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KNOWLEDGE MANAGEMENT AS AN OUTCOME OF SUSTAINED TEAM LEARNING: HYPERLINKS TO EFFECT CORRECTIE FEEDBACK

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ABSTRACT

Sustained team learning involving the Zing Team Learning System is presented as a basis for learning and knowledge management. Successive activities involving learning, reflection, and applying corrective feedback demonstrate the importance of distributive cognition and co-creation of meaning through discourse. As lifelong learners, teachers and students learn to share responsibility for learning.

INTRODUCTION

Recent research into team learning using the Zing Team Learning System (ZTLS) (Callan & Whymark, 2002; Callan, Whymark, & Waters, 2000; Purnell, Callan, & Munnerley, 2003) is juxtaposed with literature associated with cooperative learning (Biehler & Snowman, 1997; Felder & Brent, 2001; Slavin, 1981, 1991b) as a means to initiate discussion about learning management and knowledge management in schools. Few would argue that at the high end of classroom practice teachers and students craft knowledge. However, a concern is registered about assumptions associated with the management of such knowledge. Arguably, a capacity for self-management, reflection, and corrective action as a natural consequence of learning is needed, but at what level is there feedback? Moreoever, what changes to teaching and learning derive from such feedback? In what ways can the responsibility for learning and knowledge management be shared?

In concert with the first pillar of lifelong learning: "Learning to know" (Jouen, 2000, p. 11), this investigation seeks to establish whether a transition in understanding about knowledge and knowledge management can be effected between teachers and learners. In most schools, it is readily appreciated that knowledge is derived as a consequence of shared activity across a variety of learning contexts over time. The chief problem, often not realised, is that knowledge can be viewed from different perspectives – and this has profound implications for knowing and for learning. On the surface, the differences in perspective appear to be more abstract than concrete. However, for teachers and learners the issue is of some

consequence, since learners are being prepared not only for a life of learning, but also for a social order that will demand vastly different requirements for applying knowledge in a future world far removed from our own (Pfeffer & Sutton, 1999).

The present view of knowledge, its implications for learning, and its importance to society continues to shift. This is undoubtedly a product of advances in information and communications technologies (ICTs) and new ways of thinking about knowing in the much vaunted knowledge-age. This shift in understanding with its own fresh set of imperatives, has indeed usurped the earlier vision of a learning society committed to life long education (Faure, 1972) to one which looks more to lifelong learning as a means of enabling individuals to come to terms with change and uncertainty.

REFLECTIVE PRACTICE AND KNOWLEDGE CREATION

The advent of the ZTLS in schools presents something of a challenge on at least two fronts. The first is that the technology with its requisite processes for knowledge building does not sit easily with traditional (industrial model) classroom instruction. The second is that teachers, themselves, need to engage the tools from the standpoint of reflective practice based on a professional commitment to participate in knowledge creation with learners, in the first instance, and then with fellow professionals (teachers, researchers, and ICT-support personnel).

The concept of reflective practice is, in itself, highly instructive, in as much as the role of the teacher is transformed from that of the "sage on the stage" to that of facilitator or team leader. According to White (2002), "Reflective practice is the key to understanding the link between the knowledge that is gained about a particular situation and the making of the most appropriate decisions in light of the available information" (p. 2).

In view of this conceptualised study into how teachers might collectively manage local knowledge, one might ask the question, "Why should teachers be expected to change, simply because new technologies offer benefits which do not sit comfortably with traditional modes of classroom practice?" The answer may be unpalatable to some, but the nub of the issue has

more to do with the very assumptions that are held about knowledge itself, and how knowledge might be managed within learning organizations (Huysman, 2001). Moreover, there is the issue about the personal motives teachers hold as professionals regarding reflective practice.

Reflective practice is essentially about teachers determining "why certain choices work and why others do not" (White, 2002, p. 3). Alternatively, issues centre on fundamental questions suggested by Argyris (1977), such as,

- What's wrong with *doing things as they have always been done?*
- What is there to be gained by attempting to reframe teaching practice?

Such questions are symptomatic of the present gap in appreciation as to how subtly the concept of knowledge continues to shift. A more complete framework of understanding is needed.

Under the guise of *double loop* learning, where "error is detected and corrected in ways that involve the modification of an organization's underlying norms, policies and objectives" (Argyris & Schön, 1978, pp. 2-3), it is probable that teachers and learners may come to a realisation in their own time that, "Knowledge is a collaborative by-product" (de Paula & Fischer, in press, p. 5; Fischer, 2003a). Furthermore, knowledge is not only socially constructed (Huysman, 2001), but is also "enacted in practice" - it addresses the situated needs of individuals (de Paula & Fischer, in press, p. 6).

The extent to which schools are seen as learning organizations against the backdrop of the lifelong learning paradigm holds implications for the idea of how knowledge construction is or is not negotiated between teachers and learners (Cibulka, Coursey, Nakayama, Price, & Stewart, 2000; Salomon & Perkins, 1998). Without attendant tools and skills, it is difficult to see how knowledge-creation activities can be effectively enacted. A "knowledge centric" (Tiwana, 2001) organization is likely to be an organization that sees itself as a learning organization (Senge, 1990).

Purpose

With these issues in mind, ZTLS deployment needs to ensure that:

1. The creation of knowledge in classrooms is not a disconnected undertaking – "knowledge" is more than an artefact or a product of classroom learning activities.
2. Teachers and learners demonstrate a capacity to co-create meaning and manage knowledge (co-create and build).
3. Learning processes involving tools must express a value-added level to individuals in terms of deeper levels of cognition, shared understanding, and joint creativity.

In this way, the onus of responsibility is distributed across sets of classroom activities on the basis of enabled social relations between teachers and the learning teams engaged in cooperative forms of learning (Biehler & Snowman, 1997; Johnson & Johnson, 1984; Slavin, 1991a). This level of emphasis is particularly poignant since traditional assumptions about knowledge per se remain somewhat entrenched and narrowly defined. For instance, the fact that knowledge is likened to a commodity (Murray, 2000) in effect holds that lived past experiences are the only effective means of informing future experiences (de Paula & Fischer, in press; Fischer, 2003b). Table 1 summarily challenges such notions with equally valid, but, socially situated, alternative perspectives of "knowledge".

A DISCURSIVE FRAMEWORK

The ZTLS, as a Group Support System (GSS) comprises a set of tools and procedures which sets the stage for team work. However, the choice of associative method or practice to secure learning outcomes is important (Waters & Callan, 2003).

There are a number of attributes associated with use of the ZTLS that underscore a capacity to facilitate discourse contingent upon achieving process outcomes such as,

- ensuring all participants have a voice, and the all contributions are duly recognised, acknowledged, and utilised (Dennis, George, Jessup, Nunamaker, & Vogel, 1988; Nunamaker, Dennis, Valacich, Vogel, & George, 1991);
- rapid generation of ideas as the basis for achieving flow (Csikszentmihalyi, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988);
- working together in real time on really relevant activities as a team (Fischer, 2003a; Siciliano, 2001);

- guidance and support to be creative and to take risks (Felder & Brent, 1996);
- shared willingness and commitment to completing tasks as a pretext to forming Communties of Practice (COP) or Communities of Interest (COI) (de Paula & Fischer, in press; Wenger, 1998).

A framework associated with classroom discourse is important since, teacher use of the ZTLS to plan and generate assessment criteria needs to encompass a different set of knowledge-building parameters to those normally applied when teaching (Purnell, et al., 2003). In response to such efforts the points raised by Laurillard (1995) concerning the "the complexity of coming to know" (pp. 48-69) provides a salutary reminder of the obligations associated with finding out what happens during learning.

In essence, the principles concur with respect to the integrative nature of learning processes and the inseparability of knowledge and action. Starting with the proposition that a methodology of "a deep level of description of what is happening" (Laurillard, 1995, p. 49) is required, teachers have an onus of responsibility to ensure that team learning situations are circumscribed by practices that,

- apprehend the structure of discourse,
- integrate the sign with the signified,
- act on the world and descriptions of the world,
- use feedback,
- reflect on the goal-action-feedback cycle. (Laurillard, 1995, pp. 48-69)

Descriptions of the ZTLS have previously concentrated on how information is exchanged across a team of learners with the teacher as facilitator (Callan & Whymark, 2001, 2002; Callan et al., 2000; Purnell et al., 2003; Waters & Callan, 2003). Figure 1 illustrates the visual layout that is projected or displayed on a set of visual display units. In view are 12 playspaces (linked to keypads), a team space where ideas are "published" for the team and facilitator to process. The content of the session illustrates that the learning is focused on a series of questions associated with three interrelated topics. The teacher (facilitator) exercises control of the workspace by establishing the focus for the session, itemising questions or prompts as part of the agenda, and encouraging individual responses to be keyed-in to each of the

	Commodity Perspective	**Design Perspective**
Nature of Knowledge	Object	Enacted
Creation	Specialists	Stakeholders
Integration	Design time	Use time
Tasks	System-driven	User-driven
Learning	Transferred	Constructed
Dissemination	Broadcasting	On-demand
Technologies	Closed, static	Open, dynamic
Work Style	Standardized	Improvised
Social Structures	Top-down	Peer-to-peer
Work Structures	Hierarchical	CoP and CoI
Incentive Structures	Job assignments	Direct involvement
Breakdowns	Errors to be avoided	Opportunities

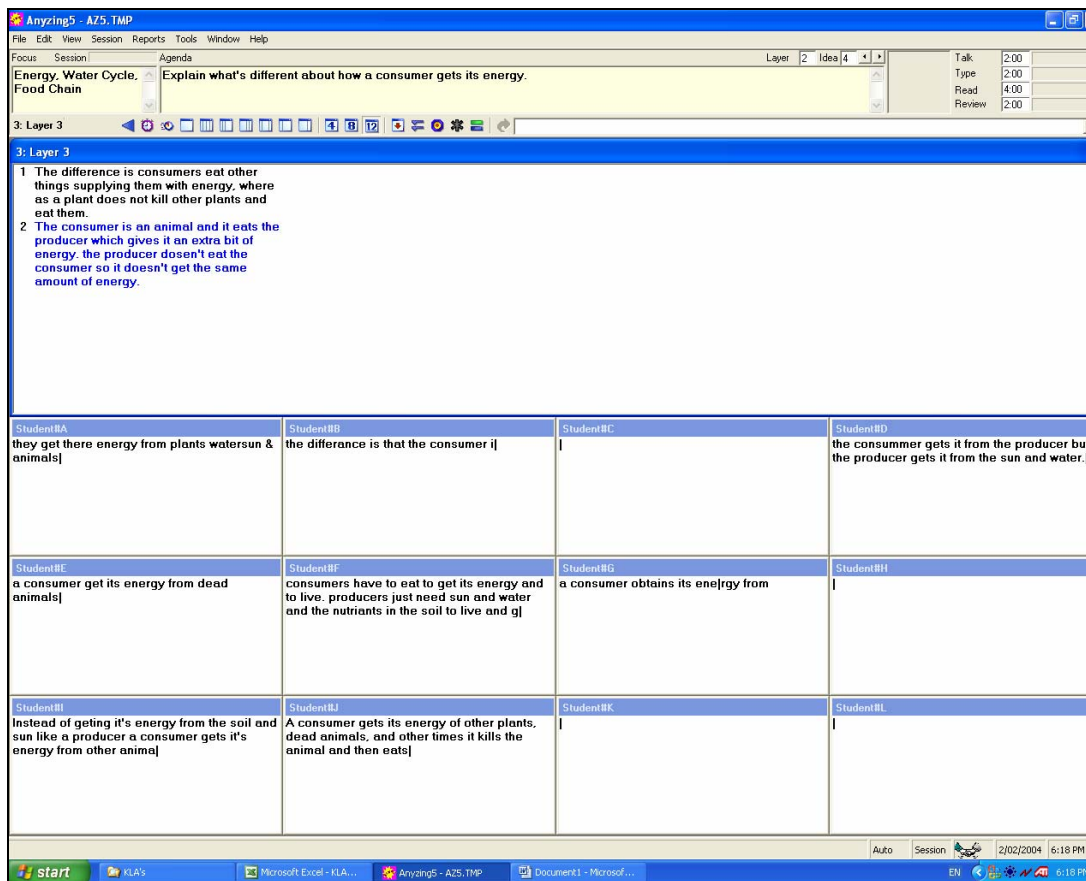*Table 1. Two Perspectives of Knowledge Management.[6]*

Figure 1. The ZTLS working interface.

[6] From "Knowledge Management – Problems, Promises, Realities, and Challenges", by G. Fischer and J. Oswald, 2001, *IEEE Intelligent Systems* (January/February), pp. 60-72. Copyright 2001 by G. Fisher. Reprinted with Permission.

playspaces which are then relayed by the participants to the teamspace. The effect is tantamount to parallel conversations occurring simultaneously (each participant has a say).

The next stage involves the listing and processing of contributions where a variety of techniques and procedures are deployed to scaffold the team's involvement with the task at hand. In an effort to refine the list of contributions in line with the task objective, teachers facilitate further discussion of the constituent parts of the response set in line with the whole set (Laurillard, 1995). Participants are not constrained from engaging in cross flow (side conversations) as this is both necessary and important to the flow and the generation of ideas (Csikszentmihalyi, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988). In most cases much of the shared content engenders further discussion, and elaboration, given that all inputs are accepted.

Analytical approach

In Figure 2 the output of the Zing session is extracted by the teacher for the purposes of assessing the calibre of the discourse both at the level of the individual contributions, and the across-team contribution.

Figure 2 illustrates the extraction of the data to a spreadsheet or database so that participant responses can be recompiled for further analysis. At this stage data are subjected to content analysis (Gee, Michaels, & O'Connor, 1992) using any type of qualitative analysis tool. Figure 3 illustrates this with the application of ATLASti (Muhr, 1993-2003) a multimedia-based, qualitative data-analysis tool. ATLASti provides the means to structure semantic network maps, and hyperlinked analysis of profiled sets of each learners contribution in class.

This summary of learner input enables the teacher (analyst) to map the outcomes of team learning activity. Sustained analysis of team sessions over time provides an overarching sequence or pattern of gaps in the learners understanding, or underlying assumptions about the learning content. Certainly, the analysis transcripting the transfer of data from one tool (in this case the Zing database) across to an analytical tool such as ATLASti provides scope for assessment and feedback.
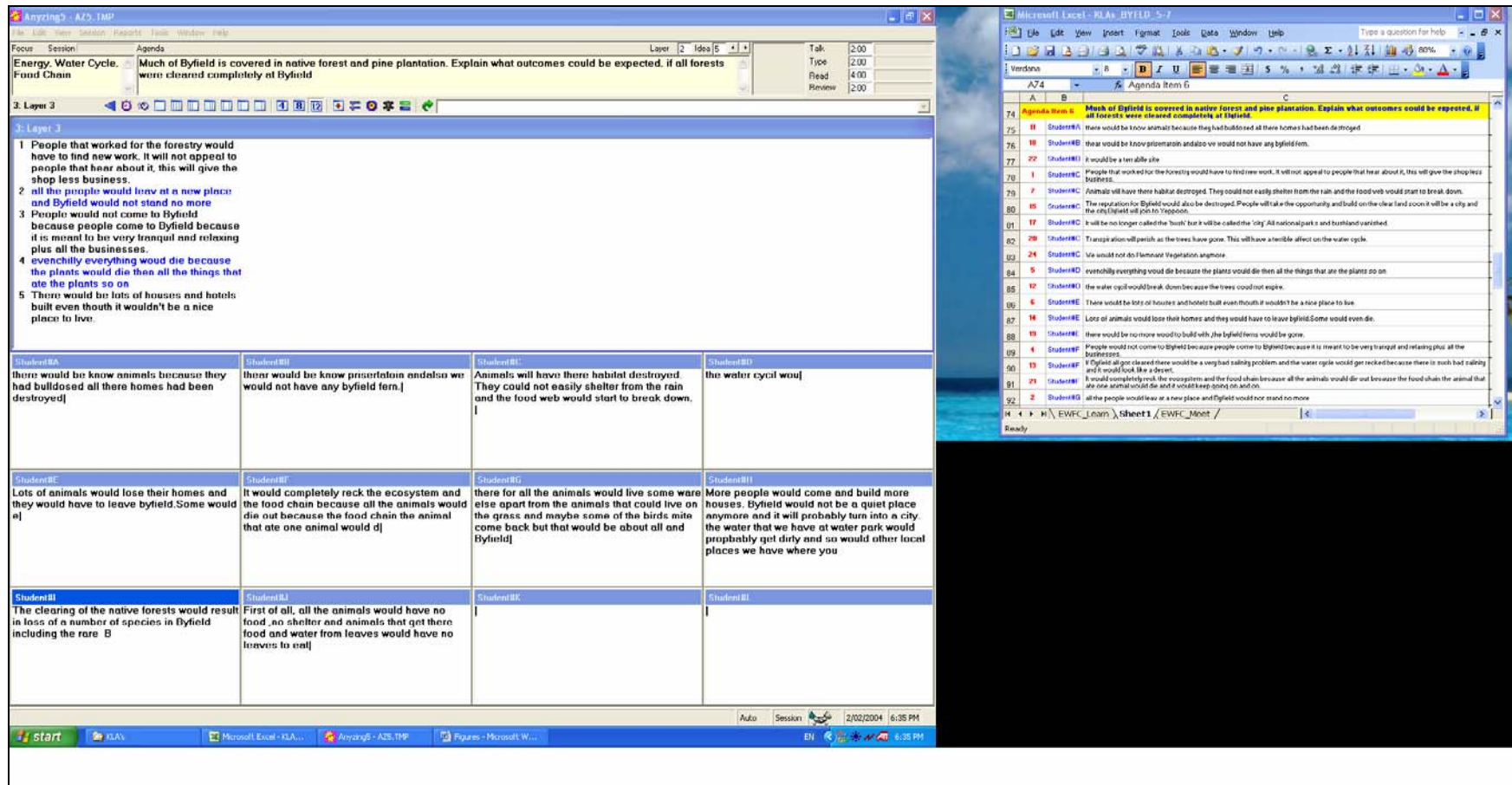
Figure 2. A ZTLS report extracted from a completed session and compiled in a spreadsheet or database.
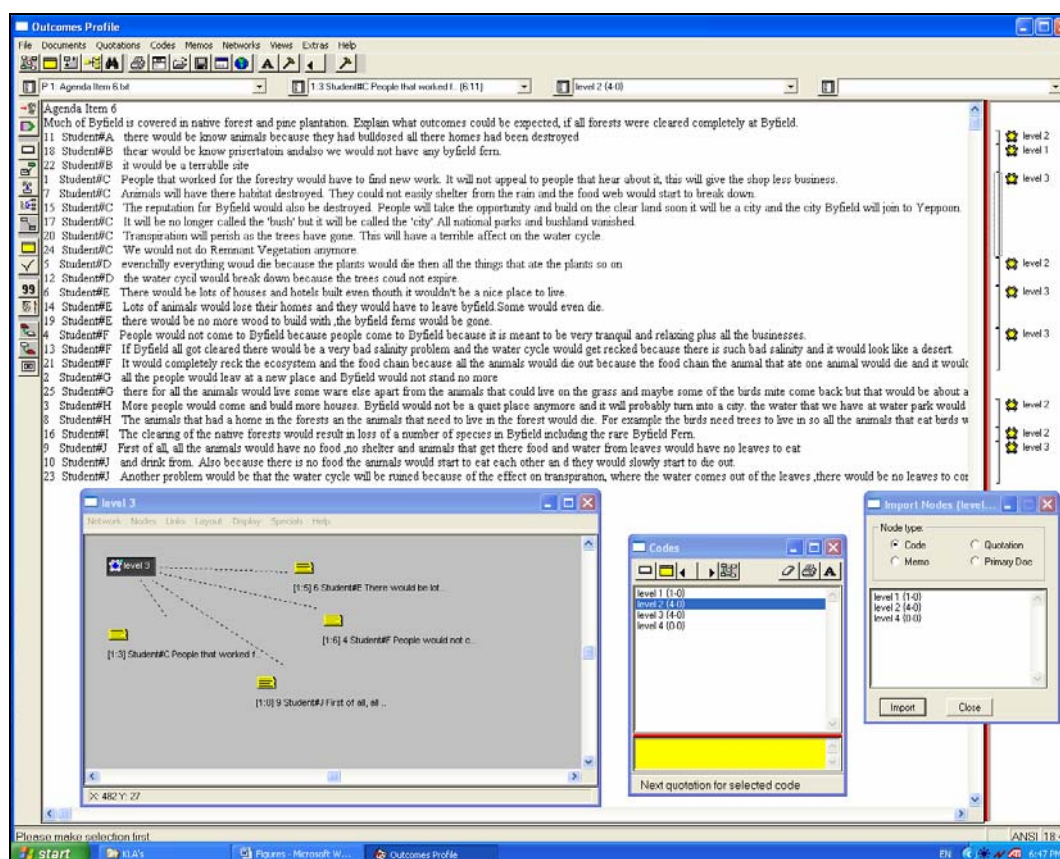
Figure 3. The Analysis of ZTLS report applying predetermined criteria.

DISCUSSION

The ZTLS illustrates that team learning is both purposeful and systematic. Teachers can assess the level and extent of knowledge coverage learners successfully appropriate. Moreover, the attendant skills and competencies involved with extended use of the ZTLS suggest opportunities for appreciating the importance of enabling learners to construct knowledge in teams (Huysman, 2001; Rogoff & Lave, 1984; Salomon & Perkins, 1998).

The sustained use of such techniques within mainstream teaching uncovers further avenues for investigation between the school as a learning organization and the manner in which shared knowledge is institutionalised (Berger & Luckman, 1996).

In concert with such an emphasis, there is a possibility that extended application of the ZTLS can uncover another, equally important, dimension of the ongoing dialectic between learning and knowledge management since, "Learning occurs through active participation in

practices of communities while at the same time identities in relation to these communities are constructed" (Huysman, 2001, p. 2).

The application of social learning theory in this way holds particular implications for continued research intended to contribute to the importance of reflective practice amongst teachers. This is consistent at least with the inclination to understand "knowledge as enacted in practice" rather than persist with the "commodity" view of knowledge (de Paula & Fischer, in press; Fischer, 2003b).

CONCLUSION

The emphasis associated with team learning involving technologies like the ZTLS confirms the importance of supporting social processes which underscore cooperative learning. As a knowledge creation tool, the ZTLS enables teachers and learners to appreciate that learning involves more than mere detection of error. The deeper the level of understanding about knowledge – its creation and its management –

the more profound will be the appreciation for learning and knowledge management.

For teachers, a commitment towards reflective practice aided by structured processes and techniques to foster collaboration, points to a willingness at least to mandate rewarding changes in professional practice. For learners, on the other hand, the prospect of learning is charged with the realisation of a special responsibility for "knowing" more about oneself. Furthermore, in exercising a personal entitlement to share and create knowledge with others, there is the prospect of mutual gain.

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ARE FOREIGN STUDENTS IN AUSTRALIAN UNIVERSITIES DISADVANTAGED WHEN LEARNING JAPANESE THROUGH THE MEDIUM OF ENGLISH?

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ABSTRACT

There is concern that international students studying Japanese in Australia are seriously disadvantaged by having to learn a foreign language through the medium of another, imperfectly-mastered, foreign language. This paper tests the validity of these concerns through comparative evaluation of the frequency and type of errors made in written texts by Australian and international students.

INTRODUCTION

In the process of learning a foreign language, students will produce non-native linguistic features in the target language. These non-native features often cause difficulties in communication, and yet they are unavoidable. Strevens called these non-native features "errors", "mistakes", "deviations", "distortions" or "points of difficulty" (Strevens, 1969), while Kramsch viewed them as "failures of performance" (Kramsch, 1993). Irrespective of the terminology applied to these non-native features, over the past three decades a number of often-conflicting theories emerged regarding the treatment of errors. For example, when structuralism theories were in vogue (Richard-Amato, 1996) errors were viewed as the formation of a bad habit to be avoided at all

costs. With the advent of the communicative approach to language teaching on the other hand, recognition was given to the fact that errors are an inevitable phenomenon in language learning (Kramsch, 1993).

Over the years, applied linguists of many nations have examined sources of errors extensively, as well as the strategies a student employs in learning a language. However, the resultant findings, reflecting the different objectives of individual researchers and the different theories each of them embraced, are not only inconclusive but also often produce contradictory. It can be seen, therefore, that student errors still provide researchers with a fruitful field of academic inquiry.