

Theory and Practice

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1. Introduction

This essay deals with the underlying theory behind part of my courseware project, the potential internet use of 'Hot Potatoes' (HP) as a teacher training tool in L2 (teaching of or through the medium of a second language. In this case, Irish). I describe HP below. HP also fits into the broader spectrum of CALL (Computer-aided language learning), which I shall also briefly refer to. I shall be integrating the theory with the actuality of operating the package in some cases, in order to link the abstract to the concrete, where appropriate.

I chose this particular package because I became engaged with its possibilities for L2 teacher training. I supervise and train third level students in Irish Methods on the Higher Diploma in Education. The teaching of L2 through L2 is a central concept on the course, and is one which some students have to struggle with. This is usually due to their experience in the Irish classroom as a school student, as everyone tends to start teaching in the manner favoured by their own ex-teachers. Those students who inherit bad practice (i.e. using L1-English to present L2-Irish) sometimes have to struggle to grasp the simplicity of what others were lucky enough to have been presented with as a given. As Somekh and Davis (1998) argue, HP or similiar packages incorporate a technology which:

1. facilitates increased access (in this case, to guidance in acceptable methodology) It does so by allowing independent access by students outside of formal tutorial time.
2. encourages and supports a model of collaborative professional development, if the tutor so desires, by presenting a uniform set of presentation templates which will enable groupwork yet at the same time allow creativity and individuality of content.
3. enhances the aim of the tutor, to inculcate appropriate teaching approaches, by the rigidity of the L2 methodology presented.

In the course of exploring the package, the student teacher/course author is confronted with language teaching problem-solving, based on sound L2 methodology. The student teacher has no option but to work within the confines of this methodology.

One other point to note is that where the term 'child' is used, it is not to the exclusion of adult learners. The concept of andragogy, that adults learn differently to children, is not a proven concept. It is based on the premise that adult learning has a basis in an abstract notion of the individual, rather than on the social context of learning. This raises more questions than answers. The person coining the term, Malcolm Knowles, has since decided to re-assess his assertions in the light of social constructivism.

2. Limitations

I do not intend to deal specifically with theories of second language learning (L2) here. It is obvious that HP or similar programmes provide only a fraction of the input needed to provide a total L2 environment, plus the many objections that can be raised about the limiting nature of interaction or the lack of contextualisation. This is not to denigrate the importance of these topics. The subject of context, for instance, is critical to the debate on whether or not a particular approach will lead to true learning through encouraging disembedded thought. Disembedded thought is thought which moves beyond the limits of the immediate physical and social context to which it refers. It was first conceived of by Piaget but the definitive work (to date) is that of Donaldson.

In the context of language teacher training, as opposed to language acquisition, my limited exploration of the medium (HP) encourages me to believe that use of the programme can lead to disembedded thought in student teachers through its use as an authoring tool. I explore this in "Reflective teaching".

This article deals mainly with the underpinning learning theories of hypermedia/web-based learning. I have no evidence of its use by learners and its makers do not make any claims. I mention briefly the advantage of the computer as a medium for language learners in "'Fun' versus 'Learned Helplessness'".

3. Hot Potatoes

Hot Potatoes (HP) is a set of software tools produced by the University of Victoria/Half-baked Software. They have been developed by the TESL department in this Canadian university. They take several tried, tested and 'best practice' second-language teaching techniques and adapt them into a pre-programmable interactive learning program which has the capability to go deeper than 'drill-and-practice'. They also may be programmed to provide the basic interface in any language supported by the standard ANSI table, and at any level that the instructor wishes. The staff is constantly developing new programs, some free for academic use, others available as shareware (but still free to download as a 'limited' version, with less features than the paid version). These programs are getting larger and more complex, as the technology and the language teaching range both expand.

Once configured into the target language, exercises are readily assembled for use either on the web or as hypermedia material from floppy disks.

4. 'Fun' versus 'Learned Helplessness'

Why should doing a second-language reading exercise compiled on a computer be any more valuable than that done on a sheet of paper? The answer, I believe, is that in some situations, notably that of the weaker language student, the learning medium helps to change the attitude of the learner. The medium of these exercises, i.e. the computer screen, changes the nature of the tasks from work to play.

Children view computers as 'fun'. The context in which they use computers is generally to play simulation games, access pleasurable sites on the internet, or to explore the capabilities of any given machine (e.g. their possible range of clip-art images) in a non-directed context where adult guidance is minimal or covert. They feel empowered and at play.

Langer (1989) talks about the 'mindfulness' of play, in other words a heightened awareness of the task we are undertaking, and compares it to work

"Ironically, although work may often be accomplished mindlessly, with a sense of certainty, play is almost always mindful. People take risks and involve themselves in their play...In play, there is no reason not to take some risks."

It is this element of play that leads me to believe that the HP programmes may seduce weaker language students to perform reading and writing tasks that they may otherwise hesitate to attempt. The change of context to a 'play' environment should help to break down some of the attitudinal barriers that weaker students build up through previous repeated failures, what Langer refers to as 'learned helplessness'. Many learners who have learnt to fail with pen and paper, for a myriad of reasons, may access computer-based material with relative ease. For instance, many adult literacy tutors manage to build more self-esteem in their students and thus make progress through word processing tasks on computers than with paper-based texts.

5. Process or outcome

In normal textbook usage, language learning is generally measured in terms of behavioural outcome. Ten sentences are given for homework/classwork. How many students got all ten right? Nine out of ten? Eight out of ten? And so on. As Langer states

"...the focus of schooling is usually on goals rather than on the process by which they are achieved..."

whereas process is encapsulated as

"...a process orientation...asks 'How do I do it?' instead of 'Can I do it?'"

Computer use can help change the concept of assessment from the former to the latter.

The former outcome-based model is behaviourist, also known as Skinnerian after the American educationalist, B.F. Skinner. Skinner coined the term 'verbal behaviour' for language. Verbal behaviour rarely needs any environmental support, in the behaviourist school of thought. It is a biological reaction, dependent on species, genes and external factors. Skinner also worked on a model of an active environment and a passive learner. However we now know that language acquisition is more complex than this model, so why cling to the same behaviourist model for assessment purposes?

The use of a programme like HP encourages the use of a process-oriented measurement of achievement. The intimacy of the learner-machine paradigm, excluding as it does the teacher/facilitator except if called upon, engages the student in an exclusive relationship that encourages exploration and learning through play and through the perception of control. This play is in actual fact controlled in both content and level by the teacher/facilitator, but the student remains unaware of this. This perception of control and choice is also referred to by Langer, amongst others, and is critical to an acceptance of the medium by the learner.

The teacher/author is calculating the ZPD of the learner, and needs to construct the interface accordingly. ZPD is Vygotsky's 'Zone of Proximal Development'. This zone is the difference between what the learner can achieve individually, and what the learner can achieve in collaboration with others. If this zone is successfully negotiated, what the learner achieves in this collaboration then passes into his/her individual development. The role of the teacher/author, then, is critical to the learning process.

Scrimshaw (1997) recognizes this in his classification of this type of package. 'Intelligent tutors' define the learner as explorer/receiver of knowledge, learning independently and actively with instructionalised knowledge. However he then refers back to Skinnerian methods of assessment, concentrating on outcome rather than process.

Jessel & Hurst (1997) explore the notion of exploration of computer media by learners as a process. They show how children initiate play repertoires in the exploring of hypermedia text, and how these repertoires are important per se rather than any end outcome. The children utilize imagination and creativity, form and negotiate within relationships (in group access), bring 'real-world' knowledge to their manipulation of the text and make conceptual links between items. These facets of the process are considered as valuable in themselves, and it is noted that the children are self-directed within a controlled environment.

In the same source Davis et. al. (1997) talk about the importance of learning a technical skill by doing, and how this 'cognitive engagement' through use of 'intellectual tools', as in this instance, can lead to decontextualisation (in other words, the encouragement of disembodied thought). This is an echo of earlier schools of thought, such as Dewey, and Steiner, but applied to a new technological tool as cognitive tool. This is also the basis for situated learning, dealt with at (8).

6.Collaborative learning

Davis (1997) is very positive about the value of collaborative approaches in encouraging the use of technology in teacher training. She also sees the form of teaching turning to facilitation rather than more traditional approaches, together with increased responsibility on the part of the learner.

I see many possibilities in nurturing a culture of collaboration in the dissemination of material at this entry level of teaching, as a possible way of combating the lack of materials available to teachers of Irish or through Irish at second level. In this respect, the work of Pierre Machu (2001) mirrors many of my own aims. In his own research, he found that student teachers passed on new computer skills to others in their peer group who lacked them. If the value of collaboration is realized at entry-level, it is hopefully carried on into professional life.

7. Reflective teaching

The act of putting together HP exercises invites reflection. It forces the student teacher to configure the ZPD between the end-user and the required language objectives.

It requires the author to think prospectively rather than retrospectively.

What subject shall the facilitator/instructor/teacher/author use? What topic? Which level? What do I want to elicit from the student? How do I say in an encouraging manner and at an appropriate level that they are wrong? Are my phrases on the interface set appropriately from a linguistic point of view? Each decision must reflect the needs of the student and the intent of the author.

All these questions go through the user of HP as an author. These are the questions that the student language teacher needs to ask. The bonus is that they forget to even notice that they are using target-language-based techniques and hopefully will absorb these through an intellectual 'osmosis'. In other words, they will decontextualise the lessons into their own intellectual repertoire.

This uses constructivism as a supporting theory. Constructivism infers that the design of instruction must attend to both motivation to learn and the ability to construct a learning environment. We actively construct our learning environment within the social context that we are familiar with, using cognitive and social interaction to form the learning experience. Machu mentions this aspect of learning in his work. Although he does not explicitly state Vygotsky, scaffolding or ZPD, he describes activities carried out by student teachers that embody these concepts. The peer helping in a group situation, the change from passive to active to independent learner, the fact that using CALL needs the teacher to be both practitioner and theoretician simultaneously, the need to think about the pedagogical needs of the learner.

8. Situated learning

Situated learning is in the tradition of Dewey, MacDonald and Vygotsky. It is *"the study of how human knowledge develops in the course of activity...knowledge is dynamically constructed as we conceive of what is happening to us, talk and move. Especially, our conception of our activity within a social matrix shapes and constrains what we think, do and say...our action is situated in our role as a member of the community...learning occurs in all human territory..."*

It is obvious here that situated learning takes the dominance of the value of teaching input introduced via social constructivism and places it in a more equal partnership with that of the learner, making both learner and environment active. It does not make any claims about genetic makeup as a contributing factor. This concept seems to have stayed in the behavioural school, and is not addressed within constructivism.

Situated learning also stresses the importance of tools, both cognitive and actual, in constructing cognitive 'maps' as a biological basis for future learning.

This concept of the neurological mapping in learning is presently in a developing stage. Here, theoreticians make comparisons between internet learning and neurological learning, for instance. Tripp interestingly takes maps as a metaphor for not only the way we navigate the internet and online material but also the way we map learning within ourselves, suggesting a connection between them. He describes the hippocampus almost as dynamic computer memory, able to retrieve essential information such as 'cognitive maps' for learning. He reviews research done in this field, and refers to a possible method of interpreting our ways of learning:

1) allocentric navigation, i.e. a cognitive map that represents landmarks and places relative to each other → semantic memory (memory facts, concepts, names etc.; our knowledge of the world)

2) egocentric navigation i.e. distance and direction → episodic memory (memory for experienced events)

He makes the case for basing instructional design on the internet and via the internet on a biological/neurological basis. He translates the working innards of a computer to the working innards of people and specifies a form of working innards for online instruction.

It is interesting reading this school of thought. As an educational linguist, you are not sure is the discipline of anatomy influencing the form of pedagogy or vice versa. The same overlap exists with the language used to describe the nature of computer hardware and networking in this article. The overlap in metaphor and simile between computers, neurology and educational theory forms a dialogue construct that blurs the line where theory ends and poetry starts. The linguist Fairclough (1989) has noted the power of social context over language, and the necessity to create new language codes to deal with new territory. This would appear to be the case here, but as Fairclough also notes, clarity can also be lost through an overdependence on one code. A mixing of neurological, computer and pedagogical terms is a very stylish code, but the danger is in failing to see where the connections do not in actuality exist. Neurologically-based online design still has a lot to prove, but it is early days yet.

9. Conclusion

Charles Adamson (2001) summarises thinking on CALL technology into three main conclusions on present practice:

1. Teachers ignore what students need and use pre-prepared materials with little critical thought.
2. Teachers use only parts of pre-prepared materials

3. Teachers prepare their own materials to fit student need

Each practice needs progressively more time on the part of the teacher to prepare and use. The first approach does not answer any school of thought, be it behaviourist, social constructivist or situated. It is indicative of a lack of salary leading to a lack of candidates of high calibre taking up the job. A low calibre student in teacher training is generally deficient in reflective skills and is unable to envisage the ZPD of a given linguistic situation and is unable to scaffold successfully. We cannot remedy the lack of investment in education, so we must encourage the concept of reflection. The use of HP in L2 methodology training would encourage a more discriminatory appraisal of pre-prepared materials, both online and in print, through this reflective process.

The second approach is the most used, but is still time-consuming. Again, the use of HP in initial teacher training would help to develop appraisal skills. Adamson also points out the problems of the high cost of pre-prepared materials and copyright infringement.

The third approach is the most time-consuming, even if it is most beneficial to learners. Training in HP or similar may be of use to the emerging teacher in order to tailor their own course – if they have the time! Adamson makes the point that these programs may be uploaded to the WWW for access.

I would go a step further, and use initial teacher training, as mentioned here and in my courseware project, not only a training ground in the technology but also in the value of collaborative learning, of facilitating rather than teaching and of the rewards of sharing. I believe that this would benefit student teachers not only in giving them L2 methodology skills, but also in future professional relationships.

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