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# *Observations in the computer room: L2 output and learner behaviour*

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**Abstract**

This article draws on second language theory, particularly output theory as defined by Swain (1995), in order to conceptualise observations made in a computer-assisted language learning setting. It investigates second language output and learner behaviour within an electronic role-play setting, based on a subject-specific problem solving task and the Internet as source of primary information. Students were given a task which includes the collaborative development of a marketing strategy for a chosen product. Data collected consists of the following corpora: emails exchanged between groups[1], the recorded discussions between each group's members while engaged in the problem solving activity, oral presentation of the groups' results as well as the individually written summaries. One area of particular interest is the analysis of the oral L2 output while solving a computer-assisted language learning task. How can the oral interaction be characterised? What kind of conclusions regarding the use of CALL can be drawn from the comparison of the oral interaction and the written output? Another area of interest is the analysis of the written L2 output. Is there evidence of second language acquisition and/or acquisition of content? Can such a CALL setting promote second language acquisition (SLA) and/or acquisition of content? Finally, the study aims to identify whether student-initiated focus on language form can be found. The article answers the questions posed above. Furthermore, the results of this study show that a very high percentage of all communication took place in L2 and occurrences of acquisition of content and language can be demonstrated.

## 1 Introduction

The acronym CALL represents computer-assisted language learning. However, it may be difficult to ascertain whether language learning is enhanced through CALL. A framework for measuring whether learning occurs in CALL settings is therefore necessary. The following represents an approach to conceptualise what is taking place in a particular open CALL setting by referring to output theory, modified language output and criteria for CALL task evaluation.

1 For the purpose of this article, the terms pair, group and dyad are all used interchangeably

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### *1.1 Input – output theory*

Language learning theory differentiates between input and output theory and has undergone phases of emphasis of one or the other. Research emphasis in acquisition processes may also have been put on either interaction and negotiation of meaning, or on input or on output[2]. According to Gass *et al*. (1998) interaction can be seen as setting "the scene for potential learning" (*op. cit*., 305), but should not be considered as a cause of language learning (see also Gass (1997)). Input research, most notably represented by Krashen (1985), investigates and hypothesises about comprehensible input and its effect on language learning. According to Swaffar (1988:125) even "limited command of language is not an insurmountable barrier to L2 reading" and therefore even very taxing texts can represent successful language input which can lead to both forms of acquisition, that of language and content.

Output may be seen as a window to what the language learner has already internalised, i.e. learnt. However, output theory argues that output and the learner dialogues during the output phase may offer an important window to the process of language learning itself. Besides the obvious function of output to enhance fluency, Swain (1995) identifies second language learners' output to serve at least three further functions: firstly to promote 'noticing' the gap between what learners want to and are able to express, secondly to test learner hypothesis and thirdly to fulfil the metalinguistic function, namely "to control and internalize linguistic knowledge" (*op. cit.,* 126). Swain names explicitly learner dialogues during the output phase of problem-solving activities, as an opportunity to research some of the cognitive processes involved in second language learning (*op. cit*., 142).

Pica *et al*. (1989) applied Swain's output hypothesis to a study with ten dyads of one native speaker (NS) and one non-native speaker (NNS) each. Each dyad worked with three different tasks, all designed to stimulate negotiation of meaning and comprehension requests in order to 'push' the non-native speakers to L2 production. The overall result included that the discussion task was shown to be capable of sustaining the greatest percentage of NS clarification requests, NNS output modification responses in general, and NNS syntactic modifications in particular (*op. cit*., 83).

### *1. 2 Modified language output*

One aim of language learning and teaching is to enable learners to produce modified language output successfully. Here the term successfully refers not only to successful communication, but also to the accurate production of language. Swain's research on language output was done with students taking part in language classes using the submersion approach, a teaching and learning framework which has received some criticism. Hammerly (1987) criticises it for its supposedly poor results in accuracy of the language output. Doughty and Pica (1986) also found that their study produced a large number of ungrammatical utterances. Their conclusion includes a realisation that task design is of vital importance for the creation of a potentially constructive framework for multidirectional tasks.

2 See Warschauer (1998) for a discussion of input, output and computer mediated communication.

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The demands put on the learner in order to produce successful modified language output may differ between beginner learners and advanced learners. For example, beginner learners may transfer their knowledge from buying apples to pears, using the same general sentence structure, but in German for instance, the case marker is influenced by the gender of the noun. The transfer from buying an apple to a pear may demand a grammatically different output, a case marker may be needed.

Example: *Ich möchte ein**en** Apfel kaufen; ich möchte ein**e** Birne kaufen.*

In such an operation, beginner learners need to concentrate on fewer steps in their language production than advanced learners do in more complex tasks. For the latter, successful modified output, as for instance summaries of specific elements of texts researched on the Internet, require the use of all the language knowledge acquired so far. This represents a challenge for the learner since the more advanced the language produced is, the greater the number of processes needed in order to produce grammatical accuracy. This may seem obvious, but it cannot necessarily be assumed that advanced learners can always remember language forms and vocabulary learnt as beginners when they need them for modified output at a more advanced stage of proficiency. Leahy (forthcoming) found that grammatical problems which needed solving by advanced learners may be at a surprisingly low level. For example, one dyad experienced vocabulary and tense problems with the verb *antworten*. Both students settled on using the verb *antworten* instead of the correct form in the given context *beantworten* and also experienced problems remembering the correct past participle form.

### *1. 3 Computer-assisted language learning and L2 output*

The comments above refer to second language acquisition theory in general. Studies normally take place in a framework with face-to-face interaction.

CALL may or may not include face-to-face instruction. It can be based on closed or open tasks. It may include computer-mediated communication, for example using email transmitted through the Internet or local area networks. However, it appears that the same elements as in face-to-face encounters can play a part in the acquisition process of a CALL setting.

Because modified language output is seen as a window to learning processes, output is also seen as an important indicator for learning in computer-assisted language learning settings. Chapelle (1997) argues that it would be helpful to conduct CALL research which is informed by classroom SLA research. She identifies two areas in particular which should be addressed in CALL research: (1) to study the kind of language learners engage in during CALL activities and (2) to evaluate the language experience in CALL for L2 learning (*op. cit.*, 27). Both areas imply a critical evaluation of language output. In her subsequent work, Chapelle (2000) continuously emphasises the importance of the study of language output and suggests "that a meaningful definition of CALL activities requires descriptive research documenting the language and interactions that learners engage in during CALL use" (*op. cit.*, 222). Since computer-assisted language learning aims to help in the acquisition process of L2, a focus on language output seems equally appropriate in a CALL setting as it is in the traditional face-to-face framework.

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However, criteria are necessary to evaluate CALL task appropriateness. In interactive learning settings, both in the classroom as well as CALL, a focus on language form in negotiations is seen as beneficial for modified language output (Gass, 1997; Pellettieri, 2000).

### *1.4 Evaluation of CALL activities*

Chapelle (2001) develops a model for CALL evaluation based on criteria as used in SLA research and theory which names a beneficial focus on form as the first criterion[3]. Altogether, she refers to six criteria for appropriateness, namely the language learning potential embedded in the task, the fitness of the task for a given group of learners, the opportunity for a focus on meaning, authenticity, a positive impact on the participants and practicality, i.e. the support and resources required for such an activity.

The task design of the electronic role-pay discussed here is addressing five of the six criteria explicitly. A specific focus on language form is not explicitly built into the task, but is implicit in two ways: firstly, as part of the reading comprehension process students deconstruct complex sentences in order to elicit meaning; secondly, active production of text, a modified language output in writing as well as conversation requires a focus on form in order to produce language which is as accurate as possible. A focus on specific language form is therefore in this framework not teacher directed, but guided by the individual student's needs.

This article aims to contribute to the CALL research asked for by Chapelle (2000:222, see above), while referring explicitly to Chapelle's criteria for evaluation of CALL activities (Chapelle, 2001).

## 2 The project

During a three to four week period, the same general multi-directional task was used for successive years among a group of BA European Business students[4]. The task took the form of an electronic role-play in which students took on different roles, decided on a product, researched it, decide on how to introduce it to a new market, and developed a marketing strategy. The chosen product was in this case Christmas Pudding. Students, all native speakers of English, organised themselves into five dyads, which largely reflected their preferences to specific fellow students in the traditional classroom. Classes took place in a large computer room with all ten students present, but sufficiently separated by several empty computer stations. Only members of a dyad were allowed to speak to each other. A condition of this electronic role-play was that communication between groups took place via email, reflecting the pretence that the groups were geographically separated and thereby simplifying data collection (see Table 1).

In their dyads, students researched the product as chosen by group one on the Internet and developed collaboratively a marketing strategy, each group fulfilling its own subtask and thereby contributing to the overall aim of a marketing strategy. Sub-tasks developed in the course of the project, for example, group 4 wrote an email to a

3 For an overview of focus on form, see Doughty and Williams (1998).

4 See Leahy (2001) for a general description of the task and an introduciton to some student solutions.

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Table 1 *The different roles*

| Dyad | Students | Role | Form of communication within dyad | Form of communication with other dyads |
|---|---|---|---|---|
| Dyad 1 | student 1+ 2 | Students represent company A in UK; wants to expand into new market in Germany; decide on product; employ company B and research assistants | face to face | email |
| Dyad 2 | student 3 + 4 | Students represent market research company B in Germany, act as consultant to company A | face to face | email |
| Dyad 3 | student 5 + 6 | Students represent research assistants to companies A + B; research similar product/s on the internet | face to face | email |
| Dyad 4 | student 7 + 8 | Students represent research assistants to companies A + B; collect information on market conditions in target market | face to face | email |
| Dyad 5 | student 9 + 10 | Students represent research assistants to companies A + B; research possible cultural differences and economic problems which might hinder launch of product | face to face | email |

prominent German food retailer in order to ascertain whether Christmas Puddings were already sold in Germany.

The task design centres on authenticity and appropriateness of the material and its up-to-date nature, the task's meaningfulness for the student group, i.e. its relevance to the main course of study, the opportunity for students to introduce their subject-specific knowledge in L2 practice, and the creation of opportunities for students to make their own choices. Therefore, this framework fulfils explicitly five out of six criteria named by Chapelle (2001) as an evaluation measurement for the appropriateness of CALL tasks. The other criterion mentioned by Chapelle, the language learning potential, is implicitly addressed.

The purpose of such a project is to create meaningful opportunities to practise the L2 in a context which is appropriate to the learner group, while offering opportunities to acquire context-related, subject-specific vocabulary. A need for communication is built into the task design. Opportunities for negotiation are less based on negotiation of meaning, as often found in L2 beginner classes (Doughty & Pica, 1986). Here, negotiation serves to clarify between students how to fulfil the respective roles and work in a team

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towards a mutual goal, i.e. a marketing strategy for a given product.

The electronic role-play is therefore based on a constructionist approach, a meaning-focused, process-oriented activity, in which learners take decisions actively, they reorganise and reconstruct knowledge (e.g. compare Tella (1991), Papert & Hare (1993) and Ritter & Rüschoff (2000)).

The data collected consists of the oral interaction in each group which is recorded and transcribed, the communication between the different groups via email, each group's presentation of results to their fellow students (recorded and transcribed) and a final summary, written individually by each student. Leahy (forthcoming) reports on the methodological considerations for data collection, the research approach and the results for one of the groups.

### *2.1 Internet as source of primary material*

Using the Internet as source of primary material seems appropriate since it can fulfil several functions: different student interests can be served while providing up-to-date information, for example statistics provided by the government when accessing official web pages (*Statistisches Bundesamt*).

The Internet is used increasingly, as is mirrored in the development of online language populations. The number of the online language population has increased from 505 million in September 2001 to 680 million in September 2003. The percentage of access in German has remained relatively constant, with 6.7% in 2001 and 7% in September 2003, which represents an increase in real terms since the overall number increased by 175 million during that period[5]. Since people seem to access the Internet increasingly in languages other than English and material is increasingly published in languages other than English, it seems appropriate to make more use of the Internet as a source of authentic material for teaching and learning purposes – see Figure 1.

Such an approach fulfils the criteria of authenticity of primary material and the availability of various types of authentic material allows for opportunities to give tasks a subject-specific angle. Varying degrees of complexity of the primary material may not present a very difficult problem for the learner. As mentioned above, reading comprehension research (Swaffar, 1988) found that the use of texts which exceed the learner's level of L2 proficiency may be overcome. Furthermore, output theory hypothesises that the learner benefits from being 'stretched' in order to facilitate learning.

## 3 Results

The results of this project are not represented as quantitative data. In very controlled learning frameworks, especially with beginner to intermediate L2 learners, predictions regarding the use of specific words, tenses, adjectives, prepositions etc. can be made, and hypotheses can be formulated and tested (e.g. Cheung & Harrison, 1992). Alternatively, the occurrence of specific language phenomena, for example the expression of events in the past (Bardovi-Harlig, 2000) can be observed and quantified. The

5 See Global Reach, Global Statistics.

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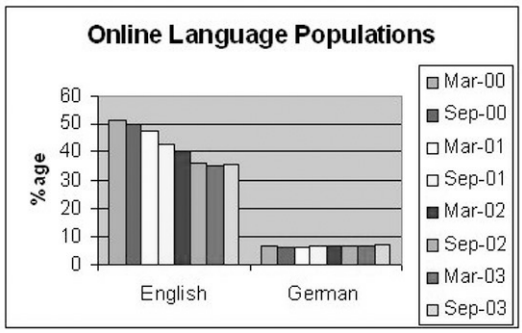



Fig. 1. Decline of percentage of English online population, relative steady percentage of German online population, while the overall figure of the online population increased by 175 million.

situation of advanced learners in open tasks is different from that of beginner learners. Here, content is learnt and language is practised in the form of scan reading, in-depth reading, free composition of summaries, and free composition of email messages. In such a complex task setting, it is more difficult to pre-determine small units of data which could be coded and used quantitatively. Therefore such a quantitative representation does not seem appropriate. However, evidence of phenomena as described for output theory (learning through interactional communication while involved in a project task) as well as criteria for CALL evaluation following Chapelle (2001) can be shown.

### *3.1 General observations*

Looking at student performance in the computer room, it becomes obvious that individual learner differences can have a substantial impact on the approaches of each dyad. Some of these learner differences were also reflected in the traditional classroom. For example, student 9 of group five would not usually offer his opinion in class contributions without being asked. During classroom pair work, he would usually work with the same partner as he did as part of the computer room project. However, he did not seem to take the initiative in either the CALL or the traditional classroom setting. While it could not easily be established that he was quietly participating in the traditional classroom, his quiet participation in the computer room was obvious. He was observed doing his Internet research and during week three summarized his findings competently (in written form) on his own when his partner was absent from class.

#### *3.1.2 Students' focus on task*

The five dyads maintained a high focus on the task during the entire period. However, some differences could be detected. Groups one and five maintained continuous focus on the task. Group five was dealing with cultural differences and got so involved that they extended their discussions to the different preferences German and British people

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have in eating, for example, chips, i.e. the British custom of eating chips with vinegar. They discussed that Germans may be food conscious, possibly vegetarians and that consumers may reject too much animal fat. During the second week this idea of differences between the two societies was picked up again and Germans were considered to be more 'alternative' than British consumers. The group drew heavily on their knowledge of German society as gained during their previous year abroad.

The other three groups maintained a high focus on the task and topic area, but also occasionally engaged in other topics. Groups two and three discussed computer problems for a while during week two. Both groups had received emails with a very large attachment and their email was temporarily non-functioning until the attachment was deleted. Group four seemed least engaged in the task. Student 7 expressed her dislike of the product Christmas Pudding on several occasions and complained about tiredness. The class took place on a Monday morning 9.00–11.00.

### *3.1.3 Working on the task*

Work on the task was moved forward through brainstorming, referring back to the task sheet, and interaction between partners. Occasionally, the tutor answered questions and pushed students to move on. Even though the task sheets' instructions were explicit, students were not always clear what they were supposed to do. Since the task framework was open and allowed students to make their own decisions, it seemed necessary to reassure students. Tutor encouragement and reassurance, as well as questioning the student approach and thereby 'pushing' for student clarification seemed to be important. It is doubtful that similar results could be achieved if students were engaged in the electronic role-play without any tutor presence. The role of the tutor in such a setting should be studied further. Results so far suggest that electronic role-plays may not be easily transferable from a setting with all students and tutor present to a distance learning situation with no physical connection between the participants.

### *3.1.4 Contribution of partners: do they contribute equally?*

Individual learner preferences determined how students worked in their dyads. Previous researchers (e.g., Sullivan, 1998; Tella, 1991) found that shy students may perform better in a computer-assisted language learning environment. This could not be confirmed for this mixed setting of CALL in a computer-room with all students present. In this study, all students had access to one computer each, but two dyads (groups one and four) made use of only one machine per pair. The task of typing was fulfilled by one student, the other sat on the side. Groups three and five worked with two computers each, each partner following their own sub-task as agreed by the participants themselves. Group two worked partly with one computer, partly with two. Student 4 seemed to be more pro-active and engaged with the task. Student 3 was less interested, and answered more often with one syllable. However, during the third week, in the preparation of the

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oral presentation of the results student 3 engaged more positively and actively with the task.

### *3.2 Oral L2 output*

#### *3.2.1 Amount of interaction in L2*

The communication between students in their dyads in the computer room was mainly conducted in L2. This is a very pleasing result since students often revert to L1 during group work phases in traditional classrooms (all oral interaction was recorded and transcribed, the few English words spoken were counted and a percentage worked out in relation to the whole session's L2 production). During the first week, four out of the five groups conducted between 98.5% and 99.5% of all the interaction in L2. The same percentage rate of L2 communication continued during the following two weeks. One exception is group four which participated with a L2 percentage rate of 93.5%, 89.5% and 98.7% in L2 during the first three weeks. This group did not like the chosen product Christmas Pudding and did not get involved with the task to the same degree as the other groups.

It is noteworthy that, during week two, students used specialised English terms when they experienced computer problems where they tried to re-gain memory and access to the email system. When they received a large attachment which blocked their email account, partners assisted each other in solving the problem, hence there was a slight increase in the use of English.

During week three, one member of the fifth group was absent, the partner present only spoke occasionally to the tutor. Otherwise, as long as the dyads were complete, students had the opportunity to talk for two hours in the target language, as well as practising writing and reading as part of the email communication with other groups. This extended opportunity to speak was made use of and was commented on positively.

#### *3.2.2 Student-initiated focus on language form*

In all dyads student-initiated focus on form could be observed. Examples of focus on language form will be given below.

#### *3.2.3 Oral interaction*

Oral inteaction may appear to represent a form of short-hand, including many incomplete sentences which (without any further context) may be incomprehensible because of missing information which is displayed on screen, for example reading of incoming emails, drafting outgoing messages and information read on the Web. Occasionally, students were referring to or reading elements of the task sheet. Furthermore, some elements of the conversation may not have been audible and therefore not comprehensible. The organisation of how to deal with the task in each dyad seemed to have been largely influenced by learner preferences and therefore determined by learner differences. Group one seemed to have found a successful working mode whereby both students'

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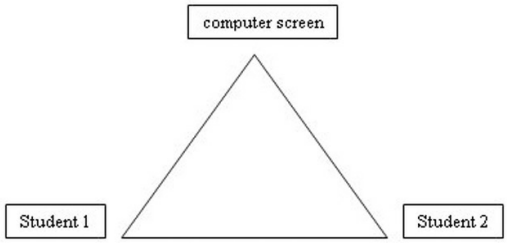



Fig. 2. Triangular relationship of oral communication between partners and screen

oral interaction appeared incomplete without the third element, the computer screen. The displayed incoming emails or messages drafted by the pair were a constituent element of the interaction.

However, precisely because both of them were communicating just in front of the computer screen, facing it rather than each other, the communication was successful even though students did not form complete sentences. The communication was taking place in a triangular relationship (see Figure 2).

Since the oral communication was incomplete and therefore grammatically incorrect, this may raise concerns about L2 development since the students appear to be using an interlanguage which is low in terms of accuracy. However, this particular pair also produced cohesive written email messages and summaries. The incomplete oral interaction during the first two weeks does not seem to have had a detrimental effect on the L2 production otherwise. During the third session students were asked to prepare a presentation of their results. While this same dyad (students 1 + 2, who previously seemed to communicate in a triangular relationship which included the computer screen) discussed which results they should present, their oral interaction became clear and comprehensible without the aid of access to the writing on screen, for example the emails exchanged. It became clear that only during the first two weeks did these students speak in a form of shorthand which regarded the computer screen as a constituent part(ner) of the interaction.

Group five provides a contrast to the oral interaction between students 1 + 2 during the first two weeks. The oral interaction between students 9 + 10 represents in itself more cohesive talk than students 1 + 2 who interact with each other and the screen. In the case of students 9 + 10 the screen is only occasionally included as a third interaction partner (session two). Group five consists of a shy (male; student 9) and a mature (female) student (student 10). The latter had worked in business before joining the university course. The transcript highlights how student 10 takes the initiative and works pro-actively. She organises her partner and drives the work on the task forward. Their interaction largely consists of more complete sentences and the content of their communication is clear, even though their L2 is grammatically very weak. Student 10 finds a website which gives information concerning customs and superstitions in connection with Christmas Puddings, for example the British custom of hiding a silver coin in the pudding. The person receiving the coin at Christmas was thought to receive health, wealth and happiness. The quote below[6] shows how student 10 organises her partner to

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translate parts of the website in order to send the information to their fellow students so they can consider including the content as background information on the pudding's packaging.

student 10: *Du kannst – diese customes and superstitions oder so übersetzen, ne*?
student 9: *Ja*.
student 10: *Deshalb, das könnte vielleicht als Einführung – nicht schlecht sein. Wir können auch vielleicht vorschlagen, dass wir könnten das auch auf die dann Verpackung geben, weil das ein bisschen – ehm – Geschichte und so zu tun ist*
student 9: *Ja*.
student 10: *und vielleicht nicht schlecht wäre. – Du musst es nicht aber alles übersetzen, ne? Nur zusammenfassen*.

As mentioned above, student 9 is shy and reserved. Here, he replies with one-syllable answers only. Student 10 asks her partner for the translation of the passage, but also gives a reason for it, i.e. it could serve as the introduction of the product. She evaluates her own suggestion (by saying that it wouldn't be bad as an introduction) and elaborates on the idea by suggesting the fellow students include this information about the product history on the packaging. The original passage and student 9's summarizing translation also serve as an example of peer collaboration about a particular phrase and will be looked at in section 3.4.

### *3.3 Student-initiated focus on specific language forms*

The following represent examples of student-initiated focus on form. While students 1 and 2 of group one draft an email reply to a fellow student, an uncertainty about the use of a verb, its perfect tense and whether it is reflexive or not, occurs during the oral interaction between them. Together, students 1 + 2 reach the correct conclusion "wir haben uns entschieden", but still seem to be unsure whether this is the correct verb form or not. In the email drafted to the fellow students they omit this verb altogether (see Table 2).

The same verb is used successfully by students 1 + 2 at the end of the same session. Email messages had been sent to selective addressees and some students were unclear which decisions had been made. Student 10 inquires at 10:54:

"*Können Sie uns mitteilen, was genau Sie schon entschieden haben? Verkaufen wir 2 verscheiden sorten von Puddings*."

and receives the answer from students 1+2 (10:56):

"*Wir haben entschieden:*
*Wir verkaufen 2 sorten von Puddings [...]*"

Students 1 + 2 had discussed the past participle form *entschieden* during this session. However, they remained unsure about the correct form and decided to omit the structure from their first reply. At the end of the same sessions they received the prompt from a fellow student which used the same past participle and seemed to re-enforce the earlier

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Table 2. *An email drafted to other students*

| week two, group one drafting an email reply to group three (transcript p.9) | Email 19/11 (week two); 10:08, to tutor, and all groups |
|---|---|
| 1: So, wir haben – reply to – K. Wir haben *sich entscheidet*, oder, oder ist es anders, reflexiv, ich weiss nicht. | |
| 2: Aber sich – wir haben *uns entschieden, entscheidet,* | |
| 1: stimmt, *uns entschieden,* | |
| 2: ich weiss immer nicht, | |
| 1: *uns entschieden*, det sieht komisch aus. | |
| 2: Sieht immer komisch aus. ?? | |
| 1: Christine fragen??. | |
| 2: und überlegt? | |
| 1: haben | |
| 2-: Wir haben überlegt, und – uns entschieden | Wir haben ueberlegt |
| 1: ah ja. | |
| 2: und jetzt sagen wir euch, [...] sagen wir euch, und nicht dagen wir euch [laughs, obviously a typing error: s-d] | jetzt sagen wir euch, |
| 1: oh dear, sagen wir euch | |
| 2: dass wir – | dass wir |
| 1: was machst du? | |
| 2: [laughs] | |
| 1: dass wir, ehm, Sosse | Sosse |
| 2: und Pudding. Ich glaube es ist ohne Umlaut. | |
| 1: Ja. | und Pudding |
| 2: zusammen kaufen will – zusammen verkaufen. OK. Ja. | |
| 1: verkaufen. | zusammen verkaufen wollen. |
| 2: das gleich am Ware | |
| 1: that's it. Ja. | Danke. |

solution. Students 1 + 2 then used the correct verb form with confidence in the opening line of their reply. This may be seen as the beginning of successful internalization of linguistic knowledge in Swain's sense, even though in this case it appears the knowledge was stored in the short-term memory only. During the following week (3), both partners used the incorrect perfect form entscheiden during their oral interaction. If the learnt form was retained for one session (week two), the older incorrect form resurfaced after another week.

Another example of focus on language, i.e. vocabulary, exemplifies how peer-tutoring can lead to acquisition of the term. During the first week's session, one student asked the partner for the term for a traditional German Christmas cake, a 'Stollen'. She remembered the term a week later during the discussion about an appropriate price for Christmas puddings on the German market. In this case, the term was successfully retained the following week – see Table 3.

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Table 3. *An examble of how peer tutoring can assist with aquisition of vocabulary*

| transcript group two, **session one**, p. 3 | transcript group two, **session two**, p. 94. |
|---|---|
| Wie heisst die – deutsche, ehm, Stocke? | 4: Wie heisst diese – diese Weihnachts- ehm – *Stollen! Stollen*? |
| 3: Was? | 3: Ja. Glaub ich. – Aber es ist |
| 4: Stocke oder? | 4: Ziemlich billig, oder? |
| 3: Eh – Stollen. | |
| 4: *Stollen. Stollen.* | 3: Ziemlich guenstig im Vergleich. Hmm. |

### *3.4 Comparison between oral interaction and written output*

As described above, in some cases, the oral interaction may occur incomplete, even hardly comprehensible without additional cues of context and information as it would have been displayed on the computer screen, either in the form of incoming emails or those drafted as replies. However, when compared with the written email communication, the emails are clear and concise, and the language appropriate to the task. Occasionally, the element of uncertainty is dropped from the email communication, for example the reflexive verb in perfect tense as illustrated above.

The transcript of the oral interaction highlights where student uncertainty how to phrase a particular idea or sentence can be overcome in collaboration.

For example, student 9 asks his partner to help phrase a passage he is summarising in German. Once student 10 is clear about the question, she suggests an answer which is subsequently used in student 9's summary.

Oral interaction:
Student 9: *Was würdest du am Ende sagen? Endlich zu sagen?*
Student 10: *Was meinst du?*
Student 9: *Ehm. Die letzte Punkt.*
Student 10: *Wo? – Ich versteh nicht, was du meinst ...*
Student 9: *Die letzte Punkt.*
Student 10: *Was für eine letzte Punkt? Ich versteh dich nicht.*
Student 9: *Sieh.*
Student 10: *Ah, endlich zu sagen. Ah, okay. Ah, jetzt versteh ich dich. [lacht] Ehh. Vielleicht – vielleicht solltest du sagen,* es ist wichtig zu sagen dass – *weil es wichtig ist. Und das ist dreißig Prozent vom Christmas Pudding sind in den Kneipen – [...]*

The suggested phrase has been used in student 9's summary as can be seen in Table 4. The translation was not refined since the customer (group one) did not request this. The final marketing strategy mentions that some information regarding the connection between Christmas Pudding and Christmas would be included on the packaging, but time constraints did not allow for a more refined translation/summary as part of the project.

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Table 4. *A translation*

| English text, copy + paste from website (12/11; 10:47, student 10) | first rough translation by student 9 (19/11; 10:52) […] |
|---|---|
| Matthew Walker estimates that this Christmas more than 25 million puddings will be consumed at home, with 51 per cent of households buying them, and 18 per cent making their own. In addition, around another 15 million will be eaten in catering establishments such as canteens, pubs and restaurants. | *[...] Es ist vermutet, dass dieses Weihnachten (in GB) mehr als 25 Millionen Christmas Puddings gegessen wird, und 51% von Haushalten wird ein verkaufen; nur 18% von haushalten wird ein selbst Kochen. Es ist wichtig zu sagen ist dass noch 15 Millionen Christmas Puddings wird im Kneipen, Cafes und Restauranten gegessen. Das heisst dass ungefähr 37.5% von Christmas Puddings in GB wird nicht zu Hause gegessen, vielleicht wir sollten denken an wie wir Christmas Puddings an Kenipen/Restauranten verkaufen können?* |

It is interesting to note that student 9 picks up the fact that an estimated 15 million puddings will be eaten outside the private British home. If a similar situation were to occur in the context of the new market, Germany, it could be appropriate to negotiate with catering establishments, for example pubs and restaurants. This is what the student suggests at the end of his translation. This idea was picked up in the summary of student 3 and is one example of how students constructed their knowledge collaboratively (see below).

### *3.5 Example of the written L2 output*

According to the external examiner, the students' performance in tests and assignments compared favourably with other British students at university level 3. The written work as part of the project would support this. The passage below represents a section of student 3's summary.

> "*Zulieferung*: Das Produkt wird in England hergestellt, da es echt englisch ist und dann werden die Puddings nach Deutschland transportiert, per Schiff. Es ist noetig, dass die Zulieferung und Transport in Deutschland auch organisiert wird.
> *Wo wird das Produkt gekauft*: in Supermaerkte (in Luxus-Essen Abteilung und auch in dem Café/Restaurant. Beim Weihnachtsmarkt, um zu probieren. Vielleicht spaeter koennen wir nach Markteinfuehrung in Restauranten anbieten, wenn es erfolgreich ist.
> *Zielgruppe*: Familie mit Kinder (die Mutter wird wahrscheinlich das Produkt in Supermarkt in Luxus-Essen Abteilung kaufen) und auch die Verkauf kleine Portionen bei Weihnachtsmaerkte (Leute moegen es, um etwas neues zu probieren)
> [...]
> *Werbung*: Da es nur ein Nischeprodukt ist, koennen wir nicht so viel Geld fuer

7 Final, individual written report, student 3.

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Marketing ausgeben – wir denken, dass es reichen wird, das Produkt einfach mit Plakaten bei der Weihnachtsmarkt zu anzuzeigen, und dann auch Plakaten in den Laden haben, um zu informieren, dass das Produkt gleich in Supermaerkte wird. Wir werden das Produkt auch in Broschuren von den Laden annoncieren[7]."

It should be stressed that the summaries were written as individual pieces in class under time pressure. Students used electronic dictionaries occasionally, but generally did not have much time to work on a polished version. Therefore the passage above represents a remarkably good L2 level.

Regarding content, student 3 has evaluated the information received and discussed during the previous weeks, for example she is concerned about the logistics of product distribution. Even though the group could not secure an answer regarding the size of the budget for marketing, the fact that the product would be launched as a niche product enables her to conclude that the budget would be small. She therefore makes suggestions concerning product information and advertisement which can be realised with a small amount of money.

Furthermore, it should be noted that this student (3) picks up an idea transmitted by email two weeks earlier: Student 9's translation of Christmas Pudding facts mentions that an estimated 15 million puddings are eaten in catering establishments. The summary above refers to this indirectly by suggesting that the product may be offered in restaurants once it has been successfully introduced to the German market.

Another type of this collaborative knowledge construction will be shown in the following paragraph/section which looks at email exchanges between four groups which lead to a decision on one element of the product: Christmas Pudding Sauce.

### *3.6 Collaborative construction of knowledge*

All students acquired content knowledge. Surprisingly not all the students were very familiar with the product Christmas Pudding at the start of the project. It is the traditional dessert for Christmas dinners, but individual families may have replaced that national tradition with their own, private one. However, collaboratively students developed a product which would still be marketed as a 'typically English' product, but which was slightly modified to fit the German market as the students saw it. The following time line (Table 5) refers to one week only. It exemplifies this collaborative process by which the decision is made to settle for a certain size of pudding and its sauce.

In line with their given roles, the final decisions are made by group 1. Group 2 fulfils its consultancy role while the other three groups provide the information which was gained through their research.

Group one represents the client who is employing the other groups to advise on whether there is a market for the product in Germany. Students 1 + 2 are making the decisions, but are firstly requesting the relevant pieces of information in order to be able to make informed decisions.

Following the request for clarification whether brandy sauce is already sold in Germany, group five responds first that there is little information available on the web, but recommends that puddings should be sold with either a sauce or a recipe for a

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sauce. Group two extends the advice to sell the product with a sauce, but specifies it should be non-alcoholic in order to broaden the target group. Furthermore, with the introduction of a non-alcoholic sauce, which could be also appealing to children, a different, smaller size could be introduced to cater for children specifically. Group two also introduces the idea to sell a sauce with a different flavour which would be more familiar to Germans, i.e. replacing a non-alcoholic brandy with a whiskey sauce. Group three believes that sauces would not need to be sold with the product. All this incoming information was considered and 34 minutes after the initial request, group one makes the decision to offer two types of pudding suitable for vegetarians, one alcoholic and one non-alcoholic, but both types should sell a sauce with the product, not only the recipe. Four minutes later group one agrees to accept the suggestion from group two of introducing a child size. They also decide on a brandy sauce. Following a clarification request by group two five minutes later, group one confirms finally that they want to introduce three, not only two products. These are two Christmas puddings at a normal size, one with alcohol and one without and, additionally, a child size is to be produced. This string of exchanges between four of the five groups ends with an unanswered suggestion by group two to consider custard for the children's pudding. Collaboratively, students constructed a product with specific characteristics, designed for expansion into a new market, taking into account factors of the target market as seen by the students.

## 4 Summary

The transcripts of the oral interaction of all groups show that students maintained a very high level of L2 output during the entire period of the project (i.e., four weeks). Between 89% and 99% of all oral interaction, and 100% of the written output, was produced in L2.

This article has named the central hypothesis of output theory and introduced some of the results of an electronic role-play performed by advanced learners of German. Swain's output theory (1995) identifies three major functions of learner output, i.e., to notice the gap, to test learner hypothesis and to "control and internalise linguistic knowledge" (126). The results of this project show that the students' L2 output can in part be described as matching the first and third of these hypotheses. Student dialogues during the problem solving phase and while drafting replies highlight moments of hesitation because of uncertainty regarding grammatical or lexical forms. The retention of a newly-learnt form, i.e., vocabulary (*Stollen*), after one week could be shown. However, the initially promising retention of a correct verb form (*entschieden haben*) could only be maintained for a short while, the older incorrect form resurfacing after one week had elapsed.

The social organisation in dyads and the agreed form of working on the task seems to be largely influenced by learner preferences and therefore learner differences. During the oral interaction students may produce an incomplete interlanguage which only becomes meaningful when reading either incoming or outgoing texts on the computer screen at the same time. This triangular communication in which the computer screen forms a constituent part of it does not seem to have any detrimental effect on the respec-

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Table 5. *Week two only: Email exchange about type of sauce to be sold with the Christmas Pudding, including alcohol or not, and size of product. All but one group were actively involved in this exchange. (*The computer clocks were not synchronised and not set to precise time. The class took place between 9.00 and 11.00. Several clocks read a time after 11.00. Presumably they are approx. one hour fast. ** Group four does not participate in this dialogue, but within their dyad students 7 + 8 comment that the idea of whiskey sauce for a Christmas Pudding made with brandy would be disgusting.)*

| Time* of email message | Student 1+2 (group one) | Student 3+4 (group two) | Student 5+6 (group three) | Student 9+10 (group five |
|---|---|---|---|---|
| 10:59 | Is Brandy sauce sold in Germany? | | | |
| 11:08 | xmas pud. + sauce are to be sold together | | | |
| 11:10 | | | | little info on sauce in the Internet; sends two URLs for recipes |
| 11:10 | | | Brandy and rum sauces are sold in Germany; he found recipes, but does not know who sells them; believes that puds do not need to sold with sauces. | |
| 11:19 | | | | Puds should be sold with sauces or recipes for sauces printed on the packaging |
| 11:30 | | Puds should be sold with non alcoholic sauces (for religious reasons), would then also appeal to Muslims and children; introduce a children size;consider a sauce with whiskey taste (more familiar with Germans) | | |
| 11:33 | Puds should not have references to religion, should only be vegetarian, two types to be offered: with and without alcohol; puds + sauce should be sold together | | | |

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Table 5. *continued*

| | | |
|---|---|---|
| 11:37 | accept suggestion from group two to introduce child size; settle on brandy sauce (since it is a typically English product). | |
| 11:42 | | reply only to group one to clarify that there will be three products now: one non-alcoholic, one with alcohol, one for kids |
| 11:45 | confirm three products (one non-alcoholic, one with alcohol, one for kids) to group two only | |
| 11:45 | | How popular is Brandy, wouldn't a whiskey taste be better? Should a custardsauce be considered for kid's pud? ** |

tive students' proficiency and grammatical accuracy, as can be seen in their later oral interaction and their written summaries.

The task fulfils the six design requirements for 'appropriate' CALL as put forward by Chapelle (2001: 55). However, the analysis of student L2 output shows that the task design could shift the L2 production more towards written output in order to create further L2 learning opportunities. Most likely, this would imply a change in the framework as well, i.e. more time would be needed to complete the task.

The lessons to be learnt from a closer look at the students' interaction is shown in the list below:

1. The students were encouraged to use online dictionaries to help with comprehension as well as active language production. This was not done to the degree expected. The transcripts show that discussions about vocabulary took place, but a dictionary did not seem to have been consulted in all cases. The use of online dictionaries may need to be practised before embarking on such a complex role-play.
2. The difference between the oral interaction and the written email communication is in some cases striking. The written communication can be far more explicit, precise and grammatically advanced than the oral interaction. Therefore it seems appropriate to develop this further and incorporate explicitly the redrafting of written output into the brief. Continuous work on written drafts should be encouraged and practised. It seems that there is great potential in exploiting the access facilitated in the computer room further and using it constructively for improved versions of L2 output. Polishing drafts, writing and re-writing is a skill which needs to be acquired, but it seems easier in word-processed form than with traditional pen and paper which "usually leads to a once-written-then-completed principle. As revising and rewriting one's draft is time-consuming and laborious, students generally mistake their first draft for the final version" (Tella, 1991:43). The computer-assisted language learning situation as described here may facilitate the use of electronic dictionaries and re-drafting of texts. But it seems important to embed requirements such as working on drafts deeper into the task structure or to encourage them through the tutor.

## 5 Conclusion

The task design described is open enough to allow students to largely make their own decisions regarding the content covered and the language skills applied. In the present scenario, all four language skills are employed, possibly with a slightly stronger emphasis on speaking. This was intentional. The work in the computer room was not intended to focus primarily on written L2 output. However, if students were engaged in a form of interlanguage as described in paragraph 3.2.3 for a prolonged period of time, this might cause concern for the student's L2 accuracy. Future research, possibly in form of longitudinal studies, may want to look at the effect this might have on L2 output.

Furthermore, the role of the teacher seems to be crucial in the process of accomplishing the task. It would be interesting to see whether this task design was suitable for dis-

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tance learning and produced similar results in the same timeframe, i.e. eight hours.

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