group of Malaysian mathematics and science teachers learned to use the language-teaching practice of tasks for English medium content teaching. It focuses on four Malaysian mathematics and science teachers who participated in a teacher-development programme by comparing their peer microteaching lessons on weeks 2/3 and 10 of the programme. The findings show that the teachers learned to use tasks by being able to successfully imitate some task criteria before others, with the crucial criterion of a ‘gap’ being particularly difficult to imitate. This suggests they were orienting to tasks through incomplete images, possibly because of their prior experiences as content teachers. Role reversal helped clarify their images of tasks, enabling faithful transmission to occur. This study concludes by suggesting that imitation and transmission are important to teacher development, and that further research using Galperin’s orienting activity is called for.

Keywords: activity theory, imitation, language teacher education, orienting activity, sociocultural theory, task-based language teaching

I Conceptual framework

1 ‘The sociocultural turn’ and language-teacher development

A common theme in recent teacher-development literature is the rejection of approaches that essentially rely on imitation of expert behaviour as something static, reproductive and generally to be avoided (for example, see Wallace, 1991). It has been a welcome change to see teachers’ own knowledge and experience recognized as the perspective on teacher development has shifted from teachers’ behaviours to teachers’ cognitions (Crandall, 2000; Freeman, 2002; Borg, 2003). One of the most recent approaches in this vein involves what Johnson (2006) has called ‘the sociocultural turn’. This includes a number of ‘divergent’ yet ‘compatible’ approaches (p. 237) that share the belief that human cognition, including learning, is socially situated and mediated.
Sociocultural theory (SCT) holds that all human higher-level mental operations or cognitions are mediated through artefacts, concepts and activities, which interact with each other as well as with innate psychological attributes (Lantolf and Thorne, 2006). We gain control over the world, others and ourselves as we internalize the means of mediation, with development characterized as moving from externally regulated activity (as objects help us exercise control) to other-regulated activity (as others help us exercise control) to self-regulated activity (as we exercise control on our own) (Lantolf, 2000). The ‘zone of proximal development’ is the ‘space’ between what can be performed with assistance and independently (Vygotsky, 1978, p. 86); assisted performance indicates what can subsequently be achieved independently (Lantolf, 2005). However, because cognitive functions ‘are always distributed between the person and the world’ (Lantolf, 2005, p. 342), even what appears to be individual because it is self-regulated is situated within a material, social, cultural and historical milieu. Objects and others continue to have roles in the process of acquiring and sustaining self-regulation (Lantolf, 2005). This is made clear in two studies of language-teacher development done from an SCT perspective. Johnson and Golombek (2003) note teachers move back and forth between object and self-regulation as they use lesson plans and materials. Verity (2000) describes how she lost and regained self-regulation as a language teacher in a new and challenging teaching situation.

Sociocultural theory itself has developed in different directions since Vygotsky, one of which is activity theory (AT) (Wertsch, 1985; Zinchenko, 1995; Lantolf, 2005; Stetsenko, 2005). Leontiev is widely regarded as the leading developer of activity theory, along with others who are less well known, such as Galperin (see Wertsch, 1985; Zinchenko, 1995; Arievitch, 2003; Robbins, 2003; Stetsenko, 2005). Activity theory focuses on activity (rather than ‘word’) as the unit of analysis for mental development (Wertsch, 1985). One line of thought particularly amenable to development through AT is Vygotsky’s discussion of imitation as a means of internalization.

2 Imitation, activity theory and orienting activity

One mechanism by which we internalize the means of mediation is imitation (Vygotsky, 1986; Lantolf and Thorne, 2006). This understanding of imitation, however, is fundamentally different from the static and reproductive understanding that has figured and been rejected in language-teacher development.

Vygotsky discusses imitation in the context of how ‘scientific’ concepts, as opposed to ‘everyday’ concepts, are developed in children. In his discussion it becomes clear that conscious understanding plays an important role. In focusing on conscious understanding Vygotsky was building upon James Baldwin’s distinction between simple imitation and persistent imitation (Valsiner and van der Veer, 2000). According to Baldwin, simple imitation
involves a single invariant copy of an action while persistent imitation involves voluntary attention during repeated efforts to better approximate an action. Vygotsky similarly distinguished between two types of imitation: drill imitation based on ‘trial and error’ and imitation based on ‘conscious understanding’ (Vygotsky, 1986, p. 188). Drill imitation aims at making a copy of an action by considering it as a whole. Conscious imitation, however, involves understanding the different elements and their relationships to each other in the action being imitated. The analysis of the general nature of these elements and their relationships is where AT makes a contribution to the analysis of imitation.

AT distinguishes activity from action; activity concerns social motives at a broad level (such as formal education) (Wertsch, 1985), whereas action is directed towards a goal which can be achieved by different operations, depending on the conditions; although operations can become automatized under changed conditions they can be ‘reactivated’ as consciously controlled (Donato and McCormick, 1994). The process by which action becomes regulated or internalized is the particular focus of Galperin (Galperin, 1992; Ariveitch, 2003).

For Galperin (1989b), the development of orienting activity is the development of mental activity. Like Vygotsky’s notion of imitation, orienting activity involves conscious understanding. It includes not only the subject’s conceptual understanding of the action, but also the subject’s sense of the action’s significance based on her past experiences.

In his early discussions of orienting activity Galperin introduces the notion of an image that guides the internalization of external activity (1989b). Galperin’s explanation that an image provides ‘a clearer view of the situation (including a picture of the action being carried out or defined)’ (1992, p. 55) suggests that an image is a visualization of the performance of an action. However, as Galperin points out, orienting activity is itself developmental, and need not be ‘correct’ (Galperin, 1992, p. 56). For example, Galperin (1967) noted that experimental data suggested that visual images were less reliably internalized than verbalizations. An image, therefore, may be what has been termed a ‘quasi-concept’ that is ‘in flux at various stages’ (Robbins, 2003, p. 101) as it develops.

Images are formed from what is ‘presented’ and ‘put to use’ when unautomatized actions are performed (Galperin, 1992, p. 54). They function by presenting possible actions so that a situation can be explored, actions previewed and corrections introduced. Although the subject is aware of the goal, her attention is focused on the means for reaching the goal. In this respect it differs from trial and error, where the means appear distinct from the goal only when success is impeded (Galperin, 1989b). Through the use of an image, action is ‘slowed down’; eventually individual steps are ‘telescoped’ together, meaning it has been internalized (Galperin, 1967). Internalized action appears different than image-guided action: once internalized only the end product is available without the intervening ‘steps’. For this reason Galperin (1992)
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stipulated the need to study mental development through activity itself rather
than self-observation reports.

Much of Galperin’s work was concerned with developing pedagogical
applications for his psychological research. He believed (Galperin, 1989a) that
optimal conditions could be identified that would unfailingly guide learners
to internalization of the steps necessary for correct performance of an action.
This has been referred to as the step-wise procedure or teaching strategy
(Arievitch, 2003; Arievitch and Haenen, 2005). The theoretical explain-
ation for the success of this procedure rests on the distinction between what
Galperin (1989b) called voluntary and involuntary memory: by consciously
attending through voluntary memory to the necessary steps a learner acquires
the target activity through involuntary memory. In other words, by focusing
on successfully achieving the means of an action, the goal is also achieved.

3 Imitation, role reversal and faithful transmission

More recently a similar analysis of the imitation of behaviour has divided
imitation into two parts: the goal towards which behaviour is aimed and the
means by which the goal is reached, generating three related notions: mimicry,
emulation and imitation (Tomasello, 1999; Lantolf, 2006; Lantolf and
Thorne, 2006). Tomasello describes mimicry as understanding neither the
goal nor the means of an activity. Emulation entails understanding the goal
but not the role played by the means. Imitation, however, entails understand-
ing that the means is used to reach the goal, that is, the intention behind the
behaviour. Imitation thus requires taking this intentionally driven conjunction
of means-and-goals as one’s own.

Role reversal is a type of imitation occurring in mutual activities
(Tomasello, 1999), where someone who imitates another must put herself in
that person’s role. A child imitating an adult pointing at herself must recog-
nize that in order to imitate the adult, the child must not point to the same
person the adult is pointing at (i.e. the adult) but rather at herself (i.e. the
child). Tomasello explains this as understanding intentions within a joint
attentional situation where social cues help the child acquire an ‘external’
perspective that includes both roles. This cognitive ability to recognize inten-
tions underlies human social learning (Tomasello, 1999).

Tomasello (1999, p. 39) argues imitative learning enables ‘faithful trans-
mission’: we pass activities on to others, particularly the next generation. The
crucial difference between humans and animals it not the creation of new
activities, but the reproduction of activities that ensures their transmission.
Faithful transmission requires understanding the significance of activities –
being in the same ‘cognitive shoes’ (p. 39) as its inventor.

In both Soviet work, exemplified by Galperin, as well as more recent
Western work, exemplified by Tomasello, the ability to imitate both goals
and means of an action can be taken as indicative of development. More
strongly, based on Galperin’s account – and possibly Tomasello’s as well – it can be taken as constitutive of development.

4 Context of the study

This study focuses on a group of Malaysian mathematics and science teachers in a programme designed to help them prepare for (1) teaching mathematics and science through the medium of English and (2) developing a workshop on this topic for other teachers. With the decision to revive English-medium education on a limited scale in Malaysia came the recognition that some mathematics and science teachers might lack the skills to teach in English. While older teachers were educated in their subjects in English, their language skills could be expected to be rusty; younger teachers were likely not to have had any experience of their subject in English, although they studied English as a subject throughout their school years. In recognition of this problem, 25 ‘Master Teachers’ were sent to New Zealand to acquire knowledge and skills that they could pass on to their colleagues through workshops. I developed the language-teaching syllabus and materials and taught throughout a 20-week programme custom-designed for this group. Although the programme covered a variety of topics, language-teaching tasks were a particular focus as a pedagogical option that would fit the content-focus of their classrooms and encourage greater language use among students without placing undue demands on teachers who might lack both the confidence and the skills for spontaneous interaction in English. This decision acknowledged the unlikelihood of non-language teachers developing sufficient knowledge and skills to provide effective language instruction through a five-day workshop for their colleagues. It was also expected to exemplify how providing opportunities for meaning-focused language use through tasks (as well as other activities such as reading articles and listening to lectures) could raise the language confidence and fluency of content teachers.

II Research questions

This study builds on a previous study (Feryok, 2008) that considered whether and to what extent the teachers took up ‘tasks’. This study re-analyses the original data from a sociocultural perspective. It addresses two questions:

- Did the teachers learn to use tasks (understood as a language-teaching practice)?
- If so, how did they learn to use them?

III Methodology

This section will begin with a brief description of the programme. It will then describe the participants, data collection and data analysis.
1 Programme

The programme was conducted by an applied language studies department and the mathematics education unit of a New Zealand university. Both took a broadly social–cognitive and experiential approach to development. This study focuses on the applied language studies strand. The programme had two phases: 10 weeks in New Zealand and 10 weeks in Malaysia. The first phase focused on developing knowledge and skills for teaching in English; the second phase focused on developing the teacher-training workshop. This study focuses on the first phase. Approximately 25% of the programme was delivered through lectures, all featuring at least one experiential activity, while 75% was delivered through experiential activities, which included materials design and peer microteaching. This study focuses on the peer microteaching sessions that occurred early in the first phase (week 2–3) after an initial introduction to task-based learning and teaching and late in the first phase (week 9) after more work with tasks. The two sessions covered the same content-related objectives.

Task-based language teaching was addressed at the beginning of the programme in a two-hour lecture on tasks that was both theoretical and practical, followed by two more hours of workshop discussion, demonstration and performance, and design. The peer microteaching sessions were followed by an hour of peer and instructor feedback. During the six weeks leading up to the second peer microteaching, two other lecturers also addressed the topic of interaction and referred to task conditions that stimulate interaction, and there were further workshops that offered the opportunity to design and perform tasks (as teachers and students) in two-hour sessions at least once a week.

2 Participants

This study will focus on four teachers who agreed, through an unanticipated but not unwelcome consensus-building process initiated by the 25 teachers involved in the programme, to participate. After I described the study and invited participation, the entire class discussed what to do (without my presence). They decided that each curriculum area (biology, physics, chemistry and mathematics) would have one volunteer who would participate formally in the study. This meant microteaching lessons were designed by the curriculum group but individually delivered by the volunteer during the videotaped peer microteaching sessions.

3 Data collection

The data include both my own and guest lecturers’ notes, my lesson plans and materials, my field notes on the microteaching and feedback sessions, videotapes of the microteaching, and teacher lesson plans and materials for the
microteaching. (I also requested and gained access, via the teachers, to some materials used in the mathematics education strand of the programme in order to determine if other exemplars were being imitated – see below.) This study focuses on the data touching on the peer microteaching. Some of these data, as well as some written data not used in this study, have been presented elsewhere (Feryok, 2008); a discourse analysis of the videotapes is under way.

4 Data analysis

The analysis is in two parts: first is the analysis of whether the teachers made use of tasks (see below for criteria); second, the practices they used were analysed according to specific task criteria in order to compare them to original activities presented to the teachers during the course of the programme.

The first part of the data analysis identified activities that appeared to have been intended to meet at least some criteria of a task. Another researcher and myself identified putative tasks in lesson segments in tape 2 and paired them with lesson segments in tape 1. Both the researcher and myself understood tasks as meeting the criteria given below, but did not analyse the data for specific criteria. For example, a lesson segment in which students were instructed to work together to achieve something was identified as a putative task, as opposed to segments in which the teacher lectured or had students read answers aloud. Note has been made whenever a language focus was included in a task. Simple percentages were calculated for inter-rater validity, with 100% agreement for tape 1 and 95% for tape 2.

The second part of the analysis focused on specific criteria for tasks that enabled specific similarities and dissimilarities between paired segments from tapes 1 and 2 to be identified. Each putative task was analysed using the following criteria for determining whether an activity was a task (adapted from Ellis, 2003):

1) primary focus on meaning;
2) gap;
3) real-world language process;
4) clearly defined outcome;
5) outcome achieved communicatively.

The following definitions are adapted from Ellis (2003):

- ‘primary focus on meaning’ is here defined as language that was primarily being used to exchange meaning rather than treated as an object;
- ‘gap’ is defined as the lack of information, opinion or reasoning that needs to be filled in order to complete the task successfully;
- ‘real-world language process’ is defined as a process (such as following instructions) associated with language as it is used in non-classroom situations (even if the actual language samples are typical of a classroom situation);
• ‘clearly defined outcome’ is defined as a product that is achieved as a result of successful completion of the task; and
• ‘outcome achieved communicatively’ is defined as the need to comprehend or produce language in order for the task to be successfully completed.

Two different researchers identified specific task criteria for the selected segments, this time first from tape 1 and then from tape 2, with simple percentages for inter-rater validity of 81% for tape 1 and 80% for tape 2. The discrepancies between the two raters mainly occurred because of their differing interpretations of (3) and (5), with one coding more narrowly and the other more widely. Because of time constraints, two tasks from the second peer microteaching were coded by myself and the first researcher. (These were the physics teacher’s bingo game and the mathematics teacher’s matching worksheet.)

I then compared the selected segments with task exemplars that had been presented before the first microteaching session (thereby making them candidates for imitation) by looking for similarities in how the different task criteria were met. For example, I examined one task criterion – a gap – more closely by looking for the specific conditions that enable a gap to be bridged. The analysis of conditions was based on the following criteria (adapted from Ellis, 2003) for presenting and using information:

1) split or shared information
2) one-way or two-way interaction
3) required or optional interaction.

Intra-rater validity (Philp, 2003) of 100% for tape 1 and 85% for tape 2 was established when I re-analysed the data four months later. The discrepancy for tape 2 occurred when I re-coded some features as ‘not clearly present’ (rather than ‘not present’) after re-reading the descriptors.

Establishing inter-rater and intra-rater validity offers support for the validity of the analysis (Mackey and Gass, 2005). Triangulation is also important for establishing validity in interpretive research (Cohen et al., 2000), and has been achieved through using data from different participants and sources.

IV Findings

First, an overview of the main findings is presented, along with a table summarizing them. Information on tasks provided before the first microteaching is described. The criteria for tasks along with the three conditions related to a gap were used in ‘theoretical’ discussions of tasks, discussions of task exemplars and feedback sessions of the peer microteaching sessions. Between the first and second peer microteaching, further information was presented in similar ways with different task types and curriculum areas. Next, two examples of teacher task use are discussed. (Note: Although all of
the peers were teachers, for the sake of clarity I will refer to the teacher acting as a teacher as ‘teacher’ and the teachers acting as students as ‘students’.

1 Overview

The findings are summarized in Table 1 and are organized in terms of teacher and task with general design features. In the table, each task identified by the researchers is analysed according to task criteria, with conditions as subheadings under ‘gap’. Present indicates that both raters agreed a feature was clearly present; unclear indicates either that both raters agreed a feature was not clearly present (but there was evidence it was intended from the instructions that accompanied the task) or that the raters disagreed about whether a feature was present; and not present means both raters agreed a feature was not present.

In the first peer microteaching session, three of the four teachers appeared to attempt to imitate tasks. One teacher (physics) did not: the lesson was based on a simple experiment unlike anything done in the programme, which furthermore did not appear to require the production or comprehension of language. In the other three cases, the teachers used activities that resembled the exemplars presented prior to the microteaching. Additionally, one teacher (biology) included a language focus on classification language. However, none of the putative tasks actually succeeded in meeting specific task criteria (see Table 1).

In the second microteaching session, all of the teachers appeared to attempt to use tasks that resembled the exemplars provided. All of the teachers also tried two tasks in the same lesson, but some of the tasks failed to clearly resemble the exemplars. Notably, the physics teacher who had not tried a task in the first session attempted two in the second; although one only partially resembled one of my exemplars, the second was clearly imitated from a maths lecture on communicative teaching.

The teachers had progressed by successfully meeting two or more criteria in at least one of their tasks, and three teachers included three or more task criteria (see Table 1). The teachers appeared to have most difficulty with the criteria concerning the need for a gap and for achieving the outcome communicatively (see Table 1). Additionally, there was some evidence that the teachers were beginning to incorporate language-focused features; besides the biology teacher’s focus on the language of classification, the chemistry and mathematics teachers attempted to include a form-focus, possibly at some cost to the success of meeting task criteria.

2 Original information and exemplars

I will focus here on three relevant episodes from early in the programme that appeared to be what the teachers attempted to imitate in the microteaching.
### Table 1  Summary of presence of task criteria in microteaching sessions

<table>
<thead>
<tr>
<th>Subject</th>
<th>Session 1:</th>
<th>Session 2:</th>
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<tbody>
<tr>
<td></td>
<td>Organizer</td>
<td>Jigsaw</td>
<td>Organizer</td>
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<td>Biology</td>
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<tr>
<td>Meaning</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
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<tr>
<td>Gap</td>
<td>Not present</td>
<td>Present</td>
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<td>Split/shared</td>
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<td>1-way/2-way</td>
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<td>1-way</td>
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<tr>
<td>Required(optional)</td>
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<td>Required</td>
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<tr>
<td>Real-world</td>
<td>Unclear</td>
<td>Unclear</td>
<td>Present</td>
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<tr>
<td>Outcome</td>
<td>Present</td>
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<td>Communicative</td>
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<td>Chemistry</td>
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<td>Meaning</td>
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In my first lecture I overviewed language-teaching methods through a reading jigsaw (based on Larsen-Freeman, 2000). The class was organized in groups; each group had a description of a method that the group was encouraged to discuss in light of their own language-learning experiences.
and its relevance for their content classrooms. Each individual had a chart with columns for each method. Everyone recorded key features of their group’s method on the chart. The class was then reorganized into groups with one representative of each teaching method. They exchanged information to complete their charts. This was followed by a whole-class discussion of language-teaching methods and the activity itself, which was identified as a language-teaching task used in task-based language teaching (one of the methods) and several other methods (such as communicative language teaching and content-based instruction), and discussed in terms of how it stimulated interaction. No technical terminology related to task criteria was introduced at this point.

In week 2 the teachers listened to a lecture on tasks (not given by me). They performed a ‘listen and do’ map-labelling task as students. They were given unlabelled maps and orally instructed where to place labels, and were allowed to ask further questions in order to clarify the exact locations. This activity was used to illustrate the following criteria for tasks (adapted from Ellis, 2003):

1) A task is primarily focused on meaning.
2) A task involves some kind of ‘gap’.
3) A task involves real-world processes of language use.
4) A task has a clearly defined outcome that is achieved communicatively.

They then completed a chart analysing five science activities according to these criteria to determine whether they were more or less task-like.

In the follow-up workshop session (which I taught) we reviewed these criteria by comparing the map-labelling activity to the methodology jigsaw, and discussed how a ‘gap’ could be achieved through two task conditions: information configurations (shared or split) and interaction configurations (one-way or two-way). We also discussed the condition of optional or required interaction using the required listening to instructions and optional asking of questions in the map-labelling task.

Classification texts were covered in another session. We looked at several classification texts from each curriculum area and completed graphic organizers on some of them, focusing on language expressing classification. These were not tasks; however, they resembled graphic organizers in the teacher (but not student) version of some textbooks used in their own classrooms, which I thought could be adapted into tasks for student use.

I then presented two tasks based on a graphic organizer activity from a local biology textbook. The original activity artefact covered biological organization with an unassembled graphic organizer. The student cuts out labels such as ‘tree’, ‘blood’, ‘all the plants, fish, worms and bacteria in a fishpond’, writes headings and subheadings for biological classification, and glues the labels under the appropriate headings.

I passed out copies of the activity. We discussed how it could be turned into a task. I then had them do two modified versions of the activity. In
the first version the class was organized in groups. Each group had a blank graphic organizer and a set of labels. They were instructed to discuss the graphic organizer and information until they could logically arrange them. I explained that this was a task with shared information and optional two-way interaction. We contrasted it with the methodology jigsaw that had split information and required two-way interaction.

I then had the class use the same graphic organizer for a ‘listen-and-do’ task. This time the biology teachers (one in each group) ‘taught’ the information in the graphic organizer while the students listened and made notes in graphic organizer form. They were encouraged to ask questions. I directly compared it to the map-labelling task from the task lecture, and explained that this was a task with split information requiring one-way interaction from the teacher to the class, but that since questions were allowed it had optional two-way interaction.

The class was given an opportunity to design a task in their curriculum groups based on topics relevant to their curriculum aims. I circulated and offered advice. The tasks were then trailed in mixed curriculum groups. This proved fairly realistic, as teachers from other curriculum areas generally lacked sufficient prior knowledge of the material covered so that they were learning from the activity.

3 Detailed descriptions of examples

For reasons of space, this section will focus on two of the participants who appeared to imitate the exemplars described above.

a Biology 1:  The lesson topic is nutrition types. In one segment the video shows the biology teacher passing out a text and an incomplete graphic organizer to each student. This was similar to non-task graphic organizers from the lesson on classification. However, she instructs the students to work in groups or pairs, suggesting she is aiming for a task with shared, two-way interaction, but it is optional: there is no gap, since all of the answers are available in each student’s handout. The video shows that many work individually. The conditions only superficially imitate those of the first adapted task exemplar; in particular, the putative task lacks a gap.

In the feedback session, the ‘students’ praised this activity, as did I, for creating an activity using a classification graphic organizer. We also discussed whether splitting the information between students might have stimulated more interaction.

b Biology 2:  The video shows the teacher telling the students to form groups. She gives one group member a copy of a text and the other group members incomplete charts. This resembles a task exemplar (the second part of the language-teaching methodology lesson above). One student reads the
text aloud while the others complete the charts, so there is split information with one-way required interaction. She then passes out a set of cards to each group and tells them to organize the cards to form a graphic organizer. This also resembles another task exemplar (the first adapted graphic organizer activity above) with shared information and optional two-way interaction. The biology teacher appeared to successfully imitate two task exemplars.

c Chemistry 1: One segment shows the teacher organizing students into groups. He passes out a set of ‘isotope cards’ to each group, making the information split and suggesting two-way interaction is required. This resembles one of the task exemplars (the first adapted graphic organizer activity). The teacher tells the students to ‘play’ with the cards, but most find it frustrating, and the instructions are not clarified. There is no particular arrangement for the cards, so the putative task lacks a clearly defined outcome and in that respect does not imitate the task exemplar. It also emerges that many students lack the requisite background knowledge of atomic structure for understanding isotopes.

In the feedback session, the ‘students’ criticized the chemistry teacher’s instructions and asked him about the arrangement for the cards, leading me to re-describe the problem as the lack of a clearly defined outcome, and remind the class that this was a task criterion. However, I also noted how split information did stimulate (frustrated!) interaction, and compared it to one of the graphic organizer tasks I had done.

d Chemistry 2: The first lesson segment reviews atomic structure (showing the teacher addressing the lack of background knowledge necessary for understanding isotopes). The class is organized into groups in which one group member reads a text about atomic structure while the others draw the diagram. Although no drawings approximate the original, the students have tried to draw something based on the reading. The activity appears to imitate the map-labelling task exemplar from the lecture. Additionally, the atomic structure text has several questions in the margins suggesting vocabulary and text comprehension foci (based on non-task exemplars), although it is not clear how these are a part of the activity as it is performed. Although these components resemble several task and non-task activities presented in the programme, the combination is unique.

Another segment involves a graphic organizer with a vocabulary list. Besides choosing which vocabulary items correctly complete the blanks, students must also determine the correct form of the vocabulary (e.g. singular or plural noun forms; third person singular or plural verb forms). Some of the items represent abstract relationships (e.g. ‘have’ to describe a part–whole relationship). The graphic organizer appears to imitate some aspects of a task exemplar (and the ‘grammarting’ a language-focus exemplar), but again the combination appears unique. In practice the participation is individual although students are instructed to work together; although
there may be a reasoning gap, interaction is not required. Taken as a whole, there is insufficient resemblance to say this activity successfully imitated a task exemplar.

V Discussion

The findings show the teachers appeared to develop their design of tasks through imitation by incorporating more of the task criteria in the second peer microteaching session than in the first. This section will explain this progress by looking at the roles played by images and role reversal in faithful transmission.

First, however, an alternative explanation needs to be explored: that the teachers were relying on trial-and-error learning. Galperin (1989a) writes that trial-and-error learning relies on flaws to draw attention to the means of achieving goals. The teachers did indeed face problems in getting students to perform their tasks as intended. However, if the teachers had made efforts to incorporate task criteria and conditions – even if they were unsuccessful – it can be argued that they were guided by a ‘quasi-concept’ (Robbins, 2003) or an incomplete image of tasks (Galperin, 1992). I will discuss this below. It may also be difficult to distinguish trial-and-error learning from learning within the zone of proximal development. The key difference between trial and error and the zone of proximal development is whether assistance, such as through role reversal (Tomasello, 1999), enables performance to take place. I will also discuss this below.

1 Images

Although the teachers appeared early on to take up the goal of encouraging language development by promoting interaction through the use of tasks, it was much more difficult to take up the means for achieving this goal (Tomasello, 1999; Lantolf and Thorne, 2006). That is, the teachers failed to imitate tasks because they failed to use the means to achieve the goal. This is shown through the teachers’ early efforts that focused on designing content-based materials that could be performed without much interaction through language. One reason for considering these to be based on incomplete images rather than trial and error is that these efforts were aimed at generating student interaction through instructions (‘work in groups’), but without the task criterion of a gap and its related conditions. In other words, in the first microteaching the teachers had some idea that they needed some means of achieving the goal of stimulating interaction even if they did not grasp how the task criteria and specific task conditions were intended to be used to achieve this until the second session.

Thus the difficulties the teachers had in fully imitating tasks suggest that their guiding image of tasks may have been incomplete, possibly because
they were mediated by past experiences (Galperin, 1992) of their prior knowledge of content teaching as well as their still-developing understanding of tasks. Vygotsky (1986) points out that dissimilarities are recognized before similarities because the latter require the conceptual ability to generalize. The teachers, however, appeared to have initially focused on how the task exemplars were similar to mathematics- and science-teaching activities. As adults they of course had the ability to make generalizations and notice similarities, as shown by noticing what was familiar; and as experienced teachers, they were familiar with a range of teaching materials. Since all those involved in the programme made efforts to use mathematics and science content, at the content level our materials resembled mathematics and science materials, possibly distracting the teachers from noticing less familiar features. They appeared to rely on images based on their ‘lay’ understanding of tasks conditioned by their own practices rather than the ‘scientific’ understanding of tasks presented in the programme.

Because these images were incomplete, the teachers lacked sufficient control over their actions and therefore reverted to object regulation (Johnson and Golombek, 2003). The content and materials of task exemplars provided relatively familiar objects that the teachers could imitate and thereby regulate their initial efforts at the design and peer microteaching of tasks. Stimulating interaction was different. Interactions, particularly as they are understood as relevant to language learning (such as negotiation sequences), may be far from central in a traditional teacher-centred, examination-oriented content classroom (as the participants described their own situations). The criterion of a gap and its related conditions may not have been noticeable and thus were not part of the teachers’ initial image of tasks. This made successful imitation difficult despite the fact that these elements were repeatedly addressed during the programme.

Further control over tasks developed as the teachers gained a fuller image of them, one way being through their increasing conceptual knowledge. The presentation and dissection of putative tasks in the first peer microteaching feedback session as well as workshop sessions throughout the programme, including using the list of task criteria to identify the presence of features, may have developed conceptual understanding. In particular it may have assisted the teachers in slowing down task design into a more analytical procedure by identifying features they could check to see if they were imitating. For these experienced teachers activity design was a procedure they probably could perform fluently with mathematics and science content, which may have led them to assume similarities between what they sought to imitate and what they actually produced. Slowing down the procedure may have contributed to noticing the dissimilarities between what they were familiar with and tasks, in particular the criterion of a gap.

However, conceptual understanding needs to be augmented with an understanding of how concepts are employed in concrete action (Lantolf and
Johnson, 2007). The connection to concrete action may have been developed as the teachers performed more tasks as ‘students’, where they could experience how interactions with other ‘students’ could be fostered through the intentional incorporation of features that could effect certain ends.

2 Role reversal

Performing tasks first as ‘students’ and later as ‘teachers’ suggests how role reversal may have contributed to imitation. Teaching is, after all, a mutual activity, and acting as students may have put teachers in the ‘cognitive shoes’ of students, as Tomasello (1999) puts it. This may have had two effects: it may have contributed to task features becoming more noticeable, and it may have contributed to knowledge being shared.

First, role reversal contributed to noticing task criteria. The confusion over what to do with the chemistry teacher’s set of cards when the only instruction was to play immediately suggested the importance of clear instructions, but further examination of the activity revealed the importance of clearly defined outcomes, which, if they were lacking, no instructions could remedy. (Thus the original instructions turned out to be quite apt!) Task criteria and conditions that could stimulate interaction were another example. Through their roles as students performing other teachers’ tasks, the students could experience how they were and were not stimulated to interact. Again, the biology teacher’s instructions to work together did not suffice because students realized they did not need to bother interacting in order to complete the activity successfully.

These kinds of experiences could then be recalled to guide the design of tasks that more closely imitated exemplars. Thus, the second way role reversal may have contributed to a fuller image of tasks was by redistributing distributed knowledge. Evidence of distributed knowledge is to be found in the fact that each of the teachers in these two examples succeeded where the other failed: the biology teacher’s graphic organizer had a clearly defined outcome and the chemistry teacher’s card game had split information, suggesting how fairly full knowledge of tasks was distributed across the class before any one individual had it. Role reversal may have allowed distributed knowledge to become shared as student experiences allowed teachers to perform tasks with criteria that they had not noticed as teachers designing tasks.

3 Faithful transmission

The clearer image of tasks enabled faithful transmission to occur. This is evident from the way teachers sometimes appeared to be trying to imitate unmodified or partially modified activities as they had been taken from textbooks before I had adapted them into tasks. The graphic-organizer activity of the biology teacher is an example. The fact that faithful transmission of the task exemplar had not occurred suggests that the incomplete image
of tasks meant that some criteria and conditions were unclear. Once she had a more complete image of tasks, the biology teacher was able to recognize those features and eventually imitate them in her later tasks. In other words, role reversal enabled her to recognize task features so that faithful transmission was possible.

As Galperin (1992, p. 54) points out, images are not inherent to objects but are based on what ‘is presented’. Here it is apparent that what ‘is presented’ includes where attention is drawn in social situations. The social situation contributes to the creation of the images as others, whether experts or peers, facilitate noticing or contribute to sharing distributed knowledge.

Although imitation is a process of internalization, it can be recognized in the learner only through externalization. This is the other side of how an image ‘is presented’ and ‘put to use’: the learner’s image is the basis for what the learner can externalize in action. Thus the process of internalization in individuals can be seen as book-ended by externalization: by teachers externalizing what is to be learned, and by students externalizing what has been learned. Both externalizations are inter-mental, expressing the socially mediated nature of intra-mental, internalized, individual development, and constitute evidence of faithful transmission.

4 Departures from the general trend

One interesting departure from the general trend of improved task design is that the teachers continued to have difficulty imitating tasks, doing both worse as well as better with respect to specific criteria (see Table 1). For example, in the second microteaching session the chemistry teacher did worse on the criterion of outcomes being communicatively achieved even though he improved on the criterion of including a gap. The complexity of tasks also became an issue in the second microteaching. The chemistry teacher tried to incorporate several different operations and outcomes into a single task. For example, in the second activity students were expected to select suitable vocabulary to complete a fairly sophisticated graphic organizer on atomic structure as well as determine the correct forms of the vocabulary. It not only taxed the curriculum group’s design capabilities, but also it taxed the students’ abilities to accomplish so much at once. Finally, in the early session teachers had self-limited themselves to attempting a single task, whereas in the late session they attempted two. The teachers may simply have been trying to do too much.

These departures raise two issues. One is that the teachers’ performances showed the kind of historical development marked by non-linearity, as shown in both regression as well as innovation, described by SCT theorists (e.g. Lantolf, 2005). It also suggests that task design was within the teachers’ zone of proximal development in that they could succeed with the assistance provided by exemplars. However, those who departed from the task
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exemplars (such as the chemistry teacher) lost the scaffolding that was still sometimes needed.

A final somewhat speculative point can be made. As Galperin points out, an image includes not only the object but also its significance for the individual. The physics teacher’s clearest instance of a task is an example: she incorporated a mathematics ‘bingo game’ as a lesson closer that had little to do with physics objectives but a great deal to do with stimulating student enjoyment. The mathematics teacher came to believe that both teachers and students focused on problem-solving at the expense of conceptual understanding. One of his non-tasks in his second microteaching was to have students read a textbook selection together. In general, however, a wider social motive may have coloured the teachers’ image of tasks: concern was regularly expressed during discussions that tasks might be so time-consuming that they would compromise meeting all the content curriculum objectives covered in examinations.

This suggests the role that wider social motives may play in conditioning individual images. The motive that stimulated these teachers to take part in this programme was largely determined by a government decision to return to limited English-medium teaching (see Nunan, 2003), which in turn is part of an effort to raise Malaysia’s international profile, particularly its economic standing. It is not language itself, but what language can do in the service of other goals, that underwrites these teachers’ activity. Their own contribution to this motive is preparing high-school students for graduation and hopefully university-level mathematics and science courses, whether their subjects are taught in Malay or English. It should not be surprising if some of them have the attitude that aiding language development always plays second fiddle to meeting content curriculum objectives. Such an attitude could play a role in the image formed of tasks and how they were understood and used by the teachers.

VI Conclusions

This study has used activity theory to show teacher development through imitation and the use of images and role reversal. Teacher development has become dominated by a reflective model, which may sometimes distance development from some of its fundamental mechanisms. Imitation need not be dismissed as only tradition-bound and change-resistant (Wallace, 1991). However, it can be argued that imitation needs to be incorporated into teacher-education programmes in ways that enable it to contribute to developing conscious control rather than mimicry. Perhaps teacher reflection needs to be guided so that it is aimed at expert knowledge, which may support its internalization. In other words, teachers should not have to re-invent the wheel if the wheel already exists; they should learn about the wheel and reflect on whether and how it suits the particular path on which they travel with their students.
Orienting activity – and in particular the notion of images – offers one way in which teacher development can be guided. In this study, teachers were presented with a wealth of both conceptual and experiential input on using language-teaching tasks. What they did not have, however, was a complete image of a task. Thus although they had clear sight of the goal, their appreciation of the means was slow to develop. Galperin attempted to address the pedagogical need for guidance through his stepwise teaching strategy (Arievitch and Haenen, 2005). Would I have saved these teachers hours of struggle by following Galperin’s teaching strategy? The non-linearity of development means this is unlikely despite Galperin’s hopes (Lantolf and Thorne, 2006), but it is possible that some kinds of assistance may better aid development than others. Further research on this issue, as well as its extension to other areas of language teacher development, would be useful. In particular, exploring the development of ‘scientific’ concepts among language teachers, as Lantolf (2005) describes Negueruela doing with language learners and as is suggested elsewhere (Lantolf and Johnson, 2007), would be a profitable line of research. This study suggests the importance of the role played by developing a ‘scientific’ concept of tasks, and in doing so it reinforces the value of conceptual knowledge. However, it is also clear that the conceptual understanding of tasks required considerable experiential support to be made usable in concrete practice.

This study is limited in the amount and type of data collected. In particular I have focused on the externalized actions of the teachers at only two points in a process. Further data from different points in the process might have provided more detailed evidence of the process itself. And despite Galperin’s criticism of self-reports, evidence of the teachers’ intentions might have added another dimension to the data. At the same time, it is important that intentionality not be divorced from the socially, culturally and historically situated ways in which it is realized. Intentions are interpreted as well as intended; focusing on readily observable elements uncovers whether and how intention and interpretation are shared. Nonetheless, including participant understandings of intentions is certainly one way to expand a study on imitation.

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VII References


