[Book Review]

Task-Based Language Learning in a Real-World Digital Environment: The European Digital Kitchen

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This book introduces and amply describes The European Digital Kitchen (EDK), a digital learning-management system designed to facilitate the simultaneous learning of second languages and cooking outside the classroom. As described more below, digital sensors are attached to the kitchen equipment, allowing the system to know whether participants have followed the L2 instructions, and to accordingly support them, through automated feedback, when necessary. The system was designed with the computer science department of Newcastle University where the editor of this volume, Paul Seedhouse, widely known for his work on Task-Based Learning (TBL) and Conversation Analysis (CA), is based. The ultimate aim of this study is to present a model for the dissemination of this hands-on approach to language learning. Digital kitchens in five European countries (Italy, Germany, Finland, Spain and the UK) are described in separate chapters by researchers collaborating with Seedhouse's initiative. These various perspectives pull together issues pertaining to the background, design, and implementation of the approach, as described below in this review.

First, TBL is a methodology for the learning of languages while learners' attention is focused on completion of some activity. The analysis of linguistic forms is not the main focus. Instead, learners use their L2 at the level they have to complete the activity. Three stages, the pre-task, task, and post-task activity are the basis of the approach. First, learners are oriented to the activity, the activity is carried out, and finally, once the task activity is complete, teachers use pedagogic exercises to raise the awareness of the language forms salient in the task. This philosophy rests on the common observation (e.g. Willis & Willis, 2001) that decontextualized instruction on linguistic structures is unlikely to lead them to be acquired by the learners. Rather, using language to actually do something is what enables effective L2 acquisition.

In a truly remarkable extension of TBL principles, Seedhouse and his colleagues offer us a full description and analysis of a real-life task context, namely cooking in a kitchen. Here, learners interact with a pedagogic digital system, to follow instructions for recipes in their L2. A User Graphic Interface (GUI) is installed in the kitchen, which allows users to interact with the system and, for example, to go back steps. Learners in the kitchen also use wirelessly connected handheld devices to request assistance from the system or indicate that they want to continue to the next stage. The system can give advice to the learners about how to prepare some dishes.

How is the system able to do this? The answer is that the kitchen equipment and utensils, such as bowls and spoons and so on, are digitally connected (as in Nintendo Wii game controllers) so that the system can monitor if learners are following the recorded instructions accurately. The system recognizes actions such as chopping or mixing and communicates with the learners through the GUI if any instruction has not been well understood. In these situations, the learners get real-time feedback from the system using pre-recorded messages. Learners can also ask for advice through this GUI. A key point of the EDK is that all five senses are used in the process of completing the task cycle, including, of course, the sense of taste, which surely consolidates language learning through a seldom-used route.

The foregoing description displays the comfortable fit between CALL and a real-world TBL approach to second-language education. The digital kitchen described works well because the technology allows learners autonomously to complete tasks in non-classroom environments. The CALL aspects do not play a subsidiary role. Rather, they facilitate human learning directly. Negotiation of meaning ensues, not only between humans (through well-attested acquisition-promoting mechanisms, such as self- and other-repair), but also between the humans and the technology itself. Principles from theory-driven CALL, which include the benefits of negotiation-of-meaning and interactional modification for learning and acquisition, underlie how people interact with the system and how learners access the different kinds of situated support available through the system. The displays show videos explaining the recipe steps and provide relevant linguistic support, such as vocabulary guidance. Following the principles of TBL, the GUI also provides scaffolding, such as translation and responds to repetition requests at any time. This design is such that the system can 'notice' what the learners are doing and intervene with reminders, or prompts, to help them move into the next step.

A brief review of some of chapters in the volume, with key points summarized, is as follows: Chapters 1 and 2 deal with the background to this approach, as outlined above. The following eight chapters deal with, in two sections, the Design and the Implementation of the European Digital Kitchen. A quick review of some of these chapters, with key points summarized, is as follows:

Chapter 3, "The Pedagogical Design of the Digital Kitchen" outlines the phases in TBL, specifically highlighting the dual focus on language and cooking. A CA analysis of participants at different levels of French proficiency is offered to show how the task completion easily overcomes confusion over new French terms, thereby providing assurances that TBL can work very well outside formal classrooms. The authors also point to the capacity of EDK to focus on world cultures, thus promoting cultural exchange. In Chapter 4, the technology behind the EFK is amply described. Interested

readers will gain specifics on the wireless accelerometer sensors (embedded with the kitchen implements), and the tablet and GUI system. Further, details on the authoring tool, and its setup, for future EDK innovation are also provided. In Chapter 5, the focus shifts to the methodological challenges of how to transcribe the interaction between the learners and the automated interface. A new term, the "negotiation of action" (emphasis added) is introduced as a new concept to research the human-non-human interaction. It is reported that, in addition to language learning, users also go through a journey of discovery concerning how to interact optimally with the system. Chapter 6 describes learning attainment (Can-Do descriptors) in terms of CEFR (the European standardized guidelines defining proficiency levels and achievement of foreign language learners), making note of potential adjustments that could be suggested to this rubric in light of, for example, strategies that learners employ in this particular automated context. Chapter 7, which describes the case of a Finnish Digital Kitchen, highlights, through CA, the rich qualities of learner-centered cooperation and negotiation to complete the recipes. Chapter 8 further explores this territory, describing how the cooking process is socially constructed and contextually bound, where interaction with the system evolves over time. It is reported that learners come to view the machine "as a learning tool rather than as another participant in the task at hand." (p. 203)

Finally, Chapter 9 and 10 raise the issue of the quality of vocabulary learning through the EDK. Details are reported about the effect of the use of this digital environment in terms of vocabulary outcomes, specifically with regard to ability in productive form recall of words encountered during the cooking sessions. Delayed post-test research on the implicit learning of vocabulary typically shows poor results (e.g. Waring & Takaki, 2003), indicating that only about 4% of new words are retained four months after, in this case, extensive reading. Second, learning of words in narrow fields has shown that confusion occurs between the forms of semantically-related words (e.g. Tinkham, 1993), such as kitchen items, in this case. One key test of the effectiveness of real-world digital environment tasks is whether such difficulties in vocabulary learning can be avoided. The results reported are very encouraging. In carefully designed vocabulary-learning investigations, the authors found that not only did the task cycle significantly build word knowledge between the pre- and post-tests but on a delayed test with a gap of two weeks, surprisingly this knowledge became further enhanced. This was investigated through interviews, and it was found that the participants had continued engagement with the words in the course of their daily lives in the UK, re-calling and reusing the words as they interacted with friends, for example. Building on this, the authors conducted further, more rigorous studies which controlled better for the practice effect of repeated testing. This confirmed that knowledge of encountered vocabulary continues to develop, and appears to be unusually resistant to forgetting. The authors suggest that participants in these tasks had initially been made aware of gaps in their knowledge in the engaging task environment, and through the task cycle, new word knowledge was enhanced and didn't decay. This can be attributed to the highly memorable quality of the automated task scaffolding and interaction. In interaction through all the task cycles, various aspects of lexical knowledge are built, and importantly, repeated. This could potentially lead to dozens of encounters through a task. This is a very welcome finding in the field of second language vocabulary learning. But it should be pointed that the post-task delay of only two weeks needs to be replicated in future research.

Overall, the book demonstrates how learning is achieved through the use of language and communicative strategies, especially with regard to interaction with the digital interactive screens, placed in each kitchen. Learners, through their engagement with the cooking tasks are shown, through their interactions, to be able to make use of strategies at their respective levels of proficiency, mainly through meta-discussions with partners about what the form and language of unknown words and phrases. The resulting language production is reminiscent of Swain's (e.g. 1985) description of the importance of output for L2 acquisition. Of great interest is how this real-life environment, 'blended' with technology is shown to lead to autonomous learning, in a way that is much less often seen in regular classroom settings, particularly as it is facilitated by the very user-friendly technological support on offer. Learners in the kitchens listen to instructions, use the available vocabulary labelled in the environment, get reminders and linguistic support from the graphical interface, and also, of course, learn from the output of their cooking partners too. Hence, the principles of Task-Based Learning are clearly invoked, in a highly new and innovative blend of language learning and 'doing'. In sum, this work can be considered as leading to the establishment of a new standard in effective learner-centered, language-learning methodology.

This is a wonderful book that paints a bright future for how CALL and TBL can be combined in highly innovative ways, even for teachers who do not have related technical expertise. Seedhouse reports that the system has an ongoing trial schedule in schools, colleges, universities in various locations in Europe. The book also has a chapter on the success of this approach in Korea, so clearly, the appeal and success are potentially global. Seedhouse's homepage also explains a further related project: Linguicuisine. In this project, "free, downloadable smartphone and tablet apps are being developed which will enable users to be guided through cooking a range of recipes… The phone or tablet will speak to the users in the foreign language and offer multimedia help to users in terms of photos and videos." Clearly, this is a growing area of research.

Finally, it didn't escape my notice that the approach espoused by the EDK initiative has very clear parallels to Content & Language Integrated Learning, in which learners can ideally learn the language even if their ability is still quite low. It is an approach which insists that learners should do much more than teachers, "Using languages to learn and learning to use languages" (Marsh, 2000). Language is a means to an end, and in this book, we see how EDK can plausibly achieve this. Clearly, we are moving into an exciting era in foreign language learning.

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