English language teaching reading principles methodologies study skills research content based learning cognition speaking development classroom interaction linguistics techniques technology grammar psychology motivation listening pragmatics resource based learning discourse participation phonetics vocabulary assessment skills education attitudes syntax independence semantics learner training communication approaches autonomous learning sociolinguistics strategies materials self-access writing genre learner centred curriculum evaluation morphology course design teacher training resource based language learning English language teaching reading principles methodologies study skills research content based learning cognition speaking classroom

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Editorial Staff

Information for contributors

rEFLections is an annual publication featuring original articles on a wide range of EFL topics, mostly in Thailand. We welcome contributions from all sources. No payment will be made but contributors will receive two free copies of the journal.

Manuscripts for articles should be no longer than 4,000 words, and follow the conventions of the articles in this issue as far as possible. Please include an abstract and a biographical note. Send 2 hard copies together with a diskette (preferably Microsoft Word 97, IBM format) to the editor at the address below:

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Editorial

In many ways, English language teaching is an immature subject academically. The field is still influenced by fads as teachers search for the 'right' way to teach English. Somewhat paradoxically, these changing fashions in ELT may be partly responsible for the slow pace of change at a deeper level. When a teacher is told that she must, say, teach grammar through consciousness-raising, why should she bother when she knows that next year she'll be asked to teach in a different way. One key problem in ELT, then, is how teachers can judge whether a new approach is just a fad or whether it is likely to be of lasting value.

The first four papers in this issue approach this problem in four different ways. The first by Gerry Lassche focuses on genre analysis which, in many situations, is an innovative, rather than a mainstream, approach to writing. Instead of conducting a potentially unreliable comparison of two approaches to teaching writing, Gerry has decided to focus on the training aspects of implementing a new approach, and especially on how trainees react. This is a crucial consideration if innovative approaches are to become mainstream.

The next three papers all focus on aspects of autonomous learning, again an approach to teaching which is yet to be accepted into the mainstream. Chada Khongchan examines how consultations can be implemented to most effectively support autonomous learning. This paper is an example of action research which aims to identify valuable directions in teaching. Pamararat Wiriyakarun in the third paper investigates students' perceptions of the acceptability of an innovation, in this case self-access learning. Again, if an innovation is to become mainstream, how students perceive the innovation is crucial. In the fourth paper, Onsiri Paladesh conducts an informal case study of an attempt to introduce self-access learning with the goal of identifying situation-specific directions for future self-access projects. Without papers like these examining the value and methods of implementing innovations, the innovations are likely to remain fads which, over time, fade into obscurity.

The last paper in the collection, by Richard Watson Todd, seems to be investigating something completely different. At first sight, comparing the use of hierarchies and networks to describe research has little in common with the other papers in this issue. However, the use of networks in language research is still innovative. If they are to be accepted into the mainstream of academic research, papers such as this one are needed to highlight their potential benefits. In this way, the last paper can also be considered a paper which is evaluating an innovation. Nevertheless, the paper does represent a new direction for *rEFLections*, but as editor I would like to see future issues contain one theoretical paper in addition to the valuable classroom-based research that has been and should remain the mainstay of *rEFLections*.

I hope you find this issue interesting, valuable and thought-provoking.

Richard Watson Todd

Editor

Contents

Multi- and Uni-Text Treatments of Genre:
A Trainer's Description and Teacher-Trainees' Evaluation

Gerry Lassche

Ajou University, Korea

Abstract

This paper discusses two approaches to teaching literacy: a text-level approach, involving the use of multiple models; and a context-level, genre-based approach, involving a single model. Each approach is described, and its implications on literacy comprehension evaluated. A qualitative assessment of teacher trainees towards the adoption of uni-text approaches follows. The findings suggest that, although teachers acknowledge the superiority of a genre-based approaches for facilitating communicative skills, they have misgivings about its applicability due to unfamiliarity with L2 and with the technical manipulation of the approach, and the antagonistic influence of current testing paradigms.

Introduction

I am a teacher trainer in a TESOL Certificate program in Korea, and my students are current Korean school teachers and private institute instructors who teach ESL. Despite being given several lectures and examples on genre-based approaches (using sources such as Feez, 1998; Hammond, 1990; Callaghan et al., 1993; Hammond and Burns, 1992), I noticed the continued presence in my students' practicum classes of *multi-text* lessons. These lessons would be characterized by the presentation of 7 or 8 full-length texts, with students given only rudimentary practice with any one text before moving on to another and another. Such practice would focus on accuracy-based comprehension of fact-based information embedded in the texts.

In an effort to understand this practice more deeply, I presented a further lecture on the genre-based or *uni-text* approaches to my students, and then conducted an anonymous survey of my students' reactions. What follows in this paper is a description of these multi-text and uni-text approaches, along with the reactions of my students as reported in their survey responses.

A multi-text approach

Some of my teacher-trainees taught their lessons by presenting multiple examples of texts one after the other in a given class. Although the texts were of the same genre and focus (i.e. either a written or oral text), any one text was not dealt with deeply, in terms of features of register and genre. Instead, accuracy-based exercises formed the sole content of the lesson. Teachers culled their materials for their practicum from textbooks published by the Korean Ministry of Education, and the tests of High School English proficiency. The layout of these textbooks showed a similar pattern to their lesson design. For example, a typical page from a Korean high school textbook (Lee et al., 2001) looks like this:

Figure 1. Typical page of Korean textbook

In the first part of the chapter, students are introduced to the idea of newspapers. Instead of being presented with a newspaper article, however, students read a lengthy report about newspapers, and learn only that these articles contain facts about events, related to different sections as noted in Figure 1 above. To demonstrate comprehension, students have to match the headline with the corresponding section article title. This is an accuracy-based treatment of the subject, since students only choose from a menu of items not necessarily related to their areas of personal interest, and are not interacting with other students in the process of answering.


Class newspaper

Who did something?	Mr. Brown
What did he or she do?	Discovered an ancient city
Where did he or she do it?	In Peru
When did he or she do it?	Yesterday

Mr. Brown discovered an ancient Incan city in Peru yesterday.

<Your Report>

Who did something?	____________
What did he or she do?	____________
Where did he or she do it?	____________
When did he or she do it?	____________

Figure 2. Further practice

In another exercise for further practice (Figure 2), again taken from Lee et al. (2001), students are led to notice the textual-level of news articles (the wh- features). Notice the modeling of a sentence which places the actor in the theme position ("Mr. Brown discovered…), when news articles usually use the passive form in order to place the object into theme position (i.e. "An ancient Incan city was discovered …"). In English, this is done to highlight the most essential element. Who discovered is not as important as what was discovered. This feature was already present in the headlines (see Figure 1), but was not picked up on by the textbook.

It is also important to notice how many text excerpts are being presented to the students. Figure 1 alludes to 5 different texts (each headline represents one text), and the exercise in Figure 2 shows two more (the Incan city text, and the students' own text). This is a point I referred to above as a multi-text approach that only addresses accuracy (i.e. fact) based levels of text.

A Uni-text approach

Texts can be viewed in at least 2 dimensions: at a textual level, in terms of the idiosyncratic features of the text; and at a contextual level, in terms of conventionalized features common to the genre of which the text is an instantiation. One simplistic way of characterizing these features is in terms of who, what, where, when, how, and why.

World's Highest Fountain to Be Unveiled in Seoul

By Lee Chi-dong
Staff reporter

As part of its efforts to enhance the image of the nation's capital for the upcoming World Cup, the Seoul city will hold a ceremony tomorrow to unveil the highest fountain in the world.

The Seoul Metropolitan Government said yesterday that it would hold a trial operation of the fountain, wrapping up one year of construction. The fountain will shoot water up to 202 meters, equivalent to the height of a 60-story building.

Located near the World Cup Stadium and the Songsan Grand Bridge in western Seoul, the gigantic fountain, built on a soccer-ball-shaped barge, has 21 surrounding subsidiary fountains, each with a height of 30 meters, along with lighting to provide special effects at night.

The 7.7-billion-won fountain was built to celebrate the World Cup finals, which are to be co-hosted by South Korea and Japan from next May to June.

"It is also meant to express the hope for world peace and prosperity," said a city spokesman. Seoul officials also expect the fountain, as a new landmark, will serve as an added attraction for the city capital.

Figure 3 A genuine newspaper text

In Figure 3 above, for example, a news article taken from the Korea Times (29-10-01, p. 3) shows the following textual and contextual features:

	Textual	Contextual: Text-User	Contextual: Text-Writer
Who	Seoul government city spokesman city officials	reader	news reporter
What	highest fountain other facts and opinions	interest area	daily news article
When	tomorrow next May to June	anytime (permanent document)	today
Where	Seoul; Korea and Japan	anywhere	

How	*Unfolding event* one year of construction trial operation ceremony serve as symbol and attraction	*Rhetorical staging* topic sentence action description history purpose	*Publishing process* attend news conference conduct research write draft edit and revise submit to editor
Why	symbol of peace tourist attraction	be informed practice English incidental notice	provide local info. Disseminate propaganda generate revenue

Table 1. Textual and Contextual features

The textual features concern a set of information found only in this particular text (Table 1); that is, these facts about the fountain are found only in this particular news article. The contextual features in Table 1, however, would be true of many daily news articles written for a similar purpose. They could be summarized in terms of the text-user and text-writer interactions.

Exercises which deal only with the textual features operate at an accuracy-based level. For instance, such questions might include “Where is the fountain located?” or “Describe the features of the fountain.” The answers to these questions are convergent (i.e. there is a single correct answer, such as "Seoul"), and do not engage any meaning-based response from the learner because the answers are explicitly available. The students have only to find the words “locate” in the text to derive the answer to the first question, and look for adjectives and associated nouns to answer the second question.

Exercises which deal with the contextual features of the text, however, have the students think through the implicit features of the text. Who is Lee Chi-dong? Why did he write this? Why did the newspaper decide to publish this article and not some other article? The answers to these and other questions would reflect the student-readers level of critical literacy, who according to Varaprasad (1997):

- think seriously about what they are reading;
- do not believe everything they read;
- question everything that does not make sense to them;
- analyse arguments;

- discount arguments based on faulty reasoning;
- have good reasons for believing some things and not believing others

That is, students can become aware of the position the text holds them in and their willingness to criticize that stance in relation to both the text and its writer. In addition, it would reflect their experience with the world, as they show awareness of different social purposes and institutions, and their willingness to engage these issues.

Varaprasad (1997) suggests that students should be placed into a critical literacy perspective right away. She dismisses a so-called "conventional approach" which, in pre-reading stages asks to "find answers to given questions based on the text; give their personal opinion about the topic; predict the continuing text." Instead, she suggests that students initially should be asked to discuss "the reason the author is writing about the topic; the whole range of ways to write a particular text; and the generation of their own list of questions."

While I think Varaprasad is right for dismissing approaches which stay only at this level of textual comprehension, I think her approach is overly optimistic for estimating how quickly students will gain entry-level comprehension of texts. Teachers need to realize the range of L2 proficiency of their students, and adjust their learning objectives accordingly (Lassche, in press). The approach I am suggesting embraces both a textual-level and a contextual-level appreciation of what texts have to offer. That is, initial treatment of textual-level features, which asks questions like "what is the topic of the text", is important for helping students understand texts.

Dealing with implicit features, then, facilitates a fluency-based approach to textual comprehension: students have to imagine what these features are, and determine on the basis of the context what a reasonable interpretation of the features might be, "reasonable" meaning here corresponding to what is conventionalized in the genre (Bakhtin, 1986). Following from Feez (1998), dealing with context-level features makes the teacher's objective of creating an understanding of news articles explicit to the learner – a "visible pedagogy" so to speak.

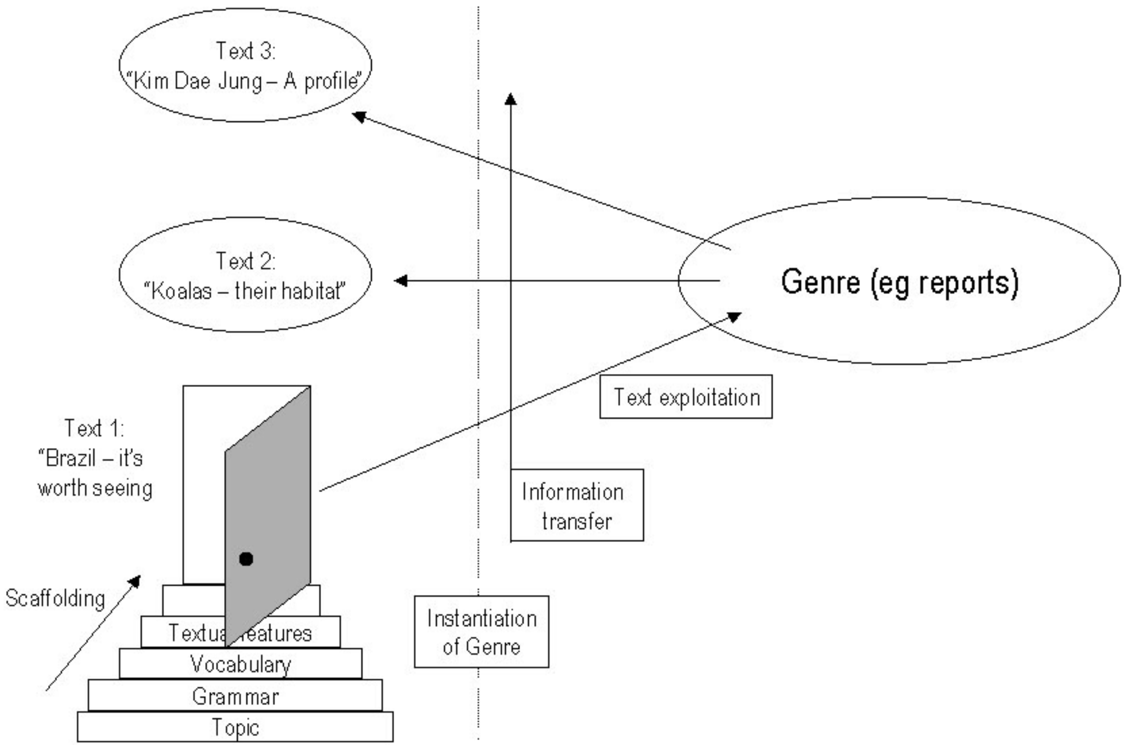

Figure 4 Uni-text approach

As Figure 4 shows, each text is an instantiation of a conventionalized form called "genre". Any one text can act as a door to "get into" the genre. Thus, usually texts are dealt with through comprehension questions that focus on idiosyncratic features of text (i.e. in the case attached, looking at vocabulary of particular places in Brazil, particular facts related to that topic (i.e. how many people live there?). By drawing explicit attention to these context-level features, teachers facilitate students' understanding of all texts within this genre. That is, the information is transferable from the one model text to other texts within the same genre.

In Figure 4 above, three information reports which provide ways of organising perceptions of the world are shown. They give information about a class of things by describing physical attributes, properties, activities, behaviour, uses, dangers, and so on. In the above example, for the three reports, the first describes the tourist attractions in Brazil; the second, the environment in which koalas live, and the third takes a more personal look at the president of Korea. All of these are examples or instances of report texts.

The process used to help students gain entry into the texts follows the sequence suggested Hammond

(1990):

1. Building knowledge of the field
2. Presentation of model text
3. Joint construction of text
4. Independent construction

My teacher-trainees were also given a chance to examine and discuss Callaghan et al.'s (1993) more elaborate model, which involves many more stages. The four-stage model was adhered to because of the simplicity of the sequence. Crucial to this type of literacy approach is the notion of scaffolding (Lassche, in press). In my course, scaffolding was defined as the structure which allows workers to build or work on a house (see Figure 5).

Figure 5 Genuine scaffolding

The builders use this structure to stand on as they build or work on a building of some kind. In pedagogical terms, this means that teachers facilitate initial awareness of genre features and structures to the students which allows them together with their peers to build and develop knowledge of similar texts (after Feez, 1998). Ellis (1997: 242) also provides a more technical description of this process:

> "[Students collaborate] with others, who serve as conduits through which cultural knowledge, including language, is acquired. Initially, learners require the scaffolding

provided in interaction with others to understand and to perform a new skill but subsequently, they are able to access this skill unaided."

In the later stage 4, students are encouraged to use this knowledge to create texts of their own choosing and interest areas. In this process, students gradually develop from a position of dependence, of teacher-led exploration of text, towards a position of independence, as producers of their own texts:

> "[Students] have to go through a process, and often a lengthy process, of learning how to learn, and they can only do this with the assistance and guidance of the teacher."
>
> (Nunan, 1999: 11)

Learners' entry into a given text could be scaffolded by an initial focus on items that may be unfamiliar. From texts presented in fig. 4, this might include textual features (distinguishing facts from opinions), idiosyncratic lexical items (place names of Brazil, the "eucalyptus tree" of the koala, the political parties of Korea) and grammar, and even the topic itself (example text-level questions #1, 2 and 3 appear in Table 2 below). This step could be a brainstorming stage, where students' knowledge of a given topic (such as Brazil) is elicited without evaluation, and displayed on the board, using a "word network" for example.

Text level questions	1Q: What are some places you can find in the text? *A: (List) Sao Paulo, Manaus, Rio, etc.* 2Q: What are some activities you can do in Rio? *A: You can go swimming at the beach. There are many nightclubs. You can go shopping too.* 3Q: Why do people go there? *A: Many people go there on vacation. Many people also go there for business.*

	4Q: Are there any "feeling" words in the Brazil text? *A: (List) fun, expensive, exciting, enjoy, wonder, etc.* 5Q: Why do you think the author wrote the Brazil text? *A: To make people want to travel there.*
Context level questions	5Q: What kind of information do you see at the beginning of the text? In the middle? At the end? *A: Beginning – intro of Brazil, outline of 3 sections (physical beauty, tourist attractions, activities); Middle – more detailed descriptions of each section; Ending – positive summary of descriptions, encouragement to visit Brazil* 6Q: Do you think that some information might be missing? [Students might be encouraged to search the internet for more information to answer this question.] *A: There are problems with crime and poverty.*

Table 2. Example questions

As discussed above, these textual features would change from text to text and topic to topic, and as such could be scaffolded in the classroom in each case. The contextual features, however, relating to genre and register, would be similar or "conventionalized" across all three texts. Each text would serve as a model from which these contextual features could be exploited. This information would be expected to transfer in the form of growing knowledge about report-like texts. Questions that related to the organization of information, or the rhetorical stages in genre-based literature (see Eggins, 1994), would be pointed out here. Question # 5 in Table 2 is an example of this.

As this knowledge deepened, texts could be exploited further and compared in order to discuss, for example, variances among the "report" conventions: Why, for example, the "Brazil" and "Kim Dae Jung" texts tended to highlight more positive features about their subject, while the "koala" text seems very objective in its presentation of facts and figures? Question # 6 in Table 2 below is an example of this. Questions of this type guide the student to realize the process of selective attention information that is involved with the creation of texts. That is, writers choose to include certain information while leaving out other equally valid details. This is the critical understanding, or critical literacy approach, of text construction and de-construction mentioned earlier.

Genre-based, uni-text approaches: A reaction to the pedagogy

I handed out a survey to my students which asked them to anonymously respond to the following two questions:

1. In what ways do you think a genre-based, uni-text approach is helpful for your teaching context?
2. Why do you think a multi-text approach is helpful?

Several papers written from a similar case study perspective include Humphrey (1990), in an Australian literacy class with NESB children, and Kay and Dudley-Evans (1998) in an international teach-training workshop on genre-based approaches held in Singapore. Both of these papers refer to the experiences of either native speakers or EFL teachers with near-native proficiency with the language. In my course, however, I presented a very brief overview of the systemic functional model of language to my mid- to high-intermediate teacher-trainees, and found that, despite the language differences, many concerns overlapped.

Where Kay and Dudley-Evans (1998) found that genre-based approaches are “particularly suitable for learners at beginner or intermediate levels of proficiency in a second language, in that it gives them confidence”, one student suggested that a uni-text approach helps lower-level students to discriminate among the different features of the genre. Kay and Dudley-Evans (1998) also note that their teachers were concerned that “it could become boring and stereotyped if overdone or done incorrectly” – a concern echoed by some of my students as well. One of my students noted that “50 minutes is too long to apply to just one text [so] students are apt to be bored about one thing. They like to deal with various learning materials.” Interestingly, Kay and Dudley-Evans’ (1998) teachers recommend “immersing students in a wide variety of texts within a particular genre”, a practice that I have found has led to the multi-text, textual-level, accuracy-based style I described above.

The problems that Humphrey (1990) noted with regard to the use of metalanguage to describe ideas of genre (i.e. theme and rheme etc.) were not an issue raised in my class or in Kay and Dudley-Evans (1998). This was probably due to an express intention of mine to not encumber my teacher trainees with a lot of terminology. This is a practice that Humphrey also admits to, a problem she resolved by compromising: using traditional terms (“verbs” versus “material/mental/verbal process” etc.) where possible. In so doing, however, I may have given a too superficial treatment of the issues. For example, one student wrote that a uni-text approach is not useful because, to develop communicative fluency, "students should deal with many texts rapidly."

Two other issues raised by students against the uni-text approach that were not addressed by the above two papers were (1) the applicability of such an approach to a test-driven syllabus; (2) the reality of large (45+ students), multi-level classrooms. As noted by another student, a multi-text approach values the properties of scanning and skimming, a characteristic of a speed-as-fluency approach to literacy as endorsed by another of my students above. The provision of many texts helps to "broaden vocabulary power and … syntax during a class." The procedure is based on the belief that being exposed to as many texts as possible, students will be able to derive implicitly the language features that will help them pass a given test, such as the TOEIC and the TOEFL.

This suggests that some teacher trainees saw texts as being puzzles, from which students were to find shape-specific, discrete bits of language as quickly as possible. The fact that students "can be provided accurate information and expressions in a short time" is seen as a positive feature of multi-text approaches, again due to the exam connection. The notion of texts serving particular purposes for specific contexts has probably not yet been realized by my teacher trainees, or ignored due to a defensive adherence to present classroom conditions. Fluency not only involves speed, but also real-time processing of appropriate responses – the pragmatic and strategic competences noted by Bachman (1990).

The university-entrance tests that Korean students face generally treat language in a context-free, accuracy-based manner, similar to what was shown in Figure 2 above. Many high school teachers feel that ignoring this reality is doing a disservice to their students' future university prospects. The teachers from private institutions feel the same way for their students who are company employees and who face TOEIC tests.

The second issue also was raised by a number of students. They suggested that presenting a single text in class may isolate many students, due to the text being "too easy" for their more advanced students, or a topic that does not correspond to their own particular interest areas. Showing many texts has the potential for providing at least one text of interest to particular students. Having many texts gives students a better chance at succeeding to understand the next one, if the first proved inaccessible.

Despite these misgivings, many teachers saw the benefits of a genre-based approach for “developing language ability [for] the real world.” Less proficient learners are seen as benefiting greatly for “discriminating among describing, informing, instructing, explaining, etc.”, although some trainees contend that the approach is more suited to advanced learners. This may be due to a differential appreciation of the process of text exploitation. The higher the student proficiency, the further the exploration into the model text.

Because the approach explicitly highlights the contextual framework in which texts appear, “we can select and teach vocabulary and grammar which commonly appear.” This graduated approach to genre comprehension provides a “sequential and intensive” organization to teaching, which helps to “fix firmly in their [students’] memory” the particular genre features. By virtue of its contextual characteristics, the uni-text approach is also seen as producing a more “authentic application” of linguistic elements to classroom use of texts.

Finally, the scaffolded nature of the uni-text approach is seen by some teachers as helpful for alleviating the stress and anxiety usually associated with EFL. Because of the graduated nature of scaffolding toward eventual “independence”, students have “lower anxiety” about their performance: “English is easy to study”, as one student put it.

Implications

While my students can appreciate the communicative benefits of the uni-text and genre-based methodologies, a clear theme in their teaching philosophy is evident: the prevalence of test-driven syllabuses. While this is not a condition in Australian schools or international settings involving people from a variety of administrative contexts, to Korean teachers the entrance test is a constant limitation on their creativity and influence over what they teach and how they teach it.

All too often I have seen my Korean educational colleagues go to places like North America, Australia and international certification programs like the one in Singapore, only to return and resort to the same kinds of practices they used before they left. Some would say perhaps “old habits die hard”, but in this case I think that it is representative more of a systemic problem: the over-riding concern and pressure to show face validity of practice, where validity is held to be the degree of correspondence between what is taught and what is measured by the entrance exams and other tests of a similar nature.

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Using Learning Profiles to Inspire Effective Consultations

Chada Kongchan

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Abstract

While self-directed learning is currently being introduced throughout Thailand in order to encourage students to become autonomous learners, consultations are also emphasized to provide support and give guidance. However, the practical problems of limited time and large numbers of students diminish the potential benefits of consultations. This paper suggests a way to make 5-minute consultations effective by requiring students to attempt peer and self-correction before the consultation and by encouraging the use of learner profiles to guide further learning after the consultation.

Introduction

Autonomy is the ability to take charge of one's own learning (Holec, 1981) so in becoming an autonomous learner, the learner is totally responsible for all decisions concerned with his/her learning and the implementation of those decisions (Dickinson, 1987). However, the fully autonomous learner is an ideal rather than reality. In fact, autonomous learners vary in terms of degrees of autonomy (Nunan, 1997) and one approach which assists learners to move from teacher dependence toward autonomy is self-directed learning which encourages learners to set and pursue their personal language learning goals (Gardner and Miller, 1999). Since most learners are not experienced in setting their own goals, they may need support, and a useful way to give this support is through consultations. A consultation provides an opportunity for learners to talk to someone about what they have learnt, their achievement or problems, how they can solve those problems and their goals and study plans to further their own studies. The teacher as a counselor acts as a good listener comprehensibly listening to all the elements and giving essential guidance. A learner profile serves the consultation as a written form of a contract or commitment that learners promise to implement their goals and study plans and record what they have learnt into the profile.

Learner Profiles

A learner profile is a collection of information which provides a picture of an individual learner's current development and future potential in terms which relate to self-access learning (Gardner and Miller, 1999). It will describe and record the learner's needs, wants and abilities. It is also composed of the learner's goal with the commitment of the learner's time and his/her signature as the learner's contract between the learner and his/her teacher on self-access learning. Learner contracts are documents, which form an agreement between students and their teacher on the setting of goals and sometimes the commitment of learners' time. In learner contracts, students and sometimes their teacher are required to sign their names to reinforce the feeling of commitment between two people. Moreover, the learner's study plan is added to guide the implementation of the goal. Documents showing what the learner aims to fulfill in his/her study plan and learning outcomes are also added to the profile. In conclusion, a learner profile consists of four significant parts: a form for a learner to evaluate his/her abilities, needs and wants, a learner contract, a study plan and documents showing what the learner learns, and the learning outcomes which can be in the form of paper or audio/ video tapes. Besides, learner profiles may be paperless as digital profiles or even digital profiles with digitized audio or video files which learners send electronically.

How to Construct Learner Profiles

To construct a learner profile, learners are asked to work on the following instructions:

1. Consider their current abilities.
2. Identify their needs and wants.
3. Set learning goals which really reflect their current abilities, what they need and want.
4. Consider the time they have available.
5. Make a realistic study plan.
6. Implement the plan.

Gardner and Miller (1999) state that results of self-assessment and a counselor's comments should be added and since learner profiles are living documents, they need constant updating by adding data to the record of work done, learning outcomes and the reflection of learners' statements of needs and wants.

Advantages of Learner Profiles

The benefits of a learner profile can be considered not only from students' but also from the teacher's perspectives. From the learner's perspective, there are many advantages of using a learner profile. First, a learner profile can be used to motivate self-study in terms of responsibilities for learners' own learning especially in order to improve themselves. A learner profile encourages learners to be able to clearly identify their abilities, their needs and also what they want to improve. Accordingly, it will help learners to classify the priority of what they need and want. In turn, they can start their own self-directed learning with the most essential need first. Second, considering language abilities helps learners to be realistic in setting their goals and study plans. This makes the learners go straight to the right track in dealing with their self-study. In addition, keeping a record of the work the learners do helps them constantly remind themselves of their goals and their commitments. Finally, the outcomes of their work enable them to see their achievement. This achievement inspires another circle of their self-study since it motivates learners to keep on taking responsibility for their own learning. In other words, learner profiles are useful records to remind learners of what they have achieved and what further goals they are working towards (Gardner and Miller, 1999). Having become familiar with the process of maintaining learner profiles enables learners to monitor their progress as independent language learners.

For the teacher, when learners work on learner profiles, the teacher can switch role from teacher to facilitator supporting a student-centred approach. They are better able to facilities the self-learning process. For example, they can help learners define their goals realistically. Without training, students may set their goals broadly; therefore, teachers can conduct a discussion between the teacher and his/her students to narrow down the students' goals so that they can plan their study. The teacher may also advise on ways to plan the students' study and monitor their progress. A learner profile also enables the teacher to access systematic documentation of self-access learning for each student, and to see how self-access facilities are being used and also what is being achieved. This information is very useful for future planning, budgeting and development of self-access materials and activities.

Consultations

The words " consult", "counsel", and "supervise" are defined in *Collins COBUILD Learner Dictionary* as follows:

If you ***consult*** an expert or someone senior to you or ***consult with*** them, you ask them for their opinion or advice and if a person or a group of people ***consults with*** others or ***consults*** them, they talk and exchange ideas and opinions about what they might decide to do. On the other hand, if you ***counsel*** people, you give them advice about their problems and if you ***supervise*** an activity or a person, you make sure that the activity is done correctly or that person is doing a task or behaving correctly. In short, to consult is to seek or ask for advice but to counsel is to advise and to supervise is to monitor. Consultation, counseling and supervision have one important thing in common, that is, a relationship between two people: one needing an opportunity for talking over problems and the other having the sensitivity and maturity to understand and having the necessary knowledge and skills to enable a solution.

King (1999) states that many students say that, more than anything, they want the other person, be it a teacher, a parent or a friend, just to listen and not to interrupt. In turn, a free floating attention or the ability to listen to all that is being communicated is needed for a counselor. The component behaviors of listening in King's idea are looking at the students and making eye contact, holding a relaxed posture and responding in a way that conveys listening, that is to say, listening to the words, the metaphors, the volume, pitch, accent, tone of voice as well as observing facial expression, bodily movement and eye contact. He believes that usually non-verbal behavior supports what is being said so listening is not a passive activity as some people regard but, actually, an active process. In addition, listening with the third ear is also needed, since listening to oneself is called listening with the third ear, and refers to the ability to use oneself to imagine how the other feels (Reik,1948 cited in King, 1999). Stimpson et al. (2000) suggest some effective ways of better supervision. Firstly, a supervisor should build genuine rapport or a good relationship in which two people can understand each other's ideas or feelings very well. Secondly, he should be sensitive to the feelings of students and avoid being in too much of a hurry. Therefore, the supervisor should consider giving students time to reflect on themselves before the discussion. Thirdly, getting students to talk is actually better than talking himself. So a supervisor needs to listen attentively and carefully to show that he is interested in what students have done and are saying because the most important person in a supervision is the student. Then the discussion should be based on what actually happened in the students' work. In addition, questions or requests that open and expand the discussion should be used because they may well affect what students then say and feel and help students explore possibilities. An alternative way is to separate the positive and negative questions by waiting for the students to respond with the positive points first before asking about negative points. Therefore, a supervisor should also find some good things to say or to praise first and then move on to the points for improvement. In fact, the opening question that gives real substance to the positive as well as the negative may have more effect e.g. What do you think about your work? Then a supervisor should raise questions rather than problems since if students feel they are in a process of solving a problem together, they can communicate better in discussing the solution. In addition to the use of questions, avoiding using a command tone, giving direct advice or suggestions and being too negative are also important, because a supervisor, a counselor or a consultant is not a person who tries to criticize students but who helps empower them.

Background

The new English curriculum at King Mongkut's University of Technology Thonburi offers task-based courses, one of which is Fundamental English III in which students undertake an e-mail project as a continuous task or adjunct project throughout the semester. In the e-mail project, students have to express and share their ideas in writing on their preferred topics: one message for a bulletin board and the other two messages for discussion lists in any international web site (see Ngonkum and Omathikul, 2001 for details). After handing each message to the teacher, a 5-minute consultation session was provided for each student to discuss his/her work with the teacher in English. Since my students were a big group of 53 students from tool, printing, and environment engineering, the first consultation seemed to lack many of the characteristics of effective consultations. For example, I only focussed on grammar points without any interest in the ideas the students wanted to convey to their readers. This made me feel unhappy and realize that something might be wrong. I also considered that some of my students felt unhappy. Therefore, I surveyed the students' opinions towards the first consultation. I found that 23% of my students did not like the consultations. This is a high proportion because, normally Thai students are reluctant to express negative feelings. Moreover, one of them asked not to attend the consultation because he was afraid of it. In addition, 30% of them had never written any English of paragraph length when studying in a high school.

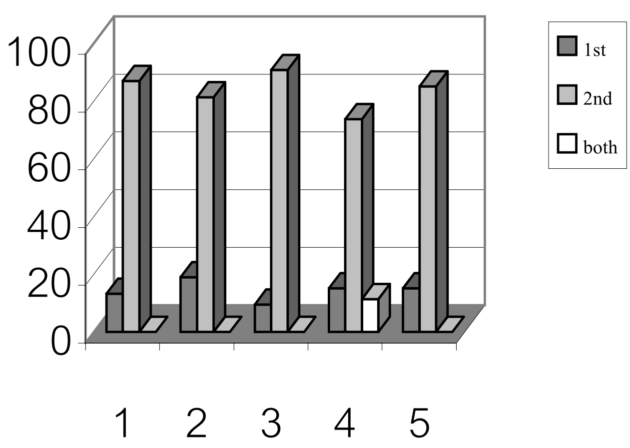
Methodology

To solve the problem, three stages of consultation were organized. The first stage, which was divided into two steps, was conducted before the consultation. In the first of these steps, the teacher demonstrated how to work on a learner profile: analyzing the students' current abilities and problems in writing, and helping students in setting their goals and completing study plans in the form of learner contracts. To enable the students to realistically analyze their current abilities, what they need and want to improve, I diagnosed the students' grammar problems by checking their first e-mail task (a message for a bulletin board) and marking this with symbols showing what the errors were. After I explained what each symbol represented, the students were asked to analyze their work in terms of their abilities, their needs and wants by checking and filling in forms provided which were based on all students' grammatical problems. Then they set their goals, time and their study plans accordingly before they implemented the plans. The second step was analyzing the second e-mail task (a message to a discussion list). In this step, I asked my students to do self-correction before sending their messages via e-mail and consulting me by editing their work using *Microsoft Word*, a dictionary, a grammar book, an English usage book, and a concordance. They were also asked to do peer correction by asking their friends to check their work and give suggestions. Then, they had to analyze their written work themselves to find their current abilities, needs and wants. Prior to consulting the teacher, the students set their goals, time and their study plans for the second e-mail assignment. The second stage is the consultation session. As a counselor, I tried to encourage the students to talk about the ideas they wanted to share with readers before discussing about their grammar points. Questions used during the consultations to ask about ideas are, for example, what is the topic?, what did you write about?, which sentence shows your interesting idea? and other questions probing deeper into some details of the content. The subsequent questions about grammar points include which sentence is correct?, which sentence is wrong? and how can you correct it? After that, the students reported on their work and showed what they did to implement the goals and study plans for the first e-mail task (bulletin board). Then, they described their current abilities, their needs and wants based on the second e-mail task (discussion list) and they also discussed with the counselor about the next goals and study plans. At the last stage, each student furthered their work on the learner profiles by implementing what they had planned in the consultation. In order to see how effective the consultations and learner profiles were, a questionnaire was distributed to the students and their learner profiles were analyzed. These are included in the appendix.

Results and Discussion

For the consultations, 86.79% of the students stated that they liked the second consultation more than the first one because they felt that they could reflect on themselves confidently and they could point out their mistakes and correct them better. Furthermore, 84.9% of them agreed that the teacher's questions enabled them to reflect on themselves better (see Figure 1).

Figure 1: Comparison between the 1st consultation and the 2nd consultation



* 1 = Students' preference

* 2 = Students spoke confidently.

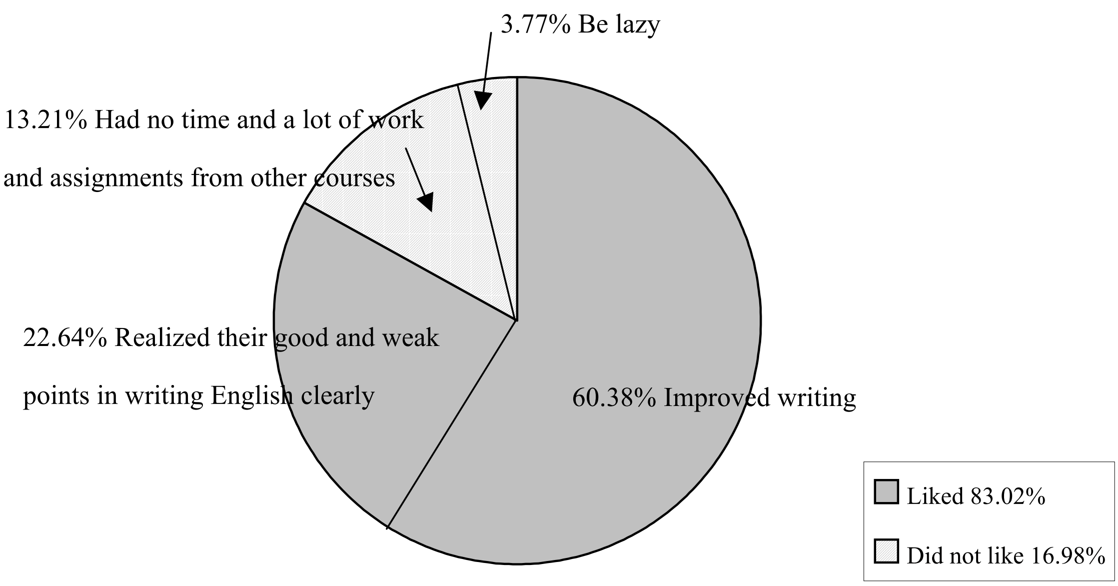
* 3 = Students pointed out mistakes and corrected them better.

* 4 = The teacher was more friendly.

* 5 = The teacher's questions enabled students to reflect on themselves better.

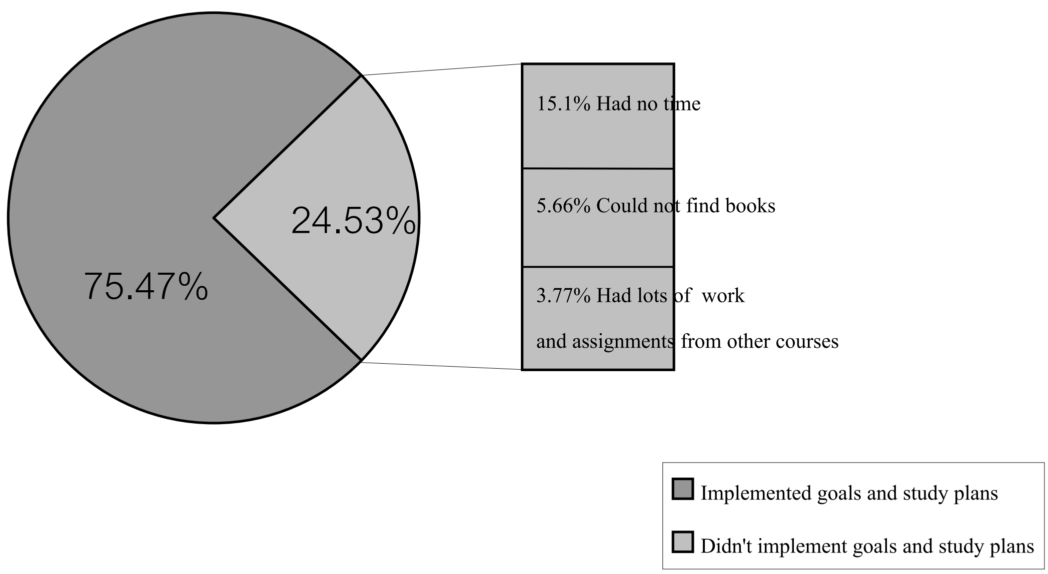
For the learner profiles, 83.02% of the students stated that they liked working on learner profiles. 22.64% of the students explained that learner profiles made them realize their good points and weak points in writing English clearly. They actually knew what and where they should start improving themselves. Moreover, 60.38% of the students liked working on learner profiles because they improved their writing through learner profiles. The most important point was that the improvement resulted from their self-study. They were happy to use that freedom. Even though most of the students liked working on learner profiles and knew that they were useful, 16.98% of the students did not like them. 13.21% of the students stated that they did not have time to implement their study plans and moreover, they had lots of work and assignments from other courses. Surprisingly, 3.77% of all the students revealed that they were lazy (see Figure 2).

Figure2: Students' Ideas about Working on Learner Profiles



For implementing the study plans, although 75.47% of the students furthered their study based on their goals and study plans, 24.53% did not do anything. Most of this group of students claimed that they did not have time and had a lot of work from other courses whereas some argued that they could not find books to work on. In my opinion, these problems obstructed the students' learning and needed to be solved immediately. Unfortunately, according to the students' learner profiles, I found that English was always the last priority for engineering students; therefore, they sometimes changed the goals and plans they had made in their contracts with the teacher by working on easier grammar points or completing short work instead. In addition, they saved the time which could be taken finding a resource book in the Self-Access Learning Centre by using their high school grammar books which were published in Thai. Eventually, some students got tired of changing their Thai style written work into the English style because it was difficult to improve and it also took time. They could not see an improvement within a day or even a semester. However, 10 out of 53 students wholeheartedly worked on their learner profiles. Moreover, one of them became a good reader enjoying reading short stories and collecting sentences to analyze for her own written work (see Figure 3).

Figure3: Implementing Goals and Study Plans



Directions for the Future

Though most of the students preferred the second consultation to the first one and liked working on a learner profile, some of them did not like working on the learner profile. Moreover, some of them including those who stated that they liked working on it did not implement their goals and plans. Even when some of them did this, they sometimes changed their goals and plans to work on easier grammar points or completed short work or even used their high school grammar books which were published in

Thai. Their important reasons for not working as had been hoped were they did not have time and had a lot of work and assignments from other courses. Besides, laziness was another reason a few students gave. Apparently, all the problems did not concern the learner profiles themselves but rather were about the time management of the students. Therefore, to encourage students to continue working on learner profiles, students need to be trained to manage their time available effectively. Teachers may also encourage their students to realize that English is a skill-based activity they cannot acquire without practising. In order to avoid changing goals and study plans, teachers can ask students to copy the sentences they want to correct onto the learner contract sheet next to their goals and study plans to help the teachers check whether the students actually implement their plans according to their real problems or not. A Self-Access Learning Centre can also help the students by providing more grammar books, English usage books and interesting self-access learning materials for them to borrow or study more conveniently.

Despite these problems, I would like to emphasize that most students preferred the second consultation and liked working on the learner profile because they improved their writing through it. They also realized that their improvement resulted from self-directed learning and they were happy to use that freedom. This means that it is relatively easy to encourage those students to keep on starting new circles of self-directed learning until it becomes their habit for life-long learning. In conclusion, a learner profile can promote self-directed learning which helps learners move from teacher dependence to autonomy. Using learner profiles can inspire effective consultations and is also a stepping stone to autonomous learning.

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Appendix

Survey on Consultation

(conducted prior to this study)

Put a tick ✔ in the box provided according to your opinion and then write your reasons and suggestions.

1.What do you think about the first consultation?

☐ I like it because ……………………………………………………………………….....

☐ I do not like it because ………………………………………………………………....

☐ I hate it because ……………………………………………………………….……....

☐ I do not have any idea about it because ……………….……………………………

2. How often did you write in paragraph length in a high school? ……… per semester

My suggestions

………

………………………………………………..

Learner Profile

For: …………………………Code…………Group………

Commencement Date: …………………………………

To learners

The contents of this profile are all about you. The purpose of the profile is to give an accurate picture of what you are able to do well and what you need to improve. You can add whatever you like to this profile.

What to put into this profile

The profile is divided into the following sections:

1. Your abilities/ What you need and want to improve
2. Your contracts/ Your study plans
3. Your records of learning achievement/ learning outcome
4. Your reflection

Writing Ability (Your ability/ What you need and want to improve)

Instructions: The following items are the main areas of grammatical points and paragraph writing skills. Consider your own abilities from your written work (e-mail project) and use the keys provided to express your writing ability.

KEY:

I can do this well. ✓

I need to practise this more. ✗

I want to practise this more even though it may be or may not be necessary for me. +

- ☐ Appropriate words
- ☐ Word order
- ☐ Adjective/ Adverb
- ☐ Special Verb (help , make,)
- ☐ Singular/ Plural
- ☐ Article (a, an, the)
- ☐ Comparative/ Superlative
- ☐ Preposition
- ☐ Spelling
- ☐ Capital letter
- ☐ Subject/ verb agreement
- ☐ Tense (verb form)
- ☐ Active/ Passive Voice
- ☐ Sentence Structure (S+ V + O)
- ☐ Combining sentences (because, if, although, but, when, which ,who, etc.)
- ☐ English language style (not Thai language style)
- ☐ Topic sentence
- ☐ Major supporting details
- ☐ Minor supporting details
- ☐ Conclusion
- ☐ Interesting Ideas
- ☐ Organizing a paragraph

Learner Contracts & Study Plans

Instructions: According to your writing ability, make a selection of what you would like to work on.

Time I have available to work on self-access each week = _______ hours

I plan to do self-access work during the following times each week:

Date/ Time (from-to)	My Goal(s) : What I would like to work on	How I will work on my goal(s)

Your records of learning achievement/ learning outcome

After you have finished your work, put your finished work into this profile and give it to the teacher.

Reflection

After you have finished your work, tick (✓) how well you did it.

☐ I am very happy with my performance this week.

☐ My performance this week was OK.

☐ I think I can do better soon.

My reflection____

____

My signature________________ Date___________ My teacher's signature_____________

Questionnaire on Consultations

(conducted after the use of learner profiles)

I. Learner Profile

Put a tick (✓) in the boxes provided according to your opinion.

1 = the least 4 = more

2 = less 5 = the most

3 = fair

	1	2	3	4	5
1. How much do you know about your writing ability?					
2. How much do you know about the grammatical points and writing skills you need to improve?					

3.	How confident are you in writing?					
4.	How much do you like working on your learner profile?					

Instructions: Put a tick(✓) in the boxes provided according to your opinion.

You can tick more than one item.

1. What is the obstacle of working on your learner profile?

☐ I have little time.

☐ I have a lot of work in other courses.

☐ I do not have a member card for SALC so I can't borrow a book from SALC.

☐ Others (write in Thai) ……………………………………………………………...

2. How can you solve your problems? (Write in Thai.)

……………………………………………………………………………………………........

Instructions: Put a tick (✓) in the box provided according to your opinion and then

give your reasons. You can write in Thai.

☐ I like working on my learner profile because …………………………………………...............

…………………………………………………………………………………………….................

☐ I don't like working on my learner profile because …………………………………….............

…………………………………………………………………………………………….................

My impression concerning working on my learner profile is……………………………..….............

…………………………………………………………………………………………….................

Suggestions/ Comments for Learner Profile ………………………………………………….............

Consultation

Before Consultation

Instructions: Put a tick (✓) in the boxes provided according to your opinion. You may

tick more than one item. Then give your reasons (write in Thai).

1. Did you check your work before sending it via the Internet? Yes ☐ No ☐

1.1 If Yes ⇨ How?

☐ Dictionary	☐ Grammar books
☐ Concordance	☐ English usage books
☐ Microsoft Word	☐ Friends
☐ Others …………………………………………………..	

1.2 If No ⇨ Why ? ……………………………………………………………………………

………

2. Did you check your work before the consultation? Yes ☐ No ☐

2.1 If Yes ⇨ How?

☐ Dictionary ☐ Grammar books

☐ Concordance ☐ English usage books

☐ Microsoft Word ☐ Friends

☐ Others ……………………………………………………

2.2 If No ⇨ Why? ……………………………………………………………………………

While Consultation

I. Instructions: Put a tick (✓) in the boxes provided.

1. Which place do you prefer to consult the teacher?

☐ in class ☐ in the teacher's office ☐ other place ……………………

2. How much time do you like to spend consulting the teacher?

☐ 5 minutes ☐ 10 minutes ☐ other ………………

Instructions: Put a tick (✓) in the boxes provided according to your opinion.

1 = the least 4 = more

2 = less 5 = the most

3 = fair

	1	2	3	4	5
1. How do you like the teacher's questions?					
1.1 What is your topic?					
1.2 What did you write about?					
1.3 Questions that the teacher asked about some details in your written work.					
1.4 Which sentence shows your interesting idea?					
1.5 Which sentence is correct?					
1.6 Which sentence is wrong?					
1.7 How can you correct it?					
2. You could tell the teacher about things you wrote about.					
3. You could point out the correct sentence.					
4. You could point out the wrong sentence.					

5. You could correct it.
6. You like working with the teacher in correcting your work.
7. You could set your goal.
8. You could plan your study.
9. You like setting the goal and planning your work with the teacher.
10. Your confidence in speaking English to the teacher

Post Consultation

Instructions: Put a tick (✓) in the box provided.

Did you work as you planned with the teacher during the consultation?

☐ Yes ☐ No ⇨ Why? ……………………………………………………

Comparison between 1st Consultation and 2nd Consultation

Instructions: Put a tick (✓) in the boxes provided according to your opinion.

1. Which consultation do you prefer?
2. Which consultation did you speak more confidently?
3. Which consultation did you point out your mistakes and the way to correct them better?
4. Which consultation was the teacher more friendly?
5. Which consultation did the teacher's questions enable you to reflect on yourself better?

1	2

Instructions : Put a tick (✓) in the boxes provided if you did better in 2nd Consultation
You may tick more than one item.

1. What factors helped you increase your confidence in reflecting on yourself?
   - ☐ Self correction before consultation
   - ☐ Peer correction before consultation
   - ☐ The teacher's questions
   - ☐ Your learner profile
   - ☐ Others (write in Thai) ……………………………………………………………..........

2. What factors helped you make decisions for your goal and your study plan?

☐ Yourself ☐ The teacher's questions

☐ Your friends

☐ Others (write in Thai)……………………………………………………………......................

Instructions: Put a tick(✓) in the box provided to choose one consultation you prefer and then write your reasons (write in Thai).

☐ I prefer 1st consultation because ……………………………………………………….................

☐ I prefer 2nd consultation because ………………………………………………………….............

Suggestions/ Comments…..……………………………………………………………………...............

……………………………………………………………………………………...

Name……………………………Code…………Group….

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Can Thai Students Become Self-directed Learners?

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Abstract

Recently in Thailand, there have been attempts to integrate self-directed learning into existing English programmes in a large number of institutions including King Mongkut's University of Technology Thonburi, where the importance of learner-centredness and learner self-assessment is stressed. However, questions about the possibility and effectiveness of the programmes and the students' ability to become self-directed learners have arisen. This paper will explore the students' perceptions of the effectiveness of learning through self-access to find out whether this learning mode could help improve their English proficiency.

What is self-directed learning?

There are few references to the term self-directed learning in language learning. It tends to be used differently by different teachers. It is claimed that it has some overlap between the terms self-directed learning and autonomy. Boud and Sidery (cited in Dickinson, 1978) described the two terms as "two names for the same phenomenon" as follows:

> "We understand self-directed to imply maximum autonomy for the individual concomitant with concern for the autonomy of others, and the use of each other's resources in sensitive and effective ways."
>
> "Underlying this definition of self-directed learning is an assumption of what is means to be an educated person. The assumption is that an educated person is one who can identify his own needs, set his own goals, develop strategies for meeting his needs and be able to monitor his own action in this process. He can co-operate with others to obtain mutual support and assistance so that each may gain fulfillment."

However, Dickinson (1978) argued that autonomy represents the upper limit of self-directed learning measured on a notional scale from total direction to full freedom. Consequently, autonomy is one set of possibilities within the larger category of self-directed learning. In other words, where the learners' choices can be made freely, we have fully self-directed learning. Where only some are freely made, we have some degree of self-directed learning.

In short, self-directed learning can be described as an approach in which learners are encouraged to choose what they want to learn or do that suits their learning styles. They can set their own goals of learning and choose means to achieve those goals. Moreover, they can monitor and assess their own work. As a consequence, self-directed learning stresses the importance of individual differences, learner training and learner self-assessment.

Why self-access language learning?

Due to the rapid developments of technology, such as television, tape recorders, the video recorders, fax, as well as media like newspapers, magazines and the Internet, the idea of self-directed learning has become a possible alternative to the traditional teacher-led approach. However, rich varieties of tools and techniques yield nothing for the self-directed learning if the learners do not know how to use them to improve their English. A grammar drill on the internet is just like that in the textbook if the learners have little choice of what they like to do or insufficient training on how to work independently without teacher support.

A number of recent studies indicate the effectiveness of moving towards student decision making rather than teacher decision making (Cotterall, 1995; Dickinson, 1995; Gremmo & Riley, 1995;Victori & Lockhart, 1995). Additionally, some research suggests that students have different learning strategies and learn best when they learn any learning task under their own direction (Gremmo & Riley, 1995; Wenden, 1991).

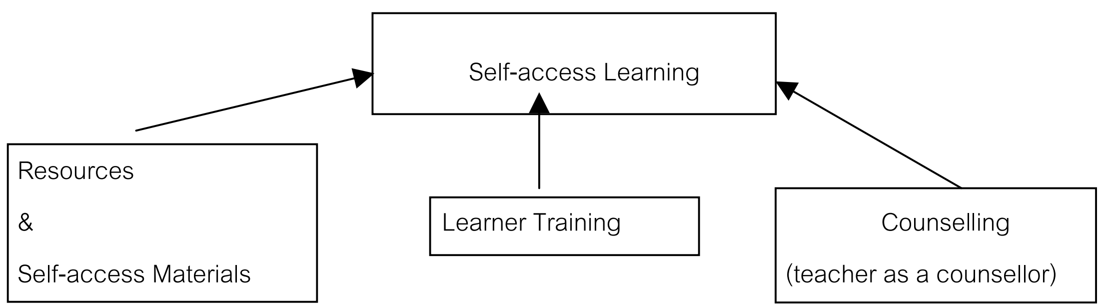
It is interesting to note that some form of self-directed learning with institutional support in the shape of counselling and resource centres has been found very useful in numerous institutions for language learning. For example, the Language Centre of University of Cambridge offers self-directed learning for more than 40 different languages (Gremmo and Riley, 1995).

However, there is no universal model for setting up a self-directed scheme. It can be adapted to various institution requirements and expectations, the particular characteristics of the learners and staff, and to meet different local needs. In this paper, the term self-access scheme is used to represent an example of how to develop a self-directed scheme under the local constraints.

A proposed self-access learning scheme

In the new task-based curriculum at KMUTT, self-directed learning is integrated into every English foundation course through the use of the course adjuncts which are spread across the whole term with supportive classroom lessons and consultations given at regular intervals (Watson Todd, 2001). A self-access project and a portfolio project are the first two adjuncts that students who study LNG 101 and LNG 102 have to work on as a part of the course requirements. The major focus of these two adjuncts is diagnosing students' weak points in grammatical performance from looking over the students' portfolios on which they work from a topic they choose. Furthermore, in face-to-face consultations, students have to report the results of their self-access work to the teacher and discuss their problems, progress and plans for further practice (Intrathat, 2001). However, some drawbacks of these projects have been found, such as students' unreal freedom in choosing tasks and a lack of teacher preparation for counselling support. Also, it is not the case that not every student needs to improve his grammar. Some may want to practice speaking, writing or other language skills. The existing self-access project does not seem to provide them the 'real' freedom to choose any task they like. Moreover, students do not know how to choose the 'right' task for their level; consequently, they choose any task at hand no matter what it is. They do not realize what or how they can learn from that task. Besides, the teacher may not know how to give effective consultations to help support students' learning. The only thing they know is that they should correct students' grammatical mistakes. Therefore, the proposed self-access scheme described in this study has been designed in the hope that it would help improve students' motivation and performance in English as it allows more freedom for students to choose their tasks and some training on how to choose the right task by setting their own learning objectives.

The components of a proposed self-access learning programme are as follows:



This self-access learning scheme provides a variety of methodological and linguistic resources e.g. self-access materials in the Self-Access Learning Center (SALC), on-line lessons and authentic materials. The scheme also provides learner training, the goal of which is to help all learners, especially those who are less effective, to become more active and more independent in their learning. To achieve this goal, both methodological and psychological preparation must be given to students. Furthermore, counselling is needed to help students to develop their learning competence in language learning. In this scheme, the teachers take on the role of counsellor in addition to their teaching responsibilities.

Procedures for self-access learning

Step 1: Students identify their problems and needs in English language learning in their first consultation (in groups) with the help of the teacher.

Step 2: Students set their own objectives of learning and choose the task compatible with their learning styles in consultation with the teacher.

Step 3: Students work individually on the task chosen in SALC or other resources over the next 3 weeks.

Step 4: Students attend the second consultation session (one-to-one) and get feedback on their work from the teacher.

Step 5: Students access their work and reflect on their feelings towards it in a Task Record Form and keep this in their portfolio.

Step 6: Students choose their second task and follow the same procedure again.

Step 7: Students attend the third consultation session and discuss with the counsellor individually about what they feel towards the self-access scheme.

Methodology

To obtain information on students' perceptions of learning through self-access, 24 students were asked to complete an Attitude Questionnaire for Self-Directed Learning and student interviews at the end of the programme. The questionnaire was adapted from Barnett 's Attitudes questionnaire for self-access (Wenden, 1991) and includes 20 items. Items 1-15 elicited the characteristics of the subjects, while items 15-20 dealt with the self-directed programme. The rating scale used was a 5-point Likert scale, with 5 representing *strongly agree* and 1 *strongly disagree*. The data obtained from the scale were interpreted according to the following criteria:

1.00- 1.80 = very low

1.81 - 2.60 = low

2.61 - 3.40 = average

3.41 - 4.20 = high

4.21 - 5.00 = very high

Results

The following data include results obtained from student questionnaires as well as student interviews.

No.	Students' Perceptions towards Self-directed Learning	M	SD	Interpretation
1	I can learn English by myself without teacher supervision.	3.58	0.93	high
2	I can learn English by working alone at my own pace.	3.46	0.93	high
3	I can choose my own way of learning English and learning situations suitable to it.	3.88	0.74	high
4	A big problem in most classes is that students have different levels.	4.00	0.83	high
5	I f I had the right materials, I would prefer to spend some time studying alone.	4.50	0.59	very high
6	Students don't have enough choice about what and how they study	2.92	1.18	average
7	Besides language class, I plan activities that give me a chance to use and learn English.	4.13	0.74	high
8	Cassettes, videos and computers are good resources for individual students to learn English.	4.58	0.58	very high
9	I can set my own objectives of learning.	4.25	0.74	very high
10	I can figure out my special problems and do something about my special problems.	3.79	0.59	high
11	I can develop my own techniques to practice listening, speaking, reading and writing.	3.96	0.69	high
12	I can develop my own techniques to improve my pronunciation, grammar and vocabulary.	3.92	0.65	high
13	If I make a mistake, I don't hesitate to ask people to correct me.	4.29	0.69	very high

14	I can learn English from my own mistakes.	4.17	0.64	high
15	I think I am a competent student with good study habits.	3.42	1.02	average

Table 1: Students' perceptions towards self-directed learning
(Adapted from Barnett 's Attitudes questionnaire for self-access in Wenden, 1991)

The findings indicate that the majority of students agreed with a large number of the items on the questionnaire (see Table 1 and Table 2). Only items 6 and 14 in Table 1 elicited neutrally responses. These finding are very surprising as they could help change the existing views towards Thai students as passive learners who need to be taught in the traditional classrooms to students with the potential to become self-directed learners.

No.	Students' Attitudes towards the Self-access Scheme.	M	SD	Interpretation
1	My ability in reading English has improved after taking this programme.	4.25	0.68	very high
2	My ability in listening English has improved after taking this programme.	4.00	0.72	high
3	My ability in speaking English has improved after taking this programme.	3.88	0.54	high
4	My ability in writing English has improved after taking this programme.	3.79	0.83	high
5	My overall ability in English has improved after taking this programme.	4.04	0.46	high

Table 2: Students' attitudes towards the self-access scheme

Students' improvement in English proficiency is one of the major factors influencing students' perceptions towards the self-access programme (Klassen et al., 1998). It can be seen from the data mentioned above that the majority of the students perceived that their overall ability in English had improved after taking this self-access programme.

A Pearson correlation was conducted to investigate if there is the correlation between students' overall ability in English (question 5, Table 2) and their perceptions towards self-directed learning (questions 1-15, Table 1). These are shown in Table 3 below.

No.	Students' Perceptions towards Self-directed Learning	*r*
1	I can learn English by myself without teacher supervision.	-.019
2	I can learn English by working alone at my own pace.	-.042
3	I can choose my own way of learning English and learning situations suitable to it.	.611**
4	A big problem in most classes is that students have different levels.	.255
5	I f I had the right materials, I would prefer to spend some time studying alone.	.181
6	Students don't have enough choice about what and how they study	.015
7	Besides language class, I plan activities that give me a chance to use and learn English.	.395
8	Cassettes, videos and computers are good resources for individual students to learn English.	.152
9	I can set my own objectives of learning.	.361
10	I can figure out my special problems and do something about my special problems.	.075
11	I can develop my own techniques to practice listening, speaking, reading and writing.	.321
12	I can develop my own techniques to improve my pronunciation, grammar and vocabulary.	.027
13	If I make a mistake, I don't hesitate to ask people to correct me.	.219
14	I can learn English from my own mistakes.	.279
15	I think I am a competent student with good study habits.	.436*

Table 3: Correlation between students' overall ability in English and their perceptions towards self-directed learning

*Correlation is significant at the 0.05 level (2 tailed).

** Correlation is significant at the 0.01 level (2 tailed).

Results (see Table 3) show that at the 0.01 significant level, students preferred to choose their own ways of learning English and learning situations suitable to them (r = 0.611). Additionally, the r-value obtained from students' beliefs in their competence in English and good study habits(r = 0.436) can be viewed as significant at the 0.05 significance level. While the second of these correlations may reflect the fact that student self-esteem is a key factor in self-assessment of ability and progress (Tarone and Yule, 1989), the more significant correlation between choosing own ways of learning and perceived improvement is less easy to explain. It may be that freedom of choice for students is a crucial influence on students' perceptions of success in autonomous learning.

It may be seen from the questionnaire results that students' perceptions of their improvement in English proficiency were influenced by their positive attitudes towards self-directed learning and self-access scheme. They believed in their own ability in choosing their ways of learning and suitable learning situations.

However, the average score of 2.92 in Question 6 (Table 3) implied that a considerable number of students seemed to hesitate about their inability to choose the tasks appropriate to their levels. They gave further clarification in the interview that they were quite satisfied at being able to choose the tasks by themselves.

> " I prefer to choose my own tasks and materials as I think I would have deeper understanding when working on them."

Yet, they still needed some more training and guidance on how to choose the "right" materials to practice on their own.

In addition, they admitted that their confidence in their competence in learning English was increased after taking this self-access programme. Some of the students' interesting comments in student interviews expressed both their intrinsic and extrinsic motivation in language learning. For example,

> "I realize that my English proficiency especially reading and listening have improved a lot after taking this self-access programme. However, I still need more practice."

> "I am not afraid to study on my own because I am motivated and I would like to be able to

speak English like a farang (a native speaker)."

" I think English is very important for my future career. I will get a good job if I have a good command of English."

With respect to good study habits of a good language learner, there are, however, a few students who admitted in the student interviews that they sometimes could not control themselves to practice English regularly. They said they needed this kind of self-study mode to be integrated into the existing ELT courses. That would help them to control themselves. It was very surprising that even though students enjoyed their freedom of choice, they still favoured some guidance or feedback from the teachers.

The data from the student interviews expressed students' highly positive feelings towards self-access learning as they realized the importance of self-directed learning as a means to become autonomous or self-directed learners. The majority of the students agreed that they would pursue independent learning in the future; however, some added the most popular escape clause, "If time permits…" This has led to me to doubt the possibility of Thai students becoming self-directed learners.

Conclusion

Even though the findings from the questionnaires, the interviews as well as the face-to-face consultations with the teacher indicate students' positive perceptions towards the effectiveness of learning through the self-access learning scheme, we cannot claim that Thai students are capable of being effective self-directed learners. It seems to be very difficult for Thai students, who get used to following instructions rather than taking the initiative and have little chance to experience this kind of self-study programme, to adjust themselves to this relatively new teaching methodology. However, the results of this study are promising and suggest that it is valuable to continue encouraging students to adopt a more active and independent role in learning. It is recommended that what we do need are not only more learner training packages for the students but also formal training for teachers in facilitating independent learning.

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Language Clinic: A Small- Scale Self-Access Centre for First-Year Students at Mahidol University

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Abstract

This paper reports what a Language Clinic project is and how it worked for three academic years (1998 - 2000) at Mahidol University. This project aimed to help first-year students at Mahidol University, Salaya Centre practice their English skills by using the principles of self–access learning. It was also helpful as a small-scale self-access centre and the feedback on the project has been important in the proposed setting up of the Language Learning Centre in the year 2002 when the university becomes autonomous.

What is a Language Clinic?

The Language Clinic was a project initiated by the Department of Foreign Languages in order to help first-year students at Salaya Centre, Mahidol University practice their English skills by applying the principles of self-access learning. The project started in 1998 and ended in 2000. The term *Language Clinic* was coined to correspond to its target users who were mainly Science and Medical Science students. Webster's New World Dictionary defines *clinic* as "an organization or institution that offers some kind of advice, treatment, or instruction " and "a brief, intensive session of group instruction in a specific skill, field of knowledge". In a medical clinic, when a patient comes in with or without a doctor's appointment, the doctor will diagnose his problem and start to give him treatment. The patient's health history also helps the doctor make decisions on the treatment. The period of treatment will go on until the patient has improved. Similarly, a learner who comes to a Language Clinic is diagnosed and a treatment is given to remedy their language weak points as is detailed below.

To help the students learn English by themselves, the system of self-access learning was used in the Language Clinic for a number of reasons. First, it helps learners choose "what" and "how" to study as they can decide on what to do, find the appropriate material to work on for the objectives decided on, and use the materials. This includes knowing how to do particular activities, what to do step-by-step as well as how to assess themselves on the achievement of the objectives. Therefore learners are able to increase their confidence and sense of responsibility through their decision-making experience. Second, it is "a user-friendly" method in that it is a way learners can access the information easily e.g.

discovering that it is easy to find materials in the self-access centre, and feeling that the self-access centre has a friendly environment so that they feel comfortable using it or talking to staff. (Dickinson,1996). Third, it helps learners gain a knowledge of the world from outside the classroom. This can be done by autonomous learning as learners have different abilities and potential and they should learn at their own pace (Garner 1993a; 1993b cited in Little 1996). The final advantage of self-access learning is that learners feel free to study by themselves without the teacher's control. However, this doesn't mean that the teacher is left out. On the contrary, the teacher has to work harder in order to provide self-access learning materials and to change learners' attitudes (Sheerin 1989:3).

How a Language Clinic system was adapted from a self-access learning system

The components of self-access learning adapted for use in the language clinic are facilitators, learners, self-access materials, a self-access learning place and management.

Facilitators

The term *facilitator* in many self-access centres covers the same roles as that of a helper, tutor, consultant, advisor, guide and so on. In fact, he or she is often a teacher. Sheerin (1989:4) suggests that the teacher should change his or her role from a "paternal or assertive one, dispensing all knowledge and fostering dependence" to a "fraternal/permissive, resource person/consultant and trainer for independence." It is also very important to have English instructors play these new roles and know when and how to play their roles. Dickinson (1996) argues that teachers should have methodological preparation to prepare them for the roles of librarian, material writers and consultants, as well as psychological preparation to promote a positive attitude towards independent learning.

The teachers in the language clinic called themselves language doctors. However, students preferred using the Thai term *ajarn* meaning "teacher" or "instructor" as the language doctors were their English teachers, and advisors on duty at the campus. During the three years in which the language clinic existed, the number of language doctors increased from 3 in 1998 to 7 in 2000. The language doctors acted as facilitators who helped explain to learners how to use the materials in the language clinic. They also acted as consultants who took turns working in the language clinic two to three hours a week to help students when they had problems concerning their English lessons and homework. To facilitate this, group discussion and tutorial hours were sometimes organized.

Learners

In addition to the teacher, we also need to consider the learner. Not only does the teacher need to change his or her roles, the student also has to change his or her traditional roles from being a passive learner, having no responsibility for learning, seeking approval and being submissive to an active role, assuming responsibility for learning, doing work without overt approval and being involved in decision-making (Sheerin, 1989:4). Independent learners should also have "psychological preparation - the recognition that learning independence is legitimate, feasible and can be effective, and understand that learning independence does not necessarily mean being in competition with the teacher," as well as "methodological preparation – learning more about how to learn" such as learning techniques, developing self-awareness and language awareness" (Dickinson, 1996). To prepare the learners to be autonomous learners, learner training and orientation should be considered.

Once the students joined the language Clinic project; they attended a language clinic orientation (usually in the first semester) to understand how to work in the language clinic, how to fill in the forms, how to use, borrow and return the language clinic materials and so on. This meant they had to consult with the teacher. The language clinic project was divided into three phases with different target learner groups in each phase. The first phase, the three–week experimental period starting in the second semester, 1998, was provided for 22 medical science students who had lower than average English scores in the first semester. The second phase starting in the first semester 2000 was offered to 10 students from each department who volunteered to join the project. The third phase starting in the second semester 2000 covered all students who wanted to practice their writing and reading skills, including grammar and vocabulary. In the third phase, there were two types of language clinic users: those who followed the self-access learning procedure, and those who came occasionally just to borrow and return the self-access learning materials, watch TV or ask some questions relevant to their English lessons.

Materials

The third component is self-access learning materials. Self-access learning materials can be classified into three types: in- house materials, commercial materials and authentic materials (Dickinson, 1996; Miller, 1996). The in-house materials are divided into student-generated materials and teacher-generated materials or specially-produced materials. The former are produced by students who are assigned to do special projects in class which are then presented in the self-access centre. The latter are produced by the teacher or self-access centre facilitators in order to make the materials suit the learners' needs, levels and fields of study. The second type, commercial or published materials, include books, textbooks, video and audio materials, and CD-ROMs. These materials can be used in their original format or adapted to make them easier for students to use although without changing the original content. The third type are authentic materials such as newspapers, manuals, brochures and leaflets, video and CD movies, news and documentaries. Junk mail can also be included. To consider what type of materials are appropriate for a self-access centre, Miller (1996) suggested that in the initial phase of setting up a self-access centre, commercial and authentic materials are the most appropriate because they are easy to find and help save time. However, when a self-access centre has been running for a period of time, in-house materials should be made because they have more benefits in the long term; for example, they meet the objectives of the target learners, and they are cheaper than the commercial materials. The student-generated materials are especially important in that they build up learners' responsibility and foster self – directed learning abilities. Each set of materials can consist of a cover sheet (e.g. objective, level, time, how to use the materials, topic), a task sheet or activity sheet (i.e. exercises, a series of tasks focusing on a particular aspect of language), a generic worksheet (i.e. providing a task that a learner can carry out with any text from a particular genre e.g. with any movie or song) and an advice sheet (e.g. suggested reading, glossary, resources) (Pemberton, 2000).

The language clinic materials were taken from commercial textbooks which focused on reading and grammar. Other materials included vocabulary textbooks, other English language books and dictionaries. The books were split up into individual worksheets which were put into files so that students could borrow the page(s) they wanted. They could take the worksheet home and return it in the required time. However, the answer key was not allowed to be borrowed. In each file, a code number and cover sheet were provided. Instructions and an explanation of how to use the materials were posted on the walls.

Self-Access Centre/Self-Access Language Centre

The fourth component is a study centre. "In an ideal world a study centre would include a library section and a self-access section" (Sheerin 1989:12). A library section should include a reference section (e.g. dictionaries, encyclopedias), a reading section (e.g. novels), a non-fiction section (e.g. travel, biography), newspapers and magazines, and an EFL section (e.g. ESP and/ or EAP books, language workbooks and key). A self-access section should mainly comprise materials for reading, listening, writing, speaking, vocabulary, grammar and social English. The equipment which is necessary in both sections are audio, video and computer equipment with Internet facilities.

The language clinic at Mahidol University was adapted from the teacher's office room and could facilitate only 5-8 students at a time. It was located next to the teachers' office rooms, common rooms and classrooms. In the second phase, the material shelves were moved outside to allow self-access centre users to take materials back home and to make more space for two more activities. One was "Speaking English is Fun" which helped students practice speaking English with native speakers. The other was watching UBC cable TV. Apart from this, the language clinic also served as a consulting room where the language doctors gave advice to the learners and spent their tutorial hours with them.

Management

The last factor to consider is management. Gardner & Miller (1997: 24–26) say that each self-access centre appears to organize itself along different lines of commands and the tasks of self-access centre managers are many and varied. From my personal experience, self-access centre management mainly involves "direct actors" or those directly involved (i.e. a manager, book-keepers, facilitators, technicians and other staff) and "indirect actors" or those who have a less direct role (i.e. financial supporters, librarians, resource persons, school administrators and outside helpers). It also involves services (e.g. opening – closing times, borrow – return systems, service charge, photocopying), filing (e.g. classifying materials by color or number coding), short term and long term planning, budgeting and financing, staff meetings (monthly and annually), evaluation (e.g. on materials and book-keeping, services, administration, staffing), and public relations (e.g. advertising, bulletin boards, newsletters, announcements). The simple idea for managing a self-access centre is how to make it easy and friendly for users.

Since the language clinic is a small-scale self-access centre with only 3 - 7 facilitators, the management is flexible. Staff meetings were held about one or two weeks before the semester started in order to set the opening and closing time, decide on the timetable, plan what to do, and evaluate the language clinic working system for the previous semester.

Preparation of the Language Clinic for Use

Before starting working in the language clinic, the language doctors prepared some learning tools for the language clinic users as follows:

Needs analysis. A basic needs analysis form was designed but only for the experimental group in the first phase. The results indicated that 8 out of 22 medical science students wanted to practice reading, and 12 thought reading was necessary for them. Therefore, reading materials were provided first.

However, speaking was perceived as the students' weakest skill. Therefore, speaking with a native speaker, later known as "Speaking English is Fun", was provided.

Learner training and orientation. A language clinic orientation was provided by giving students an orientation sheet which was also posted outside the language clinic. The sheet contained an introduction to the language clinic, how to join the language clinic project, and the advantages of the language clinic.

Language Clinic Placement Test (LCPT). The LCPT was divided into reading and grammar sections. The grammar sections, consisting of 50 multiple-choice questions, were adapted from a proficiency test in an English grammar book. The reading section consisted of two texts taken from magazines, one a general article, and the second concerning medical science. After taking the LCPT, learners identified their LCPT errors by checking their answers with the key provided in the LC. This helped them know what materials they had to work through because the questions in the LCPT corresponded to particular sets of LC materials. For example, if they failed number 1 in the grammar section, they had to practise the present simple tense in the grammar file with the corresponding code number provided.

The language clinic materials were all commercial as mentioned above.

A study plan and a record sheet. A study plan was a sheet which learners used to record what materials they planned to study for a period of time (e.g. in one week or one month) before they started working on the materials. A Record sheet was a sheet on which they recorded their work, their scores, and the time they spent working on the materials. At the end of the semester, they discussed their work with the language doctors (e.g. evaluation. improvement, errors, strengths and weaknesses).

Feedback of the Language Clinic project: strengths and weaknesses

Throughout the semester, language doctors made notes concerning the working of the language clinic. These notes were brought together in a staff meeting to identify the strengths and weaknesses of the language clinic. These are listed below.

Strengths

1. Because of the cable TV subscription, some students preferred to watch TV at the language clinic. Some of them did their homework while watching it. They liked to watch TV when the language doctors were not in the room.

2. Since the language clinic was too small, the material shelves were placed outside the room, and some language clinic users said they felt free to use them and took them home instead of working in the small language clinic.
3. The language clinic users were interested in joining the *"Speaking is Fun"* project provided in the language clinic. The small size of the room was not a problem.
4. The LCPT and the reading materials satisfied the language clinic users because they corresponded to their lessons.
5. The consultation and tutoring services satisfied users who needed help even though few users actually came to ask the language doctors for help.

Weaknesses

1. The language clinic system was not well organized. First, the language clinic was open all day but sometimes the language doctors were not on duty because the time students were free did not correspond with the time the language doctors were available. Second, data on users' attendance could not be collected because students ignored the attendance sheets. Third, the loan system was not well organized; the materials were sometimes removed from the shelves without students' signing up, and some of them were not returned until the end of the semester.
2. The language clinic was too small to organize the materials and activities, and its atmosphere was not pleasant. The room was too dark and slightly musty.
3. There was a lack of materials. This was due to the small size of the room and a lack of language doctors to help produce the materials.
4. The orientation and staff meetings were inadequate. There was a staff meeting only once or twice a semester and the orientation was mainly conducted by giving orientation sheets to the language clinic users. Besides this, the language doctors lacked some experience involving independent learning even though they tried to understand how it worked.
5. Even though many students were interested in joining the project and the LCPT challenged them in that it helped them to analyze their weak points in grammar and reading skills, few of them persevered until the end of the semester. This may have been due to inadequate orientation in independent learning and inadequate motivation.

Conclusion

The Language Clinic is an example of a small-scale self-access centre where the size of the room, materials, time that facilitators were available and other facilities were limited. However, learners were still able to gain some benefits from the language clinic and will get more benefits if it is better organized and improved. In the year 2002, the Department of Foreign Languages will set up a Language Learning Centre which will be able to facilitate more than 100 students at a time. This centre will be used as a large-scale self-access centre, a resource centre and classrooms for speaking and listening hours. Therefore, the feedback from the language clinic working system will be useful for designing the Language Learning Centre system. Likewise, the experiences the teachers had while working with the language clinic will prepare them to be teachers with new roles.

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Hierarchies and networks in applied linguistics

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Abstract

Methods of representing findings are rarely given careful consideration in applied linguistics. One example is the general preference for hierarchies rather than networks to represent relationships between concepts, largely because of the more easily understandable structure and seeming objectivity of hierarchies. However, the purported objectivity of hierarchies is open to dispute on several grounds. Networks, on the other hand, are the preferred way of representing relationships in much of cognitive psychology, mainly because they fit the research results well and are more empirically valid. Focusing on ways of representing organisation of concepts, this paper compares the use of hierarchies and networks as methods of representing relationships with an example of how each might be used to investigate topical relevance in aphasic discourse. It is concluded that, while hierarchies are clearer and easier to work with, networks provide a more valid method of representation.

Hierarchies and networks in applied linguistics

Language organises information, and the study of language necessarily entails the study of how information is organised, including how conceptual knowledge is organised and how concepts relate to each other. The study of organisation of concepts is also one of the main preoccupations of cognitive psychology. The approaches used to describe the organisation of concepts in linguistics and cognitive psychology, however, stand in contrast. Many proposed models of language processing especially at the discourse level do not reflect the cognitive structures that must underpin the processing. An example of this mismatch between models in applied linguistics and in cognitive psychology is the frequent use of hierarchies in applied linguistics compared to the emphasis placed on networks in cognitive psychology.

In this paper, I will compare the use of hierarchies and networks in describing the organisation of concepts, with the main focus being on how relationships between concepts can be represented. I hope to show that the more frequently used hierarchies are open to criticism on many grounds. An alternative way of representing the organisation of concepts, namely, networks, on the other hand, is a valid reflection of how people organise concepts in their minds, and thus networks may be preferable in many situations. Choosing between whether to use a hierarchy or a network to represent an organisation of knowledge, however, is no easy matter.

The nature of hierarchies

Perhaps the most familiar hierarchy is the taxonomic classification of living organisms originally proposed by Linnaeus. As with most hierarchies, the Linnaean classification is organised with a few very general categories at the top, such as the animal and plant kingdoms. Below these are a larger number of more specific categories, including the arthropod and mollusc phyla under the animal kingdom. This pattern of each level down the hierarchy having a greater number of more specific items is repeated throughout the Linnaean classification, so that, by the time we reach the bottom level of species, the five kingdoms at the top have been divided and subdivided into a vast number of very specific items.

Hierarchies, then, usually consist of a few (often only one) general categories at the top each of which is divided into several more specific categories or members. This hierarchical pattern of general to specific has also provided the basis for a lot of linguistic analysis. In semantics, for example, it is common to find words organised into hierarchical structures as one way of analysing meanings (see e.g. Lyons, 1977), and Figure 1 shows an example parallel to the Linnaean classification.

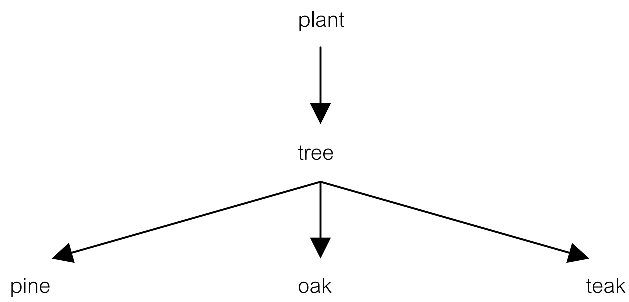

Figure 1 A typical hierarchy

The relationships in both the Linnaean classification and Figure 1 are hyponymic. In Figure 1, *pine* is a hyponym of *tree*, and conversely, *tree* is the superordinate of *pine*. Hyponymic relations can be defined through entailment, so for Figure 1 the statements given in (1) are true.

(1) If X is a pine, X is a tree.

If X is a tree, X is not necessarily a pine.

Hyponymy is not the only relation that can be used to build hierarchies. Since hierarchies represent differences in levels of specificity, any relation that distinguishes between general and specific can be used. Thus the hierarchical tree diagrams favoured by most models of syntax are based on meronymy (part-whole relations), where noun phrases and verb phrases are parts of a sentence. Other possible relations which can be used in hierarchies include entity-characteristic relations (e.g. elephant - big) and identifier - identified relations (e.g. robot - C3PO). There are, then, a variety of bases for constructing hierarchies, although hyponymy and meronymy predominate in linguistics.

The uses of hierarchies in applied linguistics

In addition to the hierarchies used in semantics and syntax discussed above, hierarchies have been applied in many other areas of linguistics, starting with Roget's lexicographic use of a hierarchy to organise his thesaurus.

Within discourse analysis, hierarchies have also been influential. A vast range of approaches has used hierarchies to explain the structure of discourse. For example, Sinclair and Coulthard's (1975) influential study of classroom discourse was predicated upon a hierarchical series of ranks in discourse with the lesson being the highest rank and the act the lowest. A classroom lesson analysed following Sinclair and Coulthard produces a hierarchy like Figure 2.

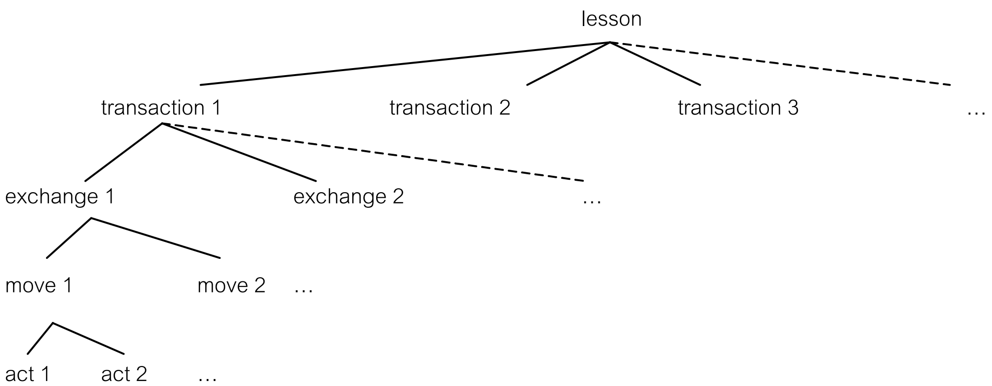

Figure 2 A hierarchical tree based on Sinclair and Coulthard (1975)

Other uses of hierarchies to analyse discourse include the following: texts have been described as a series of hierarchically-organised propositions (Grabe, 1984; Kintsch and Keenan, 1973; Tomlin *et al.*, 1997); coherence can be viewed as a hierarchy with local coherence subordinate to global coherence (Graesser *et al.*, 1994); topics, it has been argued, are best thought of as macro-propositions consisting of sub-topics and sub-sub-topics (Ellis, 1983; van Dijk and Kintsch, 1983); and both schemata (Long, 1989; Mann and Thompson, 1988; Slavin, 1994) and scripts (Abbott *et al*., 1985; Whitney, 1998) have been described using hierarchies.

Similarly, hierarchies have been very influential in educational theory, which together with linguistics provides much of the input into educational applied linguistics. Hierarchies have been used to describe the various educational disciplines (Bruner, 1960; Mohan, 1986), to describe syllabi (Woods, 1996), and to organise the teaching/learning process (Ausubel, 1963; Cole and Chan, 1987; Erickson, 1982). For example, Mohan (1986: 89) represents the structure of school-level mathematics using a hierarchy as shown in Figure 3.

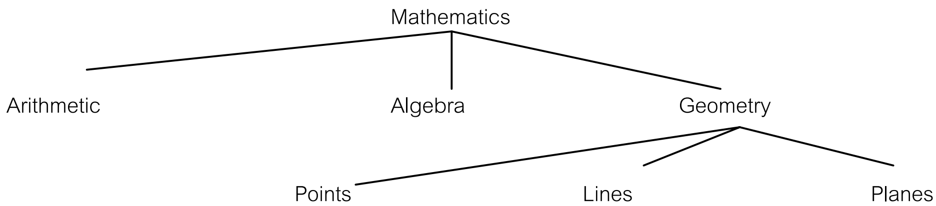

Figure 3 A hierarchical structure for mathematics (from Mohan, 1986: 89)

Criticisms of hierarchies

Given this massive wealth and range of uses of hierarchies, most of which have proved to be valuable and productive, why is there a need for a paper evaluating their value? It could be argued that the productiveness of the analyses using hierarchies already proves their value, and so no re-assessment of the use of hierarchies in applied linguistics is needed. However, there have also been several criticisms of the use of hierarchies which should give us pause to think more deeply about whether we should be using hierarchies as the basis of applied linguistic descriptions.

Some of these criticisms apply only to the use of hierarchies in specific areas. For example, we saw above that hierarchies have been used to describe topics, but Hudson (1980) argues that in situations where there is topic drift, in other words, where succeeding discourse moves seamlessly from one topic to another with no clearly identifiable boundaries, no hierarchical structure is evident.

A broader criticism of hierarchies is that they present a static picture of the world, whereas language use is dynamic. Thus, if we describe a text in terms of a hierarchy, there are problems in describing and explaining the sequence in which units in the hierarchy are introduced (van Lier, 1988).

The majority of criticisms, however, relate to the fact that hierarchies imply a very clear-cut view of knowledge that is not true in the messy realities of the world. For example, the hierarchy shown in Figure 1 appears clear-cut and indisputable. However, it is open to criticism. Firstly, the hierarchy implies that *plant* is the immediate superordinate of *tree*, but there may actually be several intermediate superordinates including *woody plant* and *flowering plant*. Secondly, if we add more concepts into Figure 1, such as *material used in making furniture*, we see that *pine*, *oak* and *teak* are co-hyponyms of two immediate superordinates, the relationship between which is unclear. Such cross-relationships, which hierarchies cannot cope with, are common in the real world (Schank, 1975; Strahan, 1989). Thirdly, there are frequently different principles available as the basis for organising a hierarchy. The taxonomic hierarchy in Figure 1 may differ from the hierarchy for trees conceptualised by forest park rangers who may categorise trees based on their health and fecundity rather than on species (Medin *et al*., 1997). These different bases for relations between concepts mean that the supposedly objective relations used to construct hierarchies frequently rely more on a researcher's subjective interpretations than on objectivity.

A further criticism of hierarchies is that a single hierarchy may include several different kinds of relations. For example, the hierarchic schema in Figure 4 taken from Slavin (1994: 196) is problematic.

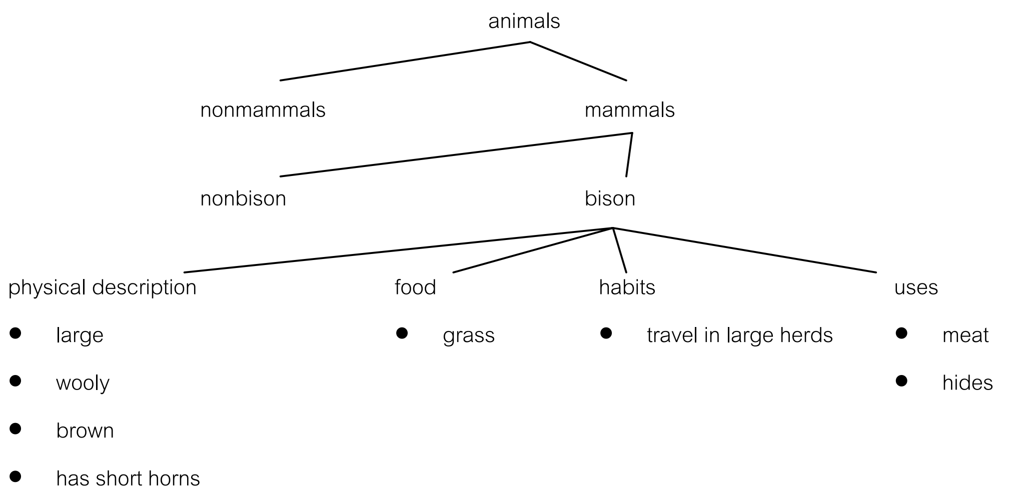

Figure 4 A schema for the word *bison* from Slavin (1994: 196)

In Figure 4, starting from the top, the first three levels are a taxonomic hierarchy based on hyponymic relations. The bottom level, however, is not based on hyponymy even though no diagrammatic distinction is made in the hierarchy to show any difference in relations between concepts. The relation between *bison* and, say, *grass* is more akin to one of entity and characteristic where eating grass is a characteristic of bison. Such mixing of different relations in hierarchies is quite common and clouds the supposedly neat picture that they present.

A further problem with Figure 4 concerns why *grass* should be placed at a lower level in the hierarchy than *bison*. We have seen that lower levels in hierarchies indicate items of a more specific nature, but is *grass* really more specific than *bison*? We can easily imagine someone looking at the schema in Figure 4 and deciding to construct a similar one for *grass* which might look like Figure 5.

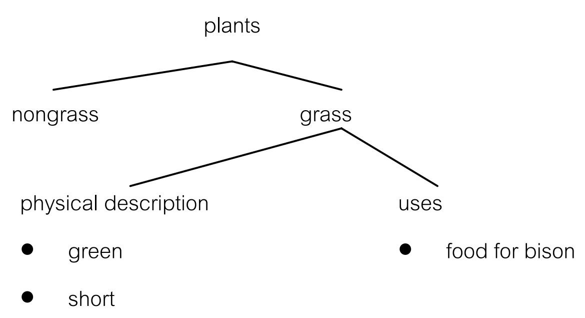

Figure 5 A schema for the word *grass*

In Figure 5, *bison* appears to be at a lower level in the hierarchy than *grass* in direct contrast to the relation shown in Figure 4. Problems such as these mean that the ostensible objectivity of a hierarchy may not actually be present and many hierarchies presented in the literature are suspect.

Reasons for using hierarchies

Having seen such a variety of criticisms of hierarchies, we are left with wondering why they are used so frequently in linguistics. As all the work from a Chomskyan perspective has shown, logic and the use of hierarchies can be powerful tools in analysing language.

The reason why Chomskyan syntax has been so successful rests on the fact that it provides theoretic, rather than empiric, explanations (Scribner, 1979). Most of the progress made in syntax has come from analyses of idealised language use rather than from analyses of messy real-world interaction. In applied linguistics, on the other hand, it is real rather than idealised language use that provides the focus for analysis, and thus applied linguistics seeks empiric explanations. Whether the logic and hierarchies used in Chomskyan approaches are relevant to the search for empiric explanations is unclear.

Similarly, the hierarchical tree diagrams used in syntax are valid by definition. If you define a subject as a component of a sentence, then the fact that a subject is a meronym of a sentence is self-evident by definition. The exact nature of the subject and the sentence are irrelevant as far as constructing meronymic hierarchies based on such meronymic definitions of syntactic components is concerned. In other words, such syntactic descriptions are internally valid but are restricted to descriptions of internalised I-language (Chomsky, 1988) divorced from context. In applied linguistics, on the other hand, analyses generally involve the state of the world, the context, and often speaker meanings and uses, as well as definitions of linguistic components. As such, applied linguistics is concerned with synthetic propositions rather than the analytic propositions of theoretical syntax (Pyles and Algeo, 1973). The placement of synthetic propositions into purportedly objective hierarchies can be fraught with problems. For example, statements whose meanings change depending on context cannot be easily assigned a place in a hyponymic semantic hierarchy. Because of problems like this, even if the use of hierarchies is valid in pure linguistics, we are still left searching for justifications of the use of hierarchies in applied linguistics.

The only justification of choosing a hierarchy to represent information organisation that I have found in the applied linguistics literature is given by Mohan (1986). In looking at ways to structure knowledge in content-based language teaching, Mohan compares the use of hierarchies and networks to represent information organisation. He chooses to use hierarchies in his analysis, arguing that "the main difference is the orderliness and precision of the [hierarchy] compared to the unruly proliferation of the [network]" (89). If the goal of an analysis, then, is to present a clear-cut and precise representation, hierarchies are preferable to networks.

Mohan's work, however, is just one of many in applied linguistics which have used hierarchies. The use of hierarchies in other studies, however, is not explicitly justified by researchers. This implies that the main reason for using hierarchies may be inertia. In other words, a hierarchy may be used in one study because a previous similar study used hierarchies. This lack of any rationale for using hierarchies demands that the use of hierarchies be evaluated, and such an evaluation must compare the use of hierarchies with the available alternatives.

The alternatives to hierarchies

A variety of ways of representing knowledge organisation within applied linguistics have been suggested. For organising concepts, these suggestions have included grids or matrices, flow charts, algorithms, hierarchical tree diagrams, and networks (Burgess, 1994; Graney, 1992; Mohan, 1986). Of these, flow charts and algorithms can be used to describe processes, and grids are useful for comparisons. For representing patterns of relationships in conceptual knowledge, then, we are left with a choice of hierarchies (and their mathematically equivalent alternatives such as Venn-Euler diagrams, see Lipschutz, 1964) and networks. Choosing between hierarchies and networks is a true choice in that they can frequently be substituted for each other in the same applications, albeit providing a different picture of the relationships. Some of the areas of discourse above which have been described using hierarchies can also be described using networks. For example, schemata have been presented as networks (e.g. Anderson and Pearson, 1984), and patterns of concepts in texts have also been described using networks (e.g. de Beaugrande and Dressler, 1981; Hoey, 1991).

Indeed, the fact that some patterns of relationships can be represented either through hierarchies or networks is such that, on occasion, it is unclear which is being used. For example, in analysing a large corpus of keywords, Scott (1997) found that keywords can be grouped into clumps which are best represented as networks. However, in a later article (Scott, 2000), using the same data and analysis, he argued that the different clumps produce a hierarchical tree of concepts, despite the fact that there is nothing in the data to indicate which of the clumps are specific and which general. Thus, Scott appears to be trying to force a network into a hierarchical structure. On the other hand, Halliday (1973), in presenting a hierarchical algorithm of options in language use, argues that the algorithm is a network. In this case, Halliday is doing the opposite of Scott and attempting to pass off a hierarchy as a network.

Given the criticisms of hierarchies I have presented above and the fact that hierarchies and networks may sometimes be used to describe the same patterns of relationships, let us now investigate the applicability of networks as an alternative to hierarchies.

A brief history of networks

While networks are used relatively infrequently in applied linguistics, they are almost de rigueur as a way of representing patterns of conceptual knowledge in cognitive psychology.

The use of networks to represent the organisation of concepts in cognitive psychology grew out of a dissatisfaction with hierarchies. In 1969, Collins and Quillian posited a mixture of hierarchies and networks to represent conceptual organisation. The basic structure was a hierarchical tree diagram, but at each of the nodes in the diagram other concepts were attached in the form of networks as shown in Figure 6. They further posited that response times taken to link two concepts would be proportional to the distance between the two concepts in the diagram. Their initial results suggested that this was true.

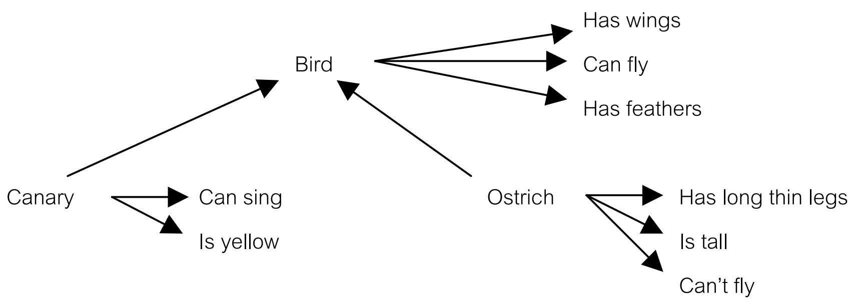

Figure 6 A mixed hierarchy and network (from Collins and Quillian, 1969)

However, Conrad (1972) took an alternative approach. Instead of predetermining the relationships between concepts as a hierarchy, he asked subjects to describe certain concepts and drew up networks of the concepts based on those descriptions. He then showed that these networks were better predictors of response times than Collins and Quillian's hierarchy. Since Conrad's research, networks have been more influential as ways of representing conceptual organisation in cognitive psychology than hierarchies.

There have, however, been several progressively more complicated variations on the theme of networks to represent the organisation of concepts. Initial models proposed a spreading activation between nodes in a network (e.g. Collins and Loftus, 1975). In other words, activation of nodes in a network spreads outwards along connections from one initially activated node to other nodes and then outwards again from these newly activated nodes.

Further refinements to this spreading activation model incorporated the strength of connections between nodes in the model (e.g. Anderson, 1980). In Collins and Quillian's (1969) model described above, the strength of a relationship between two concepts was posited as proportional to the distance between the two concepts in the diagram. In other words, related concepts are seen as existing close to each other in semantic space while unrelated concepts are distant (Van Dijk, 1977). This way of representing the extent of the relationship between two concepts as distance in semantic space can still be found in some network models (e.g. Hofstadter, 1996), but more usually, strengths of relationships are represented by weightings on connections. A strongly weighted connection indicates a close relationship or closeness in semantic space between the two concepts it links. Yet further refinements allowed the weightings of connections to be negative as well as positive (usually ranging from -1 to +1) where a negative weighting inhibits the activation of the node to which it is linked, and allowed activation to move backwards and forwards along connections rather than only spreading outwards.

A more recent development of network models produces somewhat less intuitive models. Instead of concepts being represented as nodes, the nodes themselves carry no meaning - instead, concepts are represented by combinations of connections between nodes (McClelland and Rumelhart, 1985). Such models are termed connectionist. Connectionist models are based on the metaphor of neurons in the brain and, as with the brain, can be fearsomely complicated. In the brain, each of the 20 million Purkinje cells can have up to 200,000 connections. Similarly, even a simple connectionist model can contain thousands of connections.

Network models in cognitive psychology, then, largely originated from dissatisfaction with a hierarchical model. The original simple network models have been continuously refined so that most present models are very complicated. In the next section, I will present an example of a basic network to illustrate most of the points discussed in this section. The model I will present is a spreading activation model with positive and negative weightings on connections and with backwards and forwards activation along connections. I will not attempt to present a connectionist model as the counter-intuitiveness and complexities of connectionism make such models difficult to explain and understand, but the example presented below could be reworked as a connectionist model relatively easily.

An example of a network

The example I will present here is very simple in that it consists of three nodes only. It aims to show how the hyponymic relations underpinning many hierarchies may be represented as a network using Schank's (1975) concept of *ISA* (see also Schank and Abelson, 1975, 1977). The *ISA* relation relates a hyponym to its superordinate, so from Figure 1 we can say *pine ISA tree*. Figure 7 shows a network with three nodes and weighted two-way connections.

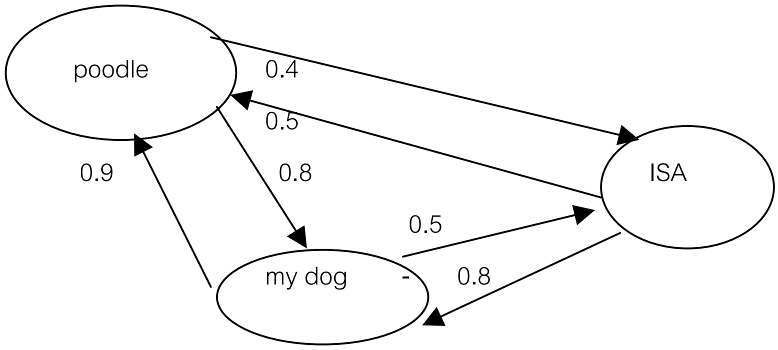

Figure 7 An example of a simple network

In Figure 7, we can see that each of the three nodes is connected to each of the others and that each connection has a number between -1 and +1 indicating its weighting. A high number (such as 0.9 from *my dog* to *poodle*) indicates a close relationship between the two concepts at the nodes. A negative weighting, on the other hand, means that activating the initial node (e.g. *ISA*) inhibits the activation of another node (e.g. *my dog*). A negative weighting is given from *ISA* to *my dog* since *my dog* is not a concept superordinate to any others.

To see how the network operates, let us suppose that I am thinking of *my dog*, in other words, *my dog* is activated (i.e. there is a value at the *my dog* node of 1). This activation will spread along the connections to other nodes giving an activation at the second node equivalent to the activation at the first node multiplied by the weighting of the connection from the first to the second node. Thus, *poodle* receives an activation of 1 (the level of activation of *my dog*) multiplied by 0.9 (the weighting on the connection from *my dog* to *poodle*) or 0.9, and *ISA* receives an activation of 0.5. The activations of *poodle* and *ISA* become new inputs into the spreading activation in addition to continued input from *my dog*. For example, *ISA*, having received an activation of 0.5 from the first 'round' of spreading activation originating from *my dog*, now receives further activation from both *my dog* and *poodle*. In this second 'round', *ISA* receives an activation of 0.5 from *my dog* and a further 0.36 (0.9 [the level of activation of *poodle*] x 0.4 [the weighting on the connection from *poodle* to *ISA*]) from *poodle*. In each round, the activation received by each node is:

Activation received at node A = $\sum$ ((the level of activation at each connected node) x (weighting on the connection from the connected node to node A))

(see Best, 1999 for details)

We can set a threshold for activation of, say, 0.8 (this threshold is necessary because following the feedback loops of continuously spreading and respreading activation will eventually lead to limits of 0 or infinity), which, once reached, means the node is activated. Thus, *my dog* is activated from the initial input of 1 and *poodle* is activated from the first 'round' of spreading activation when it reaches a value of 0.9. *ISA* is not activated in the first 'round' (when it only receives 0.5 from *my dog*), but in the second 'round', *ISA* receives 0.5 from *my dog* and 0.36 from *poodle* giving a total of 0.86 which is above the threshold level for activation.

The upshot of all this is that all three nodes are activated, meaning that every time *my dog* is activated, *ISA* and *poodle* are also activated. In other words, thinking of *my dog* always brings the realisation that *my dog ISA poodle*.

Arguments for and against networks

From even such a simple example as the three-node network in Figure 4, we can see that the use of networks is not straightforward. It takes a fair amount of work to find out that activating *my dog* activates *my dog ISA poodle*. In contrast, a simple hierarchy with *poodle* at the top and *my dog* at the bottom would show the hyponymic relation clearly at a glance. The implications and meanings residing in networks are generally not immediately apparent.

Furthermore, any sequencing of relations or concepts in a network like Figure 4 is unclear. I summarised Figure 4 as showing *my dog ISA poodle*, but there is no reason within the network why it could not be summarised as *ISA poodle my dog* or another variant. A network of concepts, then, does not automatically include a syntax for sequencing the concepts. It is possible to redraw the network to include such a sequence, but doing this would involve adding many extra nodes and connections, making the network even more convoluted and opaque.

A third problem with networks is how to construct them. Figure 4 is a purely imaginary network that was created to illustrate a point. Drawing up networks to describe and analyse real language data should not rely on intuition. However, it is difficult to see how networks, and especially the weightings of connections, could be constructed without relying on intuition. I will return to this point below.

Despite these problems with networks, they do have one massive advantage over hierarchies in representing relationships between concepts. Networks predict research results well and so are likely to be better representations of how people really organise knowledge than hierarchies. For example, there has been a lot of research using networks which has produced results matching people's reading performance and acquisition (e.g. Ans *et al*., 1998; McClelland and Rumelhart, 1981; McEneaney, 1994; Seidenberg, 1992). Other aspects of linguistics which have been validly modelled by networks include child acquisition of German articles (McWhinney *et al*., 1989), learning of regular and irregular forms of English verbs (Ellis and Schmidt, 1998), and ability to identify word boundaries (Christiansen *et al*., 1998). If the goal of an analysis is to provide a valid and realistic picture of relationships among concepts, networks should be used instead of hierarchies.

One further consequence of the predictive validity of networks can be viewed as either an advantage or a disadvantage depending on perspective. Some of the research into describing aspects of language using networks (e.g. McWhinney *et al*., 1989) has explicitly contrasted network models with rule-based models. In many networks, and especially in connectionist models, there is no explicit manipulation of symbol systems - in other words, there is no use of rules as they are usually understood in linguistics (Sokolik, 1990). The research contrasting network models and rule-based models has generally shown that networks explain human thinking better (e.g. Hunt, 1989; Ney and Pearson, 1990). If this is true and generalisable to describing organisation of concepts and other aspects of linguistics, then the goal of much linguistic research could change from a search for generalisable patterns expressible as rules to constructing networks that describe data well and following the implications and meanings of these networks. It should be stressed, however, that not all use of networks results in such an either-or choice between networks and rules.

Lastly, unlike hierarchies, networks are not restricted to organising concepts on the basis of relations. Hierarchies, as we have seen, can be built around a variety of general-specific relations, although to be logically valid these relations should not be mixed in a single hierarchy as is the case in the schematic hierarchy of Slavin (1994) discussed above. Networks can also be used to represent these relations albeit less clearly than hierarchies. In addition, networks can also represent associations which cannot be dealt with by hierarchies. For example, in a recent study Schmitt (1998) elicited association responses to the word *dark*. The most frequent responses were *light*, *night* and *fear*. These associations can easily be represented as a network by placing *dark* in a central node connected to three peripheral nodes of *light*, *night* and *fear*. The weighting of the connection from *dark* to each of these three concepts would be proportional to the frequency at which they were elicited as association responses. Further connections could be added to the network by eliciting association responses for the three peripheral concepts.

The associations between *dark*, on the one hand, and *light*, *night* and *fear*, on the other, cannot be represented in a single hierarchy. As opposites, *dark* and *light* are co-hyponyms of the same superordinate, say, *brightness*; *dark* is a characteristic of *night*; and *fear* is an characteristic of *dark*. *Dark*, then, is at a more specific level under two general concepts, *brightness* and *night*. Since there is no relation holding between these two more general concepts and their relations with *dark* are not of the same kind, we would need to separate them into two different hierarchies. So, while a set of associations can be dealt with easily, the amount of variation of types in most associative sets means that hierarchies are generally inappropriate as a way of representing associations. Given that both relations and associations can be represented in networks, we can conclude that networks can deal with a greater range of types of closeness between concepts than hierarchies.

An example of choosing between hierarchies and networks

So far in this paper, I have presented a range of arguments for and against both hierarchies and networks. Unsurprisingly then, the choice of whether to use a hierarchy or a network in a description is dependent on the particular analysis, its situation and its goals. To illustrate this, I will look at a very small data set and compare the use of hierarchies and networks to describe it.

The example concerns topical relevance in aphasic speakers. Some kinds of semantic pragmatic disorder result in aphasic speakers having difficulty keeping contributions relevant to a topic (Lesser and Milroy, 1993). For example, in (2) taken from Stubbs (1986: 185), the contribution of B, an aphasic patient, does not appear relevant to A's question.

(2) A: Were these children in it?

B: I saw a baby chick trying to fly.

The problem here is how to measure whether B's utterance is relevant to the topic of A's question. Relevance to a topic is manifested by succeeding concepts which are close in semantic space (Van Dijk, 1977; Watson Todd, 1998). In other words, two succeeding concepts separated by a great distance in semantic space can indicate a lack of topical relevance (although this is dependent on context, see Levinson, 1983; Widdowson, 1979). The problem of measuring relevance, then, frequently resolves to identifying distance in semantic space, and ways of representing closeness between concepts may be helpful in identifying this.

Let us start, then, by looking at how the concepts in (2) could be represented in a hierarchy. Keeping things very simple and ignoring the unclear *it* and the functional rather than conceptual *I*, the main concepts in (2) are *children*, *baby chick* and *try to fly*. Looking for relations between these three concepts, we may identify *try to fly* as an characteristic of *baby chick*, but it is difficult to identify any relation between *children* and the other two concepts. It should be noted that identifying relations like these is not truly objective but relies to a certain extent on the analyst's interpretation. Nevertheless, if we accept that *baby chick* and *try to fly* exhibit a entity-characteristic relation and *children* is unrelated, we can construct a hierarchy representing these relations as in Figure 8.

Figure 8 A hierarchical representation of (2)

In Figure 8, we can see a close general-specific relation for *baby chick* and *try to fly*, whereas *children* is not placed within this hierarchy but is in a separate hierarchy on its own. This suggests that *baby chick* and *try to fly* are close in semantic space, but *children* is distant from both these concepts. Applying these distances in semantic space to (2), B's utterance is internally topically relevant but is not relevant to A's question.

From this analysis, it appears that hierarchies can be used to aid analyses of topical relevance. However, it should be stressed that in analysing (2), we are looking at only three concepts. For longer stretches of data (and most stretches of data will be longer), the number of concepts involved will increase, and there will be a concurrent increase in the likelihood that valid hierarchies linking concepts on the basis of a single relation cannot be constructed.

Turning now to networks, if we attempt to make a network based solely on the data in (2), we end up with three connected nodes for *children*, *baby chick* and *try to fly*. The weightings on the connections must be high since the three concepts at the nodes are closely associated as they appear in the same short stretch of discourse. Any network based solely on a short stretch of discourse would show such high levels of connectedness, irregardless of whether the discourse exhibited topical relevance or not.

We therefore need to look at ways of constructing a network which are based on data from outside the extract. Such a network would act as a benchmark against which the extract could be compared. As we have seen, one way in which this could be done is to build a network based on word associations. However, this would require a large group of subjects from whom word associations could be elicited, and even then, there is no guarantee that any association between, say, *baby chick* and *try to fly* would be elicited.

An alternative way of constructing a benchmark network would be to create a network from the language data of a large corpus. Concepts which are close in semantic space should co-occur in a corpus relatively frequently. We could set a range of, say, 20 words as a span for counting co-occurrences. The proportion of co-occurrences as a percentage of all occurrences of the concepts would give us a measure of how closely two concepts are associated. Applying this method to *children*, *baby chick* and *try to fly* using *The COBUILD Bank of English* corpus, unfortunately we find that the phrases *baby chick* and *try* to fly* occur too infrequently to be of much use for analysis (6 and 87 occurrences respectively). I will therefore look at the number of co-occurrences within a span of 20 words of *children*, *chick* and *fly (v)*. From the corpus, we find that 0.003% of occurrences of *children* co-occur with *chick*, 0.062% of occurrences of *children* co-occur with *fly (v)*, and 0.308% of occurrences of *chick* co-occur with *fly (v)*. From these proportions, we could draw up a network converting the percentages of co-occurrences into weightings ranging from -1 to +1. Such a network would show that connections between *chick* and *fly (v)* are most strongly weighted, while connections between *children* and the other two concepts are more weakly, and perhaps even negatively, weighted. The outcome of inputting the data from (2) into such a network would show that B's response in (2) is internally topically relevant but not relevant to A's question. This finding matches the finding concerning topical relevance obtained by using a hierarchy, but may be preferable as it is founded on language data and avoids the perhaps subjective steps involved in identifying relations needed to construct a hierarchy.

Conclusion

In the previous section, I hope that I have shown that the organisation of concepts in language data can be represented as either a hierarchy or a network. Hierarchies are much easier to construct and understand, but their purported objectivity founded on the fact that relations like hyponymy are testable through logic is suspect. With the exception of tautologous theoretic explanations, a large amount of subjective interpretation may still be needed in constructing a hierarchy. Networks, on the other hand, although laborious to construct and work with, are more empirically valid as they can be based on real language data. For this reason, networks may present a truer picture of conceptual organisation than hierarchies. In addition, their empirical foundations mirror the recent emphasis in linguistic research on analyses of real language data as epitomised by corpus linguistics rather than analyses of made-up examples.

The choice between hierarchies and networks, therefore, seems to come down to a choice between providing a clear picture and providing a true picture. While this paper has focused on ways of representing organisation of concepts, I believe that the arguments also apply to investigations in other areas of applied linguistics. Since most research in applied linguistics aims to provide empirically valid explanations of language use, careful consideration needs to be given as to whether the more difficult but more valid network representations of data should be used in preference to the presently predominant hierarchies.

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