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# Input from Computer Assisted Language Learning and Novice Language Learners with Extreme Learning Styles.

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**Abstract:** In recent years, there has been a concentration on how input enhances students' language learning. There has also been investigations into how CD-ROMs could contribute to the language learning process. However, what is not understood to any great degree is how student interactions with commercially produced CD-ROMs result in language learning. This paper reports on a small study which looked at how students with extreme learning styles (visual/verbal/sequential/global) made use of different features of two CDs. In particular, it reports on how students made comprehensible the input that they received and how features of the CDs facilitated or restricted their learning.

## Introduction

The power of CALL in language learning and language teaching is to introduce new types of input, from both a quantitative and a qualitative perspective. The added quantity of input leads to a richer language learning environment, while the unique quality of CALL input means different possibilities for accessing and developing information. CALL makes for better quality of input as well in being more focused and more individualized than many other learning media. (Pennington, 1996, p. 1)

Computer assisted language learning (CALL) has failed to reach the potential that Pennington suggested for it. This is not because it has been unable to provide the input but because language learners have not taken advantage of it. Squires' (1999, p. 48) research found that learners using CALL packages often subverted the designers' intentions including accessing and using the input provided. Yet, little research has focussed on this area of the learner/courseware interface. Chappelle (2001, p. 69)) in her extensive review of the literature found only two studies: one which investigated the impact of highlighting relative clauses in reading passages; and the other which considered the acquisition of vocabulary. Although there were also a few studies on modified interaction such as translations and grammar assistance, Chappelle suggested that '[a]lthough the issue of interactional modifications with on-line linguistic input holds great potential for improving CALL, additional research is needed to clarify the relationship between the use of glosses and acquisition of vocabulary targeted by the learner through actual interactional modifications'. It is therefore important that research is carried out into what learners actually do with the courseware with which they interact (Chappelle, 1998, p. 28, Miller & Olsen, 1999, p. 95).

This paper reports on a pilot study into how the extreme learning styles of five participants affected their interactions with two different multi-media language learning CD ROMs. Learning style is one aspect which influences a learner's choices in regard to the input they receive and use. Reid (1987, p. iix) defines a *learning style* as 'an individual's natural, habitual and preferred way(s) of absorbing, processing and retaining new information and skills'. Although it has been mooted that multi-media packages can be used to enable students to learn the same content in ways which match their learning styles, there has been limited research into how this would occur (Soo, 1999, p. 299). Riding and Rayner (1998, p. 8) in reviewing research on cognitive style discovered that there were over thirty labels given for different styles. However when further examined, these labels fell into two distinct categories. One was to do with the perceptual styles in absorbing information (which they labelled the verbal

imagery dimension) and the other was to do with organising information once absorbed (which they labelled the wholist analytic dimension). Everyone would display characteristics which placed them onto both continuums.

## Research Method

Language learning is a complex activity with learning styles being only one variable. Studies which had tried to isolate the impact on learning style on the learning process (most research has occurred in other areas than language learning) have found it to be a fairly subtle effect (see for example Summerville, 1998). In this study, a small number of subjects' actual interactions with two different language presentations were videotaped, their interactions analysed and their experiences questioned through interviews.

## Subjects

Subjects were chosen who had no previous second language learning experiences as the issue of previous language learning was felt to be an extra complicating factor. However, it was considered essential to record participants' beliefs about language and language learning to see how they correlated with each other and also with their learning styles and actual interactions.

## ILS

During the second half of 2002, over a hundred volunteers who were monoglot English speakers, mostly New Zealand university students, completed Soloman and Felder's Index of Learning Styles (ILS)(2002). The ILS is a forty-four item questionnaire from which respondents could choose one of two answers for each item. The responses then allowed the respondent to be scaled on four continuums: Active/Reflective; Sensor/Intuitive; Visual/Verbal; and Sequential/Global. As a result of Riding and Rayner's work, participants for the next stage of the research were chosen who were extreme visual or verbal (equivalent to the verbal imagery dimension) or sequential or global learners (equivalent to the wholist analytical dimension). To be considered to have an extreme learning style, participants had to score at the ends of the continuums. Although there are a variety of these inventories available, Soloman and Felder's one was chosen primarily because it was readily available and could be used without cost.

One issue with the Index was the lack of indication about the features of the learning environment which would best suit learners with extreme learning styles. The descriptions which come with the index and learning styles orientation of the participants are indicated in Table 1. The codes for each participant have also been included.

Participant	Learning Style	Description of Learning Style (From Soloman & Felder, 2002)
LR	Visual	Remember best what they see – pictures, diagrams, flow-charts, time lines, films and demonstrations.
LJ	Verbal	Get more out of words - written and spoken explanations.
LC	Sequential	Tend to gain understanding in linear steps, with each step following logically from the previous one. Tend to follow logical stepwise paths in finding solutions
LA, LS	Global	Tend to learn in large jumps, absorbing materials almost randomly without seeing connections, then suddenly “getting it”. May be able to solve complex problems quickly or put things together in novel ways once they have the big picture, but they have difficulty explaining how they did it.

Table 1: Participants' Learning Styles and Descriptions

## **Recording language learning experiences**

Once a volunteer had been identified with an extreme learning style, they were then asked to do an hour each on a French and a Spanish CD-ROM (usually a week apart) followed by an interview which took no more than half an hour. Of the eight volunteers with extreme learning styles, five completed the further two and a half hours (2 global, 1 analytical, 1 visual and 1 verbal). Originally it had been anticipated that two participants for each learning style would be used. However, the combination of participants with no previous second language learning experience, who were willing to participate and who had an extreme learning style and the time to give to the research meant that this was not possible. Each participant was videotaped interacting with the CD-ROMs. Within each hour, the participant was required to spend half the time going through the story, ten minutes completing exercises on the CDs and for the final twenty minutes they could do whatever they wished. Apart from telling participants about the format for the hour, the researchers gave no information about the CDs or about what they expected to happen. All participants were supplied with paper and pens to take notes if they wanted. The global learner was the first participant and for her first hour was supplied with a worksheet to complete. It was decided not to continue with this requirement as the activities on the CD-ROMs were considered more appropriate.

## **The CD-ROMs**

The French CD-ROM was based around a popular cartoon story. As each frame of the story was chosen, the characters spoke their parts in French. Participants had options of having the dialogue repeated, calling up a written translation and/or having some grammatical parts of the dialogue described (there was no choice over what these would be). There were two types of exercises. The first one required participants to listen to a French sentence and then determine to which one of three cartoon pictures the sentence belonged. The CD-ROM gave a cross or a tick to indicate the student's accuracy. The other exercise involved a question about a cartoon picture where there were four multiple choice answers. Although the questions and possible answers were given orally, they could also be provided in a written form which most participants made use of. Participants had two chances of gaining the correct answer before the programme moved onto the next question. Marks were provided for a correct answer with more given if the correct response was chosen first time.

The Spanish CD provided the script of a dialogue between a man and his extended family and friends whom he was visiting in Spain. Participants had opportunities to see the dialogue enacted in a video either as a whole or on a line-by-line basis. They were also able to have whole lines translated or just single words and they could have the grammar of sentences or individual words explained. These were all already available on the screen. There were a range of different exercises from crosswords, rearranging video clips and unscrambling muddled sentences. Usually immediate feedback was given while completing the exercise. For example, in a cloze passage where words could be dragged from a list, when a word was placed in the appropriate place the colour of the word would change. Usually questions answered incorrectly would be repeated so that the exercise could only be completed by getting all the questions correct. A congratulations sign then appeared on the screen. However, participants could exit the exercise at any time. For exercises requiring the participant to write a word in Spanish, a keyboard containing all the Spanish letters and punctuation signs appeared at the bottom of the screen.

## **Interviews**

Once a participant had completed the two hours on the CD ROMs, the videotapes were watched by both researchers and interesting features noted. The two researchers compared notes and interview questions formulated from them. As the research was focussed on how participants made use of the input provided in the language learning courseware, the questions were centred around participants' beliefs about language, language learning and how they made use of the input provided. A further question was generally asked about the recommendations that they would make to a designer of language learning courseware.

## **Input in SLA**

Gass (1997, p. 3-7) provided a model of how second languages are acquired by suggesting five stages that convert input to output. This model is provided in Figure 1. We used the stages in the model, up to and including the Intake

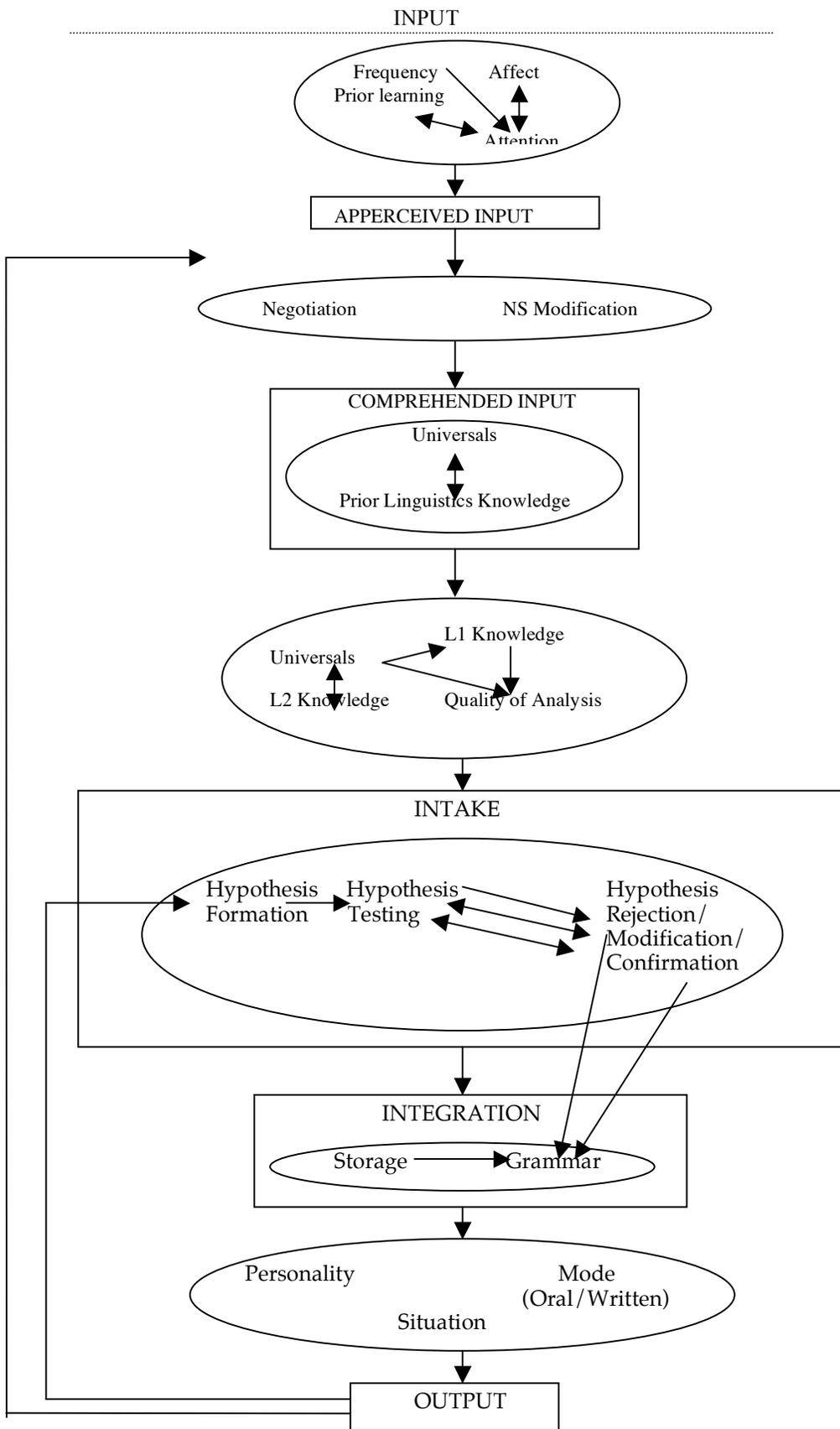


Figure 1: A model of SLA (from Gass, 1997, p.3)

stage, when considering what to ask in the interviews. After one hour with a language CD, we did not anticipate that the students would reach the stage of producing independent output.

## Results and discussion

This section reports on the findings from the research by first considering participants' views on what input was valuable to them. This is followed by a description of what learners said in regard to apperceived input, comprehended input and intake. The participants' codes are provided in Table 1.

### Input

Gass (1997, p. 4) acknowledged that not everything that is available to learners is utilised. This is represented by the dotted line at the start of the diagram. It was therefore important to discover what input these learners valued. Given that all described the purpose of learning a language as communicating with speakers of that language, it was somewhat surprising to find that some learners felt that listening and speaking were irrelevant. The verbal learner, for example, stated that 'to learn a language, I need to recognise the written word, verbal or the oral accompaniment is very much irrelevant'. This certainly matched his interactions with the CD ROMs where he only played the Spanish video line-by-line and did not make use of the repetition of the audio in the French cartoon or exercises. One of the global learners (LS) and the sequential learner (LC) similarly rejected the listening and speaking aspects of language learning. LC's reasons for rejecting these were linked to her belief that these aspects of a language could not be learnt from a computer but must instead be learnt from a human being. However, when doing the French exercises both LS and LC did use the aural support to help them determine the appropriate answers. LC described how she made use of the aural with the written input to determine the correct answers in the Spanish CD, 'because of what he was saying, like you can hear what he was saying and you could see that it sounds like'.

The other global learner (LA) was the only one to turn the sound off whilst using both CDs but after reading the dialogues, she turned it back on and often repeated it. She explained that the audio added to her information about the language but she needed to control when during her learning she received this information. This is similar to LR's, the visual learner, response to the aural input which he felt added to his understanding of the language, '(listening) is (important) but ..., for me it's not the primary part of it, like I'm a person who just likes to hear how the words are pronounced and see how they can fit into other places and so it goes into your subconscious a bit more, I think, yeah I'm more for the visual'.

It was unexpected to find that the verbal learner was relying on visual input although written rather than graphics and the visual learner was making use of the aural input. However, by investigating these further connections can be made to their learning styles. It would seem that the visual learner preferred visual information but felt that the aural information extended his knowledge. The verbal learner on the other hand found that the aural information given to him at this early stage of his learning was too difficult to process. In discussing the Spanish video, he stated 'it was useless to me, at the speed it was going through, I couldn't take in any information at all'. This is a common occurrence for beginner learners (Gass, 1997, p. 17) and so it was interesting to find that it was only the verbal learner who gave this as the reason for a preference for written input.

### Apperceived Input and Comprehended Input

Gass (1997, p. 4) described apperception as the 'process of understanding by which newly observed qualities of an object are initially related to past experiences'. Once this is noticed then the learners can work on it to make it comprehensible. This may involve interaction which modifies the input in some ways. In the CD-ROMs, modification was available through the grammar and translation possibilities.

Even in the written input there were differences in what the participants paid attention to. Of the two global learners, LA was mostly interested in similarities between words, primarily between the language being studied and English (L1) but also between French and Spanish, 'because that's what fascinates me is how they worked together. That's what in the end kept me interested was how certain words were similar... [to the] English language, similar to French, ... Yeah, [it was] not the actual language that was interesting. It was the pattern that was forming'. She used these similarities and patterns in solving the quizzes (generally quite successfully). She made limited use of the translations and grammar explanations available and in fact complained that the amount of information which was

displayed with the Spanish dialogues was confusing and the French screen was better because it was “less cluttered”.

Although the other global learner also mentioned using the similarities between English and French (he did not recognise any with Spanish), he focussed more on identifying patterns in the input he was receiving. ‘So I was looking for small vocabulary words, and even group words, and what I assumed were patterns ... and try to pick up a few from repetition, and from there tried to work out sentence construction’. LC, the sequential learner, was also looking for specific information, ‘you have to learn the basic structure of the language, like, the verbs, the nouns and stuff like that and then just pick up the rules for words’. In contrast to the global learners, she wanted the grammar to be given to her and felt that the French grammar information was insufficient because it did not describe everything which was given in the dialogue.

The verbal learner (LJ) was more interested in learning sets of verbs and nouns. He made copious notes while doing the CD ROMs (the two global learners kept none). However, he complained that the Spanish exercises were too focussed on little words such as the equivalent of ‘the’ which he had not bothered with and the French exercises were useless because they relied on aural language. He felt that at this point in his learning that the grammar help provided by both CDs was not relevant. Yet he did value the translation options. ‘I have to look at the words and then connect them with English words, and develop a picture of the French word or Spanish word’. For him, Spanish and French were not comprehensible unless they could be linked to their English equivalent.

The visual learner (LR) was much more interested in getting information about the structure of the language. The grammar descriptions were therefore of some help in working this out, ‘again just for a fuller picture and to just try and figure out where each part goes and what every bit means’. The translations also helped in trying to work out the structure of the languages by suggesting what sorts of words went in particular places. He also valued what he learnt during the exercises, stating that ‘you learn from your mistakes a lot quicker than you would from anything else’.

It would seem then that not only did the learners pay attention to different input, they made use of different aspects of the multi-media packages in order to make the input comprehensible. Once again direct links between the learning style of each learner and what they did is not obvious. Both global learners talked about looking for patterns (although not the same patterns) which could be said to show a focus on the whole rather than the parts. The sequential and visual learners also concentrated on structure of the languages but the sequential learner wanted information to be given about it whilst the visual learner was interested in working this out himself. This was similar to what the global learners were doing. The verbal learner was more focussed on types of words and wanted to learn these before being concerned with the structure of the languages. The focuses of these learners meant that they then valued different aspects of the CD-ROMs and their interactions with them.

## **Intake**

Gass (1997, p. 23) suggested that comprehended input will become intake if it is further processed. This will depend upon the level of analysis done by the learner. Analysis at the level of morphology, lexicon or syntax is more useful for intake than at the level of meaning.

The verbal learner found that the repetition of the questions in the Spanish exercises helped him to test hypotheses about the language. ‘If you make a mistake, ... you got asked the same questions again. I adjusted my notes, because “the” came in two different ways ... in the Spanish. I thought I had it in my notes, but it [computer] said I’m wrong, so now I know there are two ways of doing it. ... So, these were the subtleties I hadn’t learnt the different ways to use ‘the’ but I needed to know there’s two different ways of using it in Spanish’.

LA did not seem to make the same kind of hypotheses. In discussing how she completed the Spanish quizzes, she stated ‘I picked up words I recognise and thought okay, so that’s where they’re going to go and then, if the words sort of matched or looked similar to the English language, I placed them in. I got better as I saw them going together. Plus I also remember them from the actual thing. I sort of knew the sentences already’. From this it could be suggested that she was obviously making hypotheses about the language, but was having difficulty explaining what these were except by relating it to her knowledge of English. LS also talked about using his knowledge of English to determine what the meaning of some words were. ‘The French word for chicken is very similar to our English word poultry. I’m not sure what the word is but the point is, if you think about some words, you can actually see, almost directly translate them from the English’. He also answered the exercises by looking for individual words he would recognise and then looking for patterns. He did not necessarily know the meaning of the question or the answer. This would appear to match features of the learning style which indicates that global learners would absorb large amounts of material in an ad hoc manner but would not be able to explain how they solved

problems with this information. As both learners were successful in completing the French and Spanish exercises, they may have been analysing the information not just at the meaning level but their explanations were not clear enough to understand exactly what they were doing.

LC, the sequential learner, used her linguistic knowledge of the relationship between sounds and letters to test her hypothesis that words said by the computer programme matched particular words written on the screen. However, she was only able to do this for the Spanish one, finding the French one too aurally demanding. She also found completing the worksheet whilst going through the dialogues helped her to focus on particular language and simplified what she was expected to do.

The visual learner found the French exercise which required him to match a sentence to the correct cartoon also too aurally demanding but used a similar strategy to LC to solve the other French exercises. 'He asks you a question in French and one of the good things about hearing is reading the question [to] look back on it. It was a bit of a guess but an educated guess'. As he was also extremely successful at this activity, it would seem that he may also have been doing a deeper analysis than one simply at the meaning level.

It would seem that the hypotheses that these participants were forming were different and therefore how they absorbed information so that it could be recalled would also be different. At this beginning stage in their L2 learning, knowledge of L1 appeared to be an important crux that all participants relied on to some degree. For both global learners, seeing similarities with English words helped them recall the meanings of French or Spanish words. The sequential learner used her knowledge of sound letter relationship in English to predict how Spanish words would be spelt. The verbal learner also made predications based on English (that there was only one form for the definite article) only to then have to modify his predictions. As a result what they would have available to them to use in an L2 situation will be different.

## Conclusion

This research had only a few participants and so further research is essential. However, the differences that were recorded of what the participants did at each stage of acquiring an L2 suggests that a student's learning style does have some effect on how languages are learnt. It could well be that learners will lose interest in a CD-ROM which only provides features which they do not value. This has implications for CD ROM designers who cannot assume that L2 learners will all learn in similar ways and therefore need to provide flexibility in the way the way language learning experiences are provided. One of the most interesting features for us which needs more investigation is that of how beliefs about second language learning affect how learners made use of the input provided in CALL programmes. More research needs to be undertaken to determine how learning styles interact with these beliefs, whether for example there is a cause-and-effect relationship in either direction or if the relationship is too closely interconnected for such a distinction to be made.

As a result of this pilot study, it is intended that a further study be undertaken which investigates how ESL learners with a wider range of learning styles and language learning experiences interact with a CD-ROM designed to promote English language learning. The learners in the pilot study were all beginners and their needs of a language learning CD-ROM would be very different to those of more experienced learners. It could well be that experienced learners will persevere with activities as they recognise them as being helpful in their language learning, even if they are not enjoyable. This of course will be related to their beliefs about language learning and so this will continue to be an area of interest in this larger study.

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