

Gerard Westhoff  
Utrecht

# The Art of Playing a Pinball Machine

## Characteristics of effective SLA-tasks

*In diesem Beitrag werden die Merkmale von effektiven Aufgaben zur Förderung des Zweitspracherwerbs diskutiert. Der Autor vergleicht die Aufgabenstellung mit einem Flipperkasten. Es sei die Aufgabe der Lehrperson, einen Flipperkasten zu entwerfen, mit dem die Lernenden die grösste Chance auf eine hohe Punktzahl bekommen.*

*Die Komponenten eines cleveren Flipperkastens sind ein grosses sprachliches Angebot (Input), die Möglichkeit die Sprache inhaltsorientiert und formorientiert zu verarbeiten, sie aktiv zu verwenden (Output) und strategisch zu handeln. Das aufgabenorientierte Fremdsprachenlernen ist ein Ansatz, der diesen Kriterien am meisten gerecht wird. Die Aufgaben sollten realistisch, aktuell, informativ, funktionell und sehr variiert sein. Erfolg versprechende Ansätze sind die verschiedenen Formen bilingualen Unterrichts und WebQuests. Kriterien für diese WebQuests werden zur Zeit entwickelt. (Red.)*

### Introduction

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, according to 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 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. This paper is about the principles of building smart pinball machines for second language acquisition (SLA) and about characteristics of tasks that keep the ball going.

### 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. I will summarise the main points very briefly. For an overview see for example Brown (2000), Lightbown & Spada (1999), Mitchell & Myles (1998) and Richards & Rodgers (2001)

#### 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. 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. In order to be able to understand an average text for example, a reader needs a vocabulary of circa 7500 words. There is some evidence that, besides the knowledge of the 2500 most frequent words, knowledge of *any* additional 5000 words, will yield such a dense vocabulary coverage of general L2 texts, that they can be understood without a problem (Groot, 1994).

### 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 taught grammar rules 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. 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). As in the case of vocabulary, 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.

### 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). Misleading because it has little to do with poems or creative writing. The term is used for rule-guided production. Although there is not much reason to assume that a large part of our spontaneous speech production is consciously rule-guided, let alone that we would know these rules, practising with this variety is

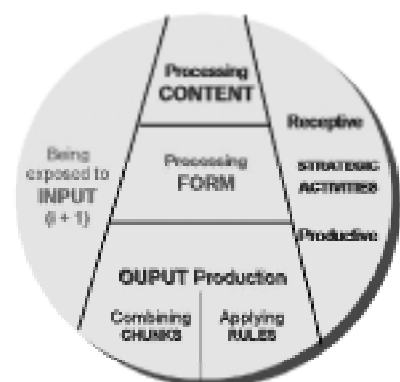
one of the main activities of most current curricula.

### 5. Acting strategically

Generally speaking, for foreign-language acquisition there is only limited time available. 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



### Characteristics of tasks to keep the ball going

#### The task-based approach

There is also rather broad agreement that SLA to a large extent takes place

by performing language activities (Wagner-Gough, 1975). In this view SLA is being seen as a function of the way input and output are processed (Long & Crookes, 1987). In this context the presence of *feedback*, *modified output* and *attention to form* are supposed to be important. And that is why interaction ('negotiation of meaning') is thought to be crucial. These ideas have resulted in a so called '*task-based approach*' (TBA) (Bygate, Skehan, & Swain, 2001). Although it has turned out to be impossible to operationalise the famous *i + 1* level, few seriously doubt that being exposed to input is more effective if its level of difficulty is not too far above the learner's actual foreign-language knowledge.

### Features and connectionism

Although there is some theoretical underpinning a.o. in Long's interaction hypothesis, there is no explanation for the assumed role of these criteria in terms of a more generic learning theory. 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

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 whom 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 acti-

vated, 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.

### The multi feature hypothesis

About the question how knowledge of such patterns is formed 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 who 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

#### **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.

#### **Promising developments: CLIL, LanguageQuests**

The criteria derived from the multi feature hypothesis provide additional arguments for a foreign language classroom in which language acquisition is learned through tasks that are lifelike, functional and informative. This can be done artificially by simulating lifelike situations. However, it seems much more economic to choose tasks for this purpose, which have to be performed anyway. That means that varieties of CLIL, bilingual education, immersion or whatever they may be labelled ([www.euroclil.net](http://www.euroclil.net)), provide us with a very powerful tool

to organize foreign language learning in an effective, attractive and efficient way. It is thus not astonishing that this type of foreign language education is booming in many European countries.

Secondly, the constraints of the printing press are not very favourable to design tasks according to these criteria. ICT offers many new possibilities in this respect. One promising development in this respect is the LanguageQuest. The concept is derived from Bernie Dodge's WebQuest (Dodge, 1995). Dodge defines the concept as follows: 'A *WebQuest* is an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the internet...' The Dutch project 'TalenQuest' ([www.talenquest.nl](http://www.talenquest.nl)) is targeted at adapting this idea to the specific requirements of SLA in the framework of the theoretical insights, outlined above. Specific additions to the original WebQuest concept are:

- Improved task design and methodology for realistic, content oriented, task based foreign language learning
- A set of support instruments:
  - Quality criteria based on a SLA Model
  - a typology of tasks
  - clarification of task features that trigger useful and effective language learning activities
  - a template, customized for the production of TalenQuests.
  - a rubric for the assessment of the pedagogical qualities of TalenQuests
- A database of local and distributed TalenQuests
- A set (30) of quality assured, model TalenQuests for French, German and English for 3 different target groups.

The project is still in a developmental stage. There are no empirical data about the effects until now, but the first experiences are positive. At any

rate the concept gives us the possibility to implement the theory outlined above in a not only very practical, but also attractive way for learners, enabling them to work independently, co-operatively, and autonomously in a realistic learning context. The concept of WebQuests, specifically seems to be promising. There is growing international interest in its implementation. Also in Switzerland. For an impression, see <http://www.babylonia.ch/> under "Webquests"

#### Footnote

This article is a slightly revised version of a plenary speech, presented to Public Consultation Conference – Language Learning and Linguistic Diversity, organised by The European Commission in Brussels, 10 April 2003.

#### References

- ANDERSON, J. R. (1995): *Cognitive Psychology and its Implications* (4 ed.), New York, NJ, Freeman.
- BEREITER, C. (1991), *Implications of connectionism for thinking about rules*. *Educational Researcher*, 20, p. 10-16.
- BIALYSTOK, E. (1990): *Communication Strategies*. Oxford, Blackwell.
- BROWN, H. D. (2000): *Principles of Language Learning and Teaching* (4 ed.), White Plains, NY, Pearson.
- BYGATE, M. / SHEHAN, P. / SWAIN, M. (Eds.) (2001): *Researching Pedagogic Tasks. Second Language Learning, Teaching and Testing*. Harlow, Essex, Pearson.
- DODGE, B. (1995): *Some Thoughts About WebQuests*. Available: <http://WebQuest.sdsu.edu/materials.htm> [2005, 27-05].
- DOUGHTY, C. / WILLIAMS, J. (Eds.) (1998): *Focus on Form in classroom second language acquisition*. New York, Cambridge University Press.
- ELLIS, R. (1986): *Understanding Second Language Acquisition*. Oxford, Oxford University Press.
- ELLIS, R. (1990): *Instructed Second Language Acquisition*. Oxford, Blackwell.
- GASSER, M. (1990): *Connectionisme and Universals of Second Language Acquisition*. *Studies in Second Language Acquisition*, 12(2), p. 179-199.
- GREENO, J. G. / SIMON, H. A. (1993): "Situativity and Symbols: Response to Vera and Simon. *Cognitive Science*, 17, p. 4.
- GROOT, P. (1994a): *Lexical coverage, text comprehension and vocabulary selection*. *Toegepaste Taalwetenschap in Artikelen*(50), p. 167-168.
- KLAUSMEIER, H. J. / ALLEN, P. S. (1978): *Cognitive development of children and youth: a longitudinal study*. New York, Academic Press.
- KRASHEN, S. (1985): *The Input Hypothesis: Issues and Implications*. London, Longman.
- LIGHTBOWN, P. M. / SPADA, N. (1999): *How languages are learned* (Revised ed.) Oxford, Oxford University Press.
- LITTLEMORE, J. (2001): *An empirical study of the relationship between cognitive style and the use of communication strategy*. *Applied Linguistics*, 22(2), p. 241-265.
- LONG, M. (1991): *Focus on form: a design feature in language teaching methodology*, in: K. D. BOT / R. GINSBERG / C. KRAMSCH (Eds.): *Foreign language research in cross-cultural perspective*, p. 40-52.
- LONG, M. / CROOKES, G. (1987): *Intervention points in second language classroom processes*, in: B. DAS (Ed.): *Communication and learning in the classroom community*. Singapore, SEAMEO.
- LYONS, J. (1968): *Introduction to Theoretical Linguistics*. Cambridge, Cambridge University Press.
- MACWHINEY, B. / LEINBACH, J. / TARABAN, R. / MACDONALDS, J. (1989): *Language learning: Cues or rules*. *Journal of Memory and Language*, 28, p. 255-277.
- MITCHELL, R. / MYLES, F. (1998): *Second Language Learning Theories*. London/New York, Arnold.
- MORTON, J. (1979): *Word recognition*, in: J. MORTON / J. MARSHALL (Eds.): *Psycholinguistics: Series 2. Structures and processes*. London, Elek.
- MORTON, J. A. (1970): *A functional model for memory*, in: D. A. NORMAN (Ed.): *Models of human memory*. New York, Academic Press.
- MYLES, F. / HOOPER, J. / MITCHELL, R. (1998): *Rote or rule? Exploring the role of formulaic language in classroom foreign language learning*. *Language Learning*, 48, p. 323-362.
- NOBUYOSHI, J. / ELLIS, R. (1993): *Focussed communication tasks and second language acquisition*. *ELT journal*, 47, p. 203-210.
- POULISSE, N. (1990): *The use of compensatory strategies by Dutch learners of English*. Dordrecht, Foris.
- RICHARDS, J. C. / RODGERS, T. S. (2001): *Approaches and Methods in Language Teaching*. (2 ed.), Cambridge, Cambridge University Press.
- RUMELHART, D. E. (1980): *Schemata: The Building Blocks of Cognition*, in: R. J. SPIRO / B. C. BRUCE / W. S. BREWER (Eds.): *Theoretical issues in reading comprehension: perspectives from cognitive psychology, linguistics, artificial intelligence, and education*, Hillsdale, NJ, Erlbaum, p. 33-58.
- RUMELHART, D. E. / MCCLELLAND, J. L. (1986): *On learning the past tenses of English verbs*, in: D. E. RUMELHART / J. L. MCCLELLAND / t. P. R. Group (Eds.): *Parallel distributed processing* (Vol. 2. Psychological and biological models, p. 216-271). Cambridge, MA, MIT Press.
- RUMELHART, D. E. / ORTONY, A. (1977): *The representation of knowledge in memory*. in: R. C. ANDERSON / R. J. SPIRO / W. E. MONTAGUE (Eds.): *Schooling and the acquisition of knowledge*. Hillsdale NJ, Lawrence Erlbaum Associates.
- SPADA, N. (1997): *Form-focussed Instruction and Second Language Acquisition: A review of Classroom and Laboratory Research*. *Language Teaching*, 30, p. 73-87.
- SWAIN, M. (1995): *Three functions of output in second language learning*, in: G. COOK / B. SEIDLHOFER (Eds.): *Principle and practice in applied linguistics: Studies in honour of H.G. Widdowson*. Oxford, Oxford University Press.
- SWAIN, M. / LAPKIN, S. (1995): *Problems in output and the cognitive processes they generate. A step towards second language learning*. *Applied Linguistics*, 16, p. 371-391.
- WAGNER-GOUGH, J. / Hatch, E. (1975): *The importance of input data in second language acquisition studies*. *Language Learning*, 25, p. 297-307.
- WESTHOFF, G. J. (1991a): *Increasing the Effectiveness of Foreign Language Reading Instruction (Part 1)*, *ADFL Bulletin*, 22(2), p. 29-36.
- WESTHOFF, G. J. (1991b): *Increasing the Effectiveness of Foreign Language Reading Instruction (Part 2)*. *ADFL Bulletin*, 22(3), p. 28-32.
- WESTHOFF, G. J. (1997): *Fertigkeit Lesen*. Berlin/München/New York, Langenscheidt.

#### Gerard Westhoff

ist Professor für die Didaktik des Fremdsprachenunterrichts an der Universität Utrecht und Direktor des niederländischen Büros für Fremdsprachen.