An SLA perspective of the LanguageQuest Design Criteria

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Abstract
This paper[2] describes the theoretical framework for the design rubric developed in the 'TalenQuest' project. This Dutch project aims to customize the WebQuest concept for foreign language learning and teaching (Talen = languages). The relevant concepts and principles from second language acquisition theory and cognitive psychology on which the LanguageQuest Assessment Tool is based are described.

1. Introduction

Why "LanguageQuest"? Why can't these high-handed Dutch L2 people be content with the well known, extensively described WebQuest concept (Dodge,1995)? In Dutch education many innovative initiatives share the aim to enhance the impact of learning activities by making them more realistic a.o. by embedding them in a rich, lifelike context in which they are functional. Since many researchers and developers in the Netherlands work from a more or less constructivist view of learning, task-based approaches in the design of new learning arrangements are preferred. Against that background the WebQuest concept seems to provide a fruitful possibility for designers who want to exploit the surplus-value of ICT for Second Language Acquisition (SLA). The concept, however, is developed and being used for all subjects incorporated in the current school curricula. As a consequence it is rather generic and, more important, not very specific in its indications about those characteristics of tasks and task descriptions that account for their learning impact. To acquire insight in architectural principles it might make not much difference whether the task is to draw or to describe a building, for SLA it does. So we tried to find out whether additional characteristics for tasks could be defined to optimise the WebQuest concept for SLA specifically. For the underpinning of these characteristics we found clues in certain insights from SLA-theory and from cognitive psychology (schema theory, constructivism, connectionism), on the basis of which we formulated a 'multi feature hypothesis', that enabled us to establish a set of rather simple additional criteria for WebQuests targeted especially at fostering SLA.

Clues from cognitive psychology

Knowledge and skills are no diseases. Some diseases are transmittable. Knowledge and skills are not. Knowledge has to be constructed and skills have to be acquired by the learners themselves. Both with the help of what they already know and can do, and in line with their preferences regarding task-approach, learning style, etc. That implies that the outcome is inevitably different per individual learner. Different learners learn different things from the same activity. The same learner learns different things from the same task under different circumstances. The same outcome can be the result of different learning activities. To put it in a metaphor: eliciting a learning process is like playing a pinball machine. Teachers, designers of materials and curriculum developers have only limited influence on the process. They cannot get their hands in the machine in order to push the ball against certain contacts. They

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can only try to make high scores probable by building smart machines that are designed in such a way that the chance of learning-hits is as great as possible. And they can design tasks so cleverly that the ball is being kept in the game as long as possible. The longer the ball is in the machine, the higher the score, but we know very little about which contacts account for that score. In this metaphor: designing effective LanguageQuests can be compared to building smart pinball machines for second language acquisition (SLA) with tasks that keep the ball going.

2. Components of a smart pinball machine

In order to find a key to the art of pinball machine construction it seems promising to take a closer look at what is known about activities that apparently facilitate SLA. Although there has been a lot of debate over the past decades, some agreement is emerging in the literature about a number of basic principles. We will summarise the main points very briefly. For an overview see for example (Brown, 2000; Lightbown & Spada, 1999; Mitchell & Myles, 1998; Richards & Rodgers, 2001)

2.1. Exposure to input

Without extended exposure to a rich input, there is little SLA. Although very few of Krashen's ideas could be confirmed empirically and although there have been long and fierce debates regarding this issue, there seems to be a broad consensus in the recent scientific literature that extendedly being exposed to a rich foreign-language input is a crucial prerequisite for foreign-language acquisition (Krashen, 1985).

2.2 Content-oriented processing

There also seems to be little doubt that being exposed to input is only effective if the input is processed (or in more practical terms, if the learner has tried to understand its meaning). We do not know, however, what learners exactly learn from this content-oriented processing. There are indications that knowledge acquired by processing the same input differs from one learner to the other. We do not seem to have much influence on that. So it is an illusion that a closed curriculum can direct this process in such a way that it leads to predictable outcomes. This does not seem to be a disadvantage. Learners do not seem to need the same knowledge for the same performance.

2.3 Form-oriented processing

There is far less agreement about the role of grammar or so-called "formal instruction". Yet a growing support for the *weak interface hypothesis* (Ellis, 1990) seems to be emerging. This hypothesis tries to explain the paradox that extended content-oriented input processing, combined with formal instruction, leads to better results than input processing alone, but that the grammar rules that were taught are seldom used in producing output. The weak interface hypothesis claims that part of the learner output is rule-directed, but that we do not know the rules. Learners form hypotheses about form aspects of the language by processing input. This process of hypothesis forming is supposed to be stimulated by directing the learners' attention to form aspects of the input (by Schmidt, 1990 labelled as 'noticing'). Such instruction is characterised as "Focus on Form", to be distinguished from explicit grammar instruction that is labelled Focus on FormS (Doughty & Williams, 1998; Long, 1991). We know very little about these learner hypotheses, not even whether they are the same for all learners or whether they occur in all stages of acquisition. For the time being we will probably have to be content with the assumption that our learners apparently form them, as long as we stimulate them to do so, in one way or another.

2.4 (Pushed) output

Recently there has been support for the facilitating and stimulating role of output production. Several arguments are given in its favour. It is assumed to enhance fluency, it makes language learners conscious of their deficits and through that increases their motivation to learn. According to this output hypothesis (Swain, 1995; Swain & Lapkin, 1995), *pushed output* contributes to form-orientation and gives the teacher or the communication partner the opportunity to give corrective feedback (for an overview of its effect see: Spada, 1997). In some cases this is even assumed to be the only possibility of providing the learner with "negative evidence" about the formal correctness of certain utterances (like when to use the French pronouns *vous* or *tu* for an anglophone learner). Experiments seem to confirm this claim (Nobuyoshi & Ellis, 1993; Swain & Lapkin, 1995).

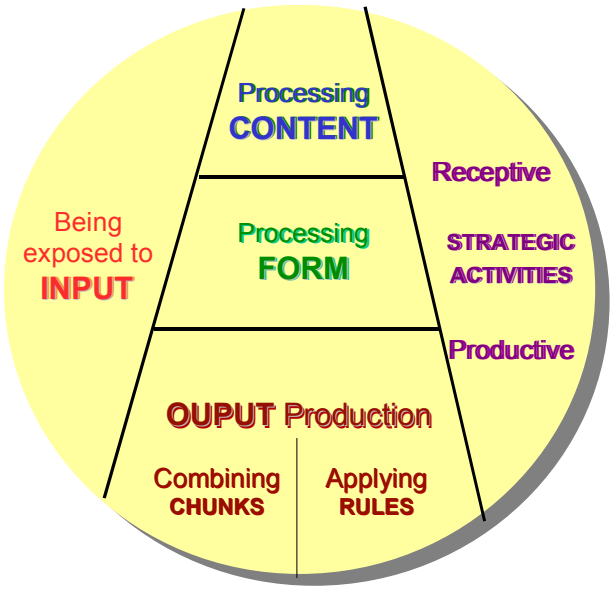
Two varieties of output can be distinguished. One part of our language utterances consists of unanalysed combinations (chunks) that are perceived as a whole (Lyons, 1968). Their use is labelled 'formulaic speech' (Myles, Hooper, & Mitchel, 1998). Pushed output increases the learner's ability to use these chunks in different situations and combinations. The other variety is somewhat misleadingly labelled "creative speech" (Ellis, 1986 p.167-170). The term is used for rule-guided production.

2.5 Acting strategically

Generally speaking, there is only limited time available for foreign-language acquisition. That means that there will always remain gaps in our knowledge. For that reason it is useful and practical to develop a repertoire of strategies to compensate for deficiencies. We can compensate for deficiencies in receptive knowledge by applying reading and listening strategies, such as inferring unknown elements, using prior knowledge, etc. (Westhoff, 1991a, 1991b, 1997). To make up for deficiencies in productive competence we can use communication skills such as negotiating meaning, avoiding, description, fillers, and the like (Bialystok, 1990; Littlemore, 2001; Poulisse, 1990).

The penta-pie

These five components can be summarized as the following '*penta pie'* of ingredients for effective and fruitful SLA-activities.



They are the components of a smart pinball machine. For a high score, activities in all five categories should be elicited in a substantial quantity. The degree to which the performance of a WebQuest can be expected to contribute to SLA is related to the extent to which this criterion is met.

3. Characteristics of tasks to keep the ball going

3.1 Features and connectionism

A smart pinball machine is one thing. A lousy player can make a big difference. The presence of all the ingredients won't help much if the ball is not kept in the machine as long as possible. The learning activity is elicited by the task. It is the challenge of the player to design smart tasks. What task characteristics account for the duration of the process? Some insights from cognitive psychology might be helpful in this respect.

First, among cognitive psychologists, there is little discussion that the product of a cognitive learning process (like a concept or a rule) should not be perceived as a template, but as a more or less open mental structure of neural units (Greeno & Simon, 1993). Some call it a 'structure of features' (Klausmeier & Allen, 1978), others a 'schema' (Rumelhart, 1980; Rumelhart & Ortony, 1977), Bereiter speaks about 'associative networks' (Bereiter, 1991). Anderson (1995, p.22) resumes: "We can be sure that human cognition is achieved through large patterns of neural activity." Such patterns or networks are not necessarily distinct entities. According to Gasser (1990) e.g. the network structure of a concept is distributed over many units, each of which can also participate in the representation of many other concepts. The term '*features*' is often used for these units. Features can be linguistic as well as non-linguistic. The concept '*flower'* for example consists of features from many different categories like:

- Semantic (is coloured, smells good, is vegetation)
- Morphological (gets –s- for plural)
- Syntactic (can serve as object or subject)
- Combinational (is more often combined with the words *to pick* or *red* than with, for example, *to kill* or *fluid*)
- Pragmatic (can serve to gain sympathy)
- Environmental (is often in a vase, in a garden)
- Associative (is connected to feelings like *cheerful* or *festive*, to 'that particular flower you got from your first lover')
- etc.

The identity of a concept consists of a distinctive combination of features. According to this so called connectionist theory the essence of a concept is not in the units but in the combination in which they are activated. The units are more or less neutral. Similar to an electronic information board, one and the same particular light bulb can, depending on the combination with other bulbs in which it is activated, be part of different letters. Unlike an electronic information board, features in a neural network activate each other. Activation of a network can start from any connected feature, dependent on the type of stimulus that is received. The stronger the connection, the sooner and faster the activation.

3.2 The multi feature hypothesis

About the question how such patterns are learned, we find parallel views among cognitive psychologists. Anderson (1995, Gasser (1990), Morton (1979) and Morton (1970) for example, suggest that they emerge by having been (repeatedly) processed in combination with each other. According to this connectionist theory, our brain keeps track of the regularities in

the occurrence of combinations and of the frequency of these combinations. The frequency determines the 'weight' of the established connections between the features. This 'weight' accounts for the ease of activation. In computer simulations computers appeared indeed to be able to learn linguistic phenomena like the morphology of the past tense on the basis of these principles (MacWhiney, Leinbach, Taraban, & MacDonalds, 1989; Rumelhart & McClelland, 1986). So it is not only important to process features in great frequency, it seems to be advantageous if the learning activity contains those combination patterns which are most frequent in later application situations. In such application situations the first stimulus coming in and activating the others, can be of many types (visual, auditive, via a pragmatic intention, a morphological or syntactical necessity, etc.). Against that background, patterns can be activated the more easily, if they consist of features of all sort of categories. From these conclusions it seems to be logical to hypothesise that retention and ease of activation is improved by mental activities involving:

- many features
- from many different categories
- in current combinations
- in great frequency
- simultaneously

3.3 Lifelike, Current, Informative, Functional, Rich

From this hypothesis five more criteria for effective learning activities can be derived.
To begin with, it is rather cumbersome to try to provide learners with language utterances that are constructed synthetically according to the requirements of the hypothesis. If we ask our learners to perform realistic tasks, the probability that they will have to process many different features in current frequent combinations simultaneously will be substantial. That probability will be further enhanced if we try to make those activities functional in the sense that they serve a purpose or lead to something. That will make the combination of semantic and pragmatic features more probable. If the activities are informative in the sense that they provide the learners with information they would like to know, the probability will be enhanced that features will form logical and functional connections with features in existing knowledge. And finally, the richer in variety the features that are manipulated mentally, the more entrances to the emerging neural network will be created, which will make activation under different circumstances easier.

4. A rubric for the assessment of Language Quests

The penta-pie and the multi feature hypothesis result in two sets of criteria for effective SLA-activities. It is clear that the current WebQuest concept is not designed to meet these requirements. Yet it is important that they are taken into account. The contribution to SLA is dependent on seemingly petty details. In a WebQuest in order to plan a visit to DisneyLand http://www.disneylandparis.com/ e.g., the sub-task: "In which restaurant can you order a hamburger?" elicits a much poorer learning activity than "Decide what you would like to eat in which restaurant?" In the second formulation, the menus will have to be studied more intensively and in more detail. Consequently many more features of the input that is being provided by the menus will be processed in various ways. The variety and deepness of this processing can be further increased by adding a budget condition: "Choose a menu for three persons, You have got € 25.- You can keep what you don't spend." The current guidelines and directives for designing and assessing WebQuests do not give clues in this respect.

For this reason additional criteria for WebQuests especially aiming at SLA were developed. The design and try out experiences enhanced insights and enabled improvements that eventually led to the current version (April 2006) of the LanguageQuest Assessment Tool.

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