Chapter 3

3.1 Introduction

Originally implemented at the University of Groningen in 1994 and still used in Dutch universities today, Hologram is probably the longest running CALL program in HE in the Netherlands. It is the result of a teaching innovation project carried out at the University of Groningen between 1993 and 1996. The project involved five languages (English, German, French, Spanish, Russian) from four different departments at the Faculty of Arts. Reports on the Hologram project and the program that resulted from it can be found in: Jager (1996; 1998), Jager and Wekker (1997) and De Jonge (1997). Some descriptions in this chapter have been taken from these publications.

The main objectives were summarised in the project proposal as follows:

The project application aims to innovate the teaching of languages in such a way that:

- in the face of the complex demand for learning, the Faculty [of Arts] can continue to offer high-quality language teaching, focusing on differentiation, self-study and technology;
- pass rates at graduate level are improved;
- up-to-date language learning and teaching facilities are created for students and staff of all faculties in the University of Groningen;
- expertise in the use of information technology in language learning is embedded in the Faculty;
- the University of Groningen will become a leader in national collaboration in the field of computer-assisted language learning.

(Internal Application University of Groningen, 1992 [translated])
It is evident that these objectives were mainly of a strategic nature. As to the manner in which ICT (or IT as it was commonly called at the time) would contribute to language learning, it was believed that the main benefits would be in providing extra individualised practice. The application envisaged that the use would be primarily for vocabulary acquisition, grammar and syntax.

One assumption at the time of the application was that the project would be based on the usage of many different CALL programs for the respective languages and that the project would be run in the form of several subprojects within the departments involved. Although hiring a courseware programmer had been budgeted, no explicit coordination of activities between the departments was planned at first. A case was made for close collaboration between the teachers involved, since it soon became evident that the ideas and expectations about CALL were very similar in the participating departments. To respond to this need, a coordinator was added to the project before it actually started.

In the initial phase of the project the objectives were specified further and decisions were made as to the content to be developed. Although the emerging multimedia potential of the technologies at the time allowed more communicative approaches to language learning, it soon became evident that the greatest demand among the departments concerned was for computer-assisted grammar learning. This was felt to be an area where students underachieved, primarily because of insufficient practice. There was thus clear room for improvement, a large number of students were involved, and the teaching in this area was expected not to undergo any major changes in the years to come. These were listed as essential criteria for the development of computer-assisted learning materials at the time (Mirande, 1994). It was also believed that grammar was one of the areas where the use of computers could have clear advantages over the traditional classroom and textbook-based
approaches. This led to a reformulation of the main objectives and implementation criteria soon after the start of the project:

The main objective of the grammar programs is to improve students’ results in the area of practical grammar. The point of departure is a cognitive approach, in which promoting an understanding of the theory and using grammatical structures [correctly] are of primary importance.

The programs are intended as a complement to regular classes. They should offer students more extensive possibilities outside regular class time for study and practice in the subject to be learnt (e.g. as a preparation for exams and re-sits). Facilities need to be provided for specific, context-dependent feedback. The programs should be optimally geared to the different learning needs of individual students.

With a view to maintaining, extending and continuing the programs after the end of the project, language specialists should be able to input, modify and extend learning content without the intervention of a programmer.

(Intermediate Project Report 1, Dupuis & Jager, 1994)

These objectives were drafted in close consultation with the language teachers themselves, who met regularly (one hour a week on average during the first two years) with the coordinator and programmer to discuss the planning and progress of the project.

3.2 How Hologram works

Hologram (Hoger Onderwijs Leeromgeving voor Grammatica⁴) offers a generic framework for grammar teaching. It has the form of an authoring tool. The

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⁴ Higher Education Learning Environment for Grammar.
program was intended to allow exercises and theory to be integrated in ways that traditional textbook/workbook formats could not provide. Student interaction with linguistic material was to be intensified, while at the same time the monitoring of performance by students themselves and teachers was to be improved.

In the description below, details will be given about how the program was used for English. The discussion reflects how the program was used in the English department between 1994 and 1998. The description is based on its use in the context of a “practical grammar” course in this department. Hologram is still used in the English department today, for instance for a module on syntactic analysis, for which a commercial version of the program is used in conjunction with a course book (Verspoor & Sauter, 2000). The description of the programme may be considered representative of how the program has been used in several institutions in the Netherlands.

In the Department of English at the University of Groningen, Hologram was initially used to complement *A Contrastive Grammar of English and Dutch* (CGED), consisting of a textbook and a workbook (Aarts & Wekker, 1987; Aarts, Verhulst, Waterval, & Wekker, 1989). The main grammar points were discussed in class and students studied the relevant chapters from the book before they started using the program. Hologram offered the usual sets of exercise formats, such as gap-filling, matching and multiple choice. It distinguished itself from other programs available at the time by its easy-to-use authoring facilities, its extensive student monitoring and its interactive hypertext, which offered students full recourse to relevant grammatical information.

The basic premise was that explicit grammar learning was necessary, that contrastive grammar learning was useful and that grammar was best taught as a subject in its own right. Crucially, the project was not aimed at challenging these assumptions, which continue to be relevant in the debate on the role of
grammar in language teaching today. The preferred option at the time was to regard the program mainly from the point of view of making the best possible use of the teaching resources available.

Hologram was used to promote student reflection on grammatical concepts and problems for which teaching had so far only applied traditional classroom techniques (instruction and practice) and classical media formats (textbook and workbook). This traditional approach, largely based on the PPP sequence introduced above, was found to be inadequate for practising in several respects: instruction was group-oriented, relatively few items could be discussed in the time available, in groups of more than 40 students student participation was minimal, and student preparation for classes left much to be desired. As a result, students received too little practice in the relevant exercise material and were underachieving at exams. Hologram was primarily designed to counteract this inefficient use of teacher and student time and to improve student achievement and motivation. An extensive description of how Hologram works is given in Example 1 below. The text is based on Jager and Wekker (1997).

**EXAMPLE 1: HOLOGRAM**

The opening screen of Hologram provides access to the sets of exercises prepared by the teacher. For each set specifics are given, such as progress, score and a list of grammar points covered in the set. Initially the sets are the same for all students, but the composition changes in accordance with student performance, filtering out grammar points mastered and generating new exercises for grammar points not yet mastered.

A typical sequence of student actions is the following: answering the question, checking the answer, getting feedback and calling up the relevant theory topic, which is available in the form of a hypertext. None of these steps is mandatory, i.e. a student can look at an exercise without answering it; answer it without calling up feedback; answer it, ask for feedback without consulting the hypertext, etc. Alternatively, the hypertext may be
consulted before the answer is given or the student may ask for the correct answer to be
given. A typical screen is shown in Figure 5, which illustrates a drag-and-drop exercise
after feedback has been provided.

In this example demonstrating the contrastive treatment of a number of well-known
tense problems for Dutch users, the student has filled two gaps by choosing ‘has tried’
from the answers in the list on the right (in “He has tried for years to get a permanent
job.” and “At the time the managing director has tried to hush up the affair.”) A
checkmark indicates that the first answer is right and a cross that the second is wrong. By
clicking on the cross the relevant feedback has become available in the form of a small
pop-up screen.

The feedback establishes a close link with the exercise to which it refers by using words
from the exercise (these words are shown underlined): “The present perfect of the verb

try is not possible here because of the time adverbial at the time”, but the systematic nature of similar errors is emphasised by repeating the same explanation with different words for other contexts (e.g. “The present perfect of the verb go is not possible here because of the time adverbial yesterday.”) The feedback is concise and makes use of specific terminology (‘present perfect’ and ‘time adverbial’). The idea is that students who have studied the relevant part of the theory will recognise the problem immediately and that students not yet familiar with these concepts are referred to the relevant sections from the hypertext, which they can open by clicking on one of the hyperlinks given (Present Perfect: Indefinite use or Past vs. Present Perfect).

The destination of the hyperlink is a page from the hypertext containing relevant information for the grammar problem concerned:

![Figure 6: Hypertext screen](image)

Ideally, the information given on such a page provides sufficient background for the grammar problem concerned, but hyperlinks in the text and other navigational devices such as tables of content and linear browsing facilities make it possible to access other
parts of the hypertext as well. The hypertext can also be used independently of particular exercises or feedback. In this way students are given an opportunity to explore the relevant theory topics before answering any of the questions.

After having their answers checked, students can try each exercise again as often as they want, but no scores are awarded after the second attempt. Implemented in a local area network, Hologram allows teachers continuous access to student results. A separate reporting module provides a breakdown of individual student results showing the composition of sets for consecutive attempts and comparing individual results to group results. In addition, the module also provides extensive question surveys, showing how often each answer was selected (or entered). For fill-in exercises, additional information is available, such as a list of answers entered that had not been anticipated by the teacher.

Full translation sentences do not occur in Hologram. Although there is no physical limit to the length of the answer to be supplied, providing appropriate feedback for lengthy input is difficult because of the great number of alternative answers (even though Hologram stores any answer that it does not recognise, allowing the teacher to add it to the list of possible answers at a later stage). The usual strategy in such cases is to isolate the problem, as exemplified in Figure 5.

The hypertext plays a key role in enhancing students’ insight into the problems at hand. Although its suitability for supporting exploratory learning was pointed out above, no strong claims were made about the mode of presentation being cognitively superior to the traditional written textbook. The hypertext is used for all the reasons that hypertexts are generally used for (in help systems, on-line manuals, etc.). The main information unit, the topic or page, very much resembles the traditional paragraph. It is mainly the ways in which it is linked to other topics, the speed of access, the ease of navigation, and particularly the possibility to access it from any given point in the computerised exercises (context-sensitivity) which give it an edge over the written medium.

One of the most notorious problems associated with hypertext, loss of orientation, has been addressed by making the hypertext dependent on the exercises rather than the other
way round. There is little danger of students “getting lost in hyperspace”. Although a bidirectional system was considered at first, in which students could access the exercises from the hypertext as well as access the hypertext from the exercises, a decision was made in favour of a monodirectional system because accessing the exercises from the hypertext might make the presentation of exercises rather haphazard and would leave teachers too little control over the learning process.

3.3 ICT integration and Hologram

The Hologram project demonstrates how aspects of pedagogy, technology and the educational environment have been aligned in such a way that the deployment of one application for a sustained period of time has been achieved. Although it is obvious that Hologram does not belong to the TBLT framework from which we take our primary bearings for contemporary language pedagogy, the project and the program that resulted from it can be used to demonstrate several aspects of implementation, which are equally valid for the use of ICT in differently oriented language learning contexts. Discussing these aspects with a view to the primary components of integration outlined in the previous chapter helps to put a face on the issues concerned and serves to place the changes in perspectives and practices in the use of technology for (language) learning over the past 15 years into a historical context.

3.3.1 Pedagogy

Hologram is clearly not a product of the TBLT tradition outlined above. In several respects, it may be said to be diametrically opposed to TBLT principles. Its strong reliance on linguistic structure as a defining element in program design shows its affiliation with the traditional form-focused language syllabuses, firmly opposed by TBLT theorists and practitioners (cf. chapter 2 above).
Notwithstanding that, the design of the program was clearly pedagogically motivated. In terms of the Flexibility-Activity Framework introduced above, the program was definitely conceived to activate students and to make more flexibility in learning and teaching arrangements possible. Although (most of) the existing pedagogical procedures and resources remained intact, more active engagement of the learner with the subject matter to be learnt was sought after, and, reportedly, also achieved.

The subject matter, primarily knowledge of linguistic concepts, is acquisition oriented (in the sense of the Sfard’s Acquisition Model of learning; cf. Table 4 above). It looks at grammar (or syntax, or pronunciation, or vocabulary – to mention some other areas to which Hologram has been applied) as a subject to be learnt in the context of an academic language program – not an unusual view in many academic language departments today. The contrastive approach, reminiscent of grammar-translation methods in language teaching, however, strongly suggests that this type of grammar teaching is regarded as facilitative of second language learning, which obviously remains a moot question until the present day. Leaving these issues aside, the Hologram project can be used to illustrate several aspects of pedagogy more generally, which are also relevant for appreciating the potential of technology in more contemporary views of language teaching, such as TBLT.

Hologram capitalises on offering flexibility in terms of the dimensions distinguished by Collis and Moonen (Collis & Moonen, 2001: 10):

- Content: not every learner practices and studies the same topics;
- Time: students can work at their own pace of studying;
- Instructional approach and resources: an alternative is offered for class-based teaching and the traditional book formats;
Delivery and logistics: self-study by students is possible in the institution at the time and place that suits students best (during opening times of the institution); at the same time results can be monitored, allowing for tracking of student progress by teachers and personal feedback if required (for the network-based version).

The decision to place the program in the larger setting of classroom instruction and textbook preparation was also inspired by pedagogical considerations. No matter how good the feedback and explanation that could be provided by the program, it was felt that for explaining certain aspects of language or dealing with unexpected problems the presence of a live teacher was essential. This tied in with the view expressed at the time by Zähner (1995) that teachers cannot be emulated by computer programs in their role of instructors and providers of immediate feedback, adapting as they do to individual learners with far greater flexibility and at far greater speed than any computer could provide. Although the educational perspectives are radically different, this echoes the concerns expressed by Doughty and Long (2003) and Skehan (2003) about preserving the role of the classroom and the classroom teacher in technology-enhanced language learning environments.

The decision to keep using the text book and work book follows the same line of thinking. The traditional book format constitutes a highly efficient medium, particularly if portability and reading speed are taken into account (Nielsen, 1990). Laurillard (2002), discussing the narrative properties of media, adds to this that whereas books or lectures are well suited to convey the narrative structure of texts, hypertext may reduce “knowledge to fragments of information” (Laurillard, 2002: 188). Significantly, the hypertext in Hologram is offered on a needs-based, just-in-time learning basis, rather than as an online grammar book to be studied in linear fashion. There is thus substantial support for the pedagogical decision to opt for a kind of “best-of-both-worlds” approach in program design.
Finally, the pedagogical focus of Hologram on specific language areas (rather than an integrated treatment of several skills at the same time) was characteristic of a fair number of programs at the time (e.g. the TELL consortium (http://www.hull.ac.uk/cti/tell/), operating in the UK at the same time, also offered programs specifically focusing on reading, translation, grammar, etc.). As Levy and Stockwell (2006) point out, one of the functions of CALL is to focus on specific language skills and language areas. At the time when computer use generally was regarded as working with a particular program (unlike the present day, where a much larger range of functions converge in a single PC), this focused use fitted in well with general perceptions on the use of computer technology. Although pedagogy today, including TBLT, supports more holistic approaches to language learning, favouring integrated skills learning rather than discrete skills learning, it will be argued below that there continues to be a place for focused skills practice and for exploiting the types of flexibility offered by Hologram in contemporary frameworks of language learning.

3.3.2 Technology

In terms of technology, Hologram represented the state-of-the-art at the time. It was based on Windows, which was just being introduced as an operating system in the participating universities at the start of the project. The program was written in ToolBook, one of the leading educational authoring packages of the time (see http://www.toolbook.com for information on current versions). The hypertext was based on the ToolBook hypermedia format, rather than HTML. HTML was only just beginning to take off as the programming language for the Web. Local networks and a network-based database system were used for delivering the program to students and keeping track of student progress.

In terms of learning technology, Hologram would be characterised as a tutorial program, which Levy (1997) distinguishes from tool applications in
CALL in that it puts “the teacher in the machine” (p. 182). The tutor evaluates, whereas the tool does not (p. 180). Clearly, the teacher’s roles of transmitter of learning content and provider of feedback are encapsulated in the program, particularly because all the materials are authored by teachers themselves. This is enhanced by the level of adaptivity (Laurillard, 2002) provided through the interactive exercises which are the core of the program.

In fact, Hologram meets Laurillard’s description of an effective adaptive tutorial application in several respects. Compare, for instance, the following description (based on an entirely different tutorial application) with the features of Hologram described above:

There is a default sequence built into the program structure, such that the program moves through topics that progress in complexity. Based on the frequency of the student’s errors, it may suggest they do more before moving on to a different topic, or taking a test. Thus, adaptivity acts at the level of deciding what task to set, and how much practice to offer on each one. However, it is crucial to allow the student to override the default sequence. This is a user-control medium, and they will wrest that control somehow, to the extent of abandoning the program if it does not give them the freedom appropriate to the medium. … Tutorial programs should be fully controllable by the student because although the teacher’s adaptive strategy may be generally effective, it may not be so on every occasion as far as the student is concerned.

(Laurillard, 2002: 137-138)

On the face of it, the exercise format and the way in which they are presented are reminiscent of the ‘drill-and-practice’ exercises of early CALL programs. And although some behaviourist tenets may also be visible in aspects such as the scoring mechanism and teacher monitoring, students have full control of the program, which greatly reduces the sense of being ‘drilled’ and practice is enhanced by the provision of feedback and explanations. A general point of
consideration, referring back to the comments by Schrooten (2006) and many others on ‘behaviouristic’ software, is that it is usually not possible to dismiss a program as ‘behaviouristic’ by simply looking at its features. As Chapelle (2001) and Warschauer and Kern (2000) have pointed out, CALL should always be evaluated within the context in which it is used. It is in fact not unlikely that CALL programs used in, for instance, a TBLT context will have some features resembling those from software developed at the time of ‘behaviourist’ CALL.

With respect to another aspect of technology, how well the program can handle student input, the limitations of the technology at the time were recognised from the start. Rather than introducing advanced natural language processing techniques, a more pragmatic approach was used which deployed fairly sophisticated string matching algorithms (including the use of wild cards) and compensated for recognition failure by recording the answers concerned and allowing teachers to add them to the list of possible answers, if need be (cf. Jager, 2001). As Schrooten (2006) above remarked, computers today still fall short of interpreting learner input and providing appropriate feedback. In spite of the substantial amount of research on error detection and correction (Heift & Schulze, 2007), Intelligent CALL (ICALL) has not yet produced the reliable, robust algorithms that are needed for larger-scale automatic evaluation of learner input (Blake, 2008b). As Salaberry (2001) suggests, “increased technological sophistication” does not always imply “increased effectiveness to achieve pedagogical objectives” (p. 51). In this respect then, the input handling in Hologram tried to make the best possible use of ‘proven’ technology at the time.

3.3.3 Environment

As Collis and Moonen (2001) point out, it is quite common for innovation projects to start in the way the Hologram project did. Some overtones of the general feeling “You can’t not do it” (Collis and Moonen’s ‘Lesson 3’) are
present in the project application, including a sense of having to maintain a leading position in the field. The project initiation phase is top down and project implementation details are left to a project team in charge of running the project. This is typical of many innovation projects. Reporting on research conducted during the late 90s of the previous century, Collis and Moonen (2001) remark:

We also analysed many different strategic plans involving technology for traditional universities and found they all included statements about offering high-quality education (as has always been the case) as well as about the importance of information and communication technology in the learning process. However, few operationalized their goals beyond general statements such as ‘attention to individual students’ or ‘preparing students for the future’. Operationalizations are typically left to internal committees and working groups.

(Collis & Moonen, 2001: 39)

It should be pointed out that Collis and Moonen (2001) address this issue from an institution-wide perspective. In the next chapter, we will discuss how this perspective has become much more important in recent years. At the time of the Hologram project, the strategic initiatives were primarily developed at the faculty or departmental levels, with little coordination between them. As a result, many faculties and departments were developing computer-assisted learning programs for their own specific disciplines on the basis of the technologies and pedagogies that they deemed fit. Hologram was made to measure to the specifications of four language departments in one faculty, but its development was largely independent of software development in other disciplines and faculties in the same university. As we shall see later on, this scope for development has radically changed during the past few years and the environment for implementation has been stretched to the level of the institution as a whole, and beyond.
The management at faculty level was strongly supportive of the project. This is evident from the substantial budget allocated to the project (approximately € 300,000), which was mainly used for the release of staff time (2.8 f.t.e. p.a.) for a three-year period. In fact, after completion of the project, commitment to consolidation of the project results remained firm, which largely accounts for Hologram having been in service for such a long time. Consolidation was facilitated by collaboration with other institutions, which will be discussed further in the next section.

### 3.3.4 Implementation

Before assessing the implementation of Hologram in terms of our model of implementation, we will summarise the relevant aspects from each of the areas above that implementation must address. A summary of the key aspects in pedagogy, technology and the educational environment is provided in Table 6 below:

<table>
<thead>
<tr>
<th>Pedagogy:</th>
</tr>
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<tbody>
<tr>
<td>• Engaging students in acquiring linguistic concepts more actively;</td>
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<tr>
<td>• Student control of navigation and choice of type and amount of feedback;</td>
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<tr>
<td>• Adaptation to student levels;</td>
</tr>
<tr>
<td>• Enhanced flexibility in mode and time of delivery of course content;</td>
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<tr>
<td>• Existing views on grammar teaching not challenged and propagated in program content designed by teachers themselves;</td>
</tr>
<tr>
<td>• Basic course structure, existing course materials and exam procedures classroom procedures and roles left intact;</td>
</tr>
<tr>
<td>• Traditional role of teacher, course book and work book preserved;</td>
</tr>
<tr>
<td>• Focus on discrete language areas;</td>
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</tbody>
</table>
A decisive factor in the implementation of the Hologram project was the link with existing views and teaching practices in the area of practical grammar education. This relates to “educational effectiveness”, one of the 4 E’s (Institutional Environment, Educational Effectiveness, Ease of Use, Personal Engagement), which Collis and Moonen (2001) have found to be primary determinants for the acceptance of educational software by teachers. In the initiation phase (start up stage) of a project, pedagogical effectiveness and the institutional environment are most critical for achieving success. With regard to effectiveness, they mention the following aspects as important for achieving a short-term pay off:

**Learning effectiveness**

- The innovation can solve personally relevant educational problems;
- The innovation provides new forms of learning experiences;
• The innovation provides support for the existing curriculum.

(Collis & Moonen, 2001: 55)

These aspects were highly pertinent to the initial stage of the Hologram project. Teachers’ perceptions of educational effectiveness were positive overall. Teachers generally spent less time on teaching grammar (De Jonge, 1997). They reported greater participation and heightened interest with students, and in some cases suspected a relationship between an improvement of exam results and the use of the program. The English department, for example, reported a fail rate of 45% for the practical grammar exam in 1994/1995 and 33% in 1995/1996 when Hologram was first used, but this drop in fail rates can of course not be incontestably attributed to the use of Hologram alone. What was relevant, however, was that substantial differences in frequency of usage were reported between courses where the use of Hologram had been made obligatory and those where the use of the program was on a voluntary basis. In fact, if there was an improvement in study results, it may well have been due to the mandatory use of the program alone. In contrast to other set tasks in the traditional setting, such as handing in and marking completed exercises in print, Hologram offered an easy, unobtrusive and manageable way of checking whether students had actually done the task. It is reasonable to assume that the combination of program features together with this mandatory use account for the successful implementation reported by the departments involved.

In terms of effectiveness, then, the Hologram project can be regarded as complying in several respects with the 4-E model proposed by Collis and Moonen (2001). The implementation also meets requirements associated with the other Es of the 4-E Model. The key aspects identified by the 4-E model in relation to the Hologram project can be summarized as follows:
## 4-E Model

<table>
<thead>
<tr>
<th>Institutional aspects (Environment)</th>
<th>Hologram implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Vision about technology within the institution.</td>
<td>Creating “up-to-date learning and teaching facilities” was one of the project objectives.</td>
</tr>
<tr>
<td>• Actual level of technology use in the institution.</td>
<td>Transition to MS Windows had been planned; Hologram anticipated on this.</td>
</tr>
<tr>
<td>• Readiness to change in the institution.</td>
<td>Primarily acceptance of technology use, not pedagogical change.</td>
</tr>
<tr>
<td>• Funding and incentives available.</td>
<td>Budget for co-ordination, programming and content development; release from other duties for teachers.</td>
</tr>
<tr>
<td>• Experiences in the past with technology in the institution.</td>
<td>Some projects, mainly focusing on general technology use by students, had been completed; some teachers and project coordinator had prior experience with technology for learning-related purposes.</td>
</tr>
<tr>
<td>• Adequacy of the technical infrastructure in the institution.</td>
<td>Upgraded as part of the project.</td>
</tr>
</tbody>
</table>

## Effectiveness

### Learning effectiveness

- The innovation can solve personally relevant educational problems;
  - Project built on perceived problems in specific areas of language teaching (esp. grammar), for which the program offered a solution; obligatory use may have contributed to effectiveness.

- The innovation provides new forms of learning experiences;
  - Educational technology added on to existing resources and teaching and learning formats.

- The innovation provides support for the existing curriculum;
  - Existing courses and pedagogy were point of departure and did not change significantly.

### Long-term pay-off

- The innovation is likely to result in eventual financial gain for the institution.
  - Definitely not a consideration with respect to savings on teacher expenditure; possibly relevant for attracting more students and improving student output.

## Ease of use

- Ensure that the instructors have up-to-date computers and good connections.
  - High-performance PC's (more advanced than regular PC's) made available to project members.

- Arrange for network connections to be subsidized for home use, for both instructors and students.
  - Not yet very relevant at the time; idea not compatible with LAN-based program.

- Choose a software environment that does not require training in order to use and does not require
  - Although initial training was required (especially to understand the conceptual design), ease of use was a distinguishing feature, which made Hologram popular also
special client software that is unfamiliar to the user.

### Engagement

- Take care that the first experiences of working with the technology ‘fit’ with the instructor’s experience and beliefs about the learning process.
- Build the instructor’s self-confidence by starting with a successful experience.

Teacher’s prior experience and beliefs about grammar learning were at the basis of the program design. First evaluations with students positive, although early programming stages accompanied by many program issues and bugs.

| Table 7: Assessment of Hologram implementation in terms of the 4-E Model, based on Collis and Moonen (2001: 52-56) |

A few other aspects of general interest for implementation are worth commenting on. In the description of how the project was run, project coordination, particularly the initiative to make departments (which had hitherto often operated independently) join forces in developing a specific software program, was mentioned as a key characteristic of the project. In discussing cooperation as a way of pushing educational software beyond the level of enthusiastic pioneers, Collis and Moonen (2001) make a number of useful observations, which may be relevant for promoting the use of CALL more generally. Pioneers, they argue, are not always best positioned to move the process forward. They are often interested in pursuing their own interests and pushing their own limits, which does not automatically make them the leaders of choice for implementation. Collis and Moonen (2001) put the point quite forcefully when they remark:

> Pioneers are frequently not high on the influence ladder in an institution, and even if they are, they are perceived as more of a liability than a benefit in the scaling-up process. Their enthusiasm may be interpreted as indiscriminate by the non-pioneers, and their experience related to a level of technology fondness that is not shared by their colleagues.

(Collis & Moonen, 2001: 57)
When it comes to bridging the potential-practice gap in CALL, pioneers are indispensable in pushing the potential of CALL forward, but implementation requires that practices building on this pioneering experience are established in which implications in terms of pedagogy, technology and institutional environment as a whole are addressed. If pioneers are made responsible for implementation, they should be open to the concerns of other, sometimes less technology-minded, colleagues and the longer-term interests of the institution as a whole. In the case of the Hologram project, the project team consisted of a mix of pioneers and staff who were relatively new to the use of technology for language learning. Rather than expecting the pioneers to somehow enthuse others by their own use of technology, the project team was formed to give direction to the project and try to achieve success by setting realistic goals.

Another aspect of collaboration is that it may be very profitable to work together when content production is aimed for (as in the case of Hologram). Although local circumstances make it difficult to give rules of thumb for cost-effectiveness of educational media (Laurillard, 2002: 195-197), which may make it necessary to look at return on investment (ROI) in different terms (Collis & Moonen, 2001, chapter 6), content development may benefit substantially if content can be developed by different teachers or other materials designers collectively. For languages (as for many other disciplines) this may involve working with other institutions in different universities. This type of collaboration has been another distinguishing feature of the Hologram project.

Presentations of Hologram at conferences and symposia had sparked off interest in other institutions in the Netherlands for using the program. Although the possibility of making the program available commercially had been explored, the institutions most interested in using the program for teachers and students decided to establish a consortium, led by the Faculty of Arts, University of Groningen. The consortium would finance the
maintenance and further development of the program as well as facilitate the exchange of learning materials developed. An additional benefit of the arrangement was that it allowed the University of Groningen to continue the appointment of its programmer, whose presence turned out to be invaluable in resolving issues reported after the project and adapting it to specific needs in the partner institutions. This initiative, in which the University of Leiden, the University of Nijmegen (now Radboud University of Nijmegen) and the University of Groningen were involved at first, was embraced later by the University of Tilburg and the University of Utrecht. It continues to be the basis for close cooperation between these universities in the field of CALL to the present day. The sustained financial support by the participating institutions is yet another instance of institutional support which is critical to the success of CALL implementation.

Although the Hologram project has been useful for articulating several aspects involved in the implementation of ICT for learning-related purposes, this does not necessarily make it a model for CALL implementation in general, particularly in view of the myriad of technology options and the radically different conceptions of language pedagogy today. Rather, Hologram constitutes one particular form of computer use for language learning requiring a particular set of measures for successful implementation. There are many other forms of ICT use for language learning and teaching, exploiting different aspects of pedagogy, technology and making different demands on the educational environment. In anticipation of a more extensive discussion in the next chapters, this section ends by outlining why it might be much harder to achieve successes today in two key areas of implementation where Hologram has been relatively successful.

The first concerns the use of existing pedagogies as a point of departure for the project. In chapter 1, it was pointed out that the potential-practice gap has both a quantitative and a qualitative dimension. Too few teachers are using ICT for language learning and the kinds of uses in evidence are not generally
considered pedagogically innovative. There is a dearth of communicative, task-based CALL practices. The Hologram project left teacher beliefs, possibly also student expectations, about grammar learning unchallenged and explored ways in which the existing curriculum could be enhanced by the use of technology. Such an approach, as has been demonstrated, finds support in implementation frameworks such as the Flexibility-Activity Framework, but the Hologram project introduced changes in the ‘pedagogical approach’, rather than the ‘pedagogical model’. If the latter is to be addressed (Collis and Moonen (2001) make many suggestions for doing so), this involves challenging the concepts and principles that have hitherto guided teachers. In that case, changing teacher beliefs and convictions will have to be a key element of implementation.

Collis and Moonen’s first lesson is “Be specific”: “We need to define our terms and express our goals in a measurable form or else progress will be difficult to steer and success difficult to claim.” The key point of this is inevitably: if principled changes to the language learning curriculum are required, this should be made explicit from the outset and project implementation should focus on this accordingly.

As indicated in chapter 2, we will explore this issue further by considering TBLT as the framework from which we take our bearings. This will obviously lead us away from the pedagogical principles and practices that guided the Hologram project, although, as we shall see, implementation will also be comparable in several respects. The focus on TBLT as a guiding framework, however, brings out the issues of supporting innovative pedagogies with contemporary technologies in full. The holistic approach to language learning, the many technology options available, the points of contact with learning technologies for other disciplines focus attention on aspects not covered by the Hologram project. A considerably higher degree of change management is required if IILL is to be achieved under these conditions. It will be demonstrated that these conditions are typical of much of HE today, which is
why this exercise of developing an implementation framework for IILL in light of current circumstances should be of relevance to many HE institutions today.

Another crucial difference for implementation today might be the shift away from a focus on content to a focus on activity as the guiding principle in curriculum design. In fact, implementation of the Hologram project can be seen to go directly against Collis and Moonen’s lessons 14 and 15:

<table>
<thead>
<tr>
<th>Lesson 14</th>
<th>Aim for activity.</th>
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<tbody>
<tr>
<td></td>
<td>The key roles of the instructor are becoming those of activity planning, monitoring and quality control.</td>
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<table>
<thead>
<tr>
<th>Lesson 15</th>
<th>Design for activity.</th>
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<tbody>
<tr>
<td></td>
<td>Instructional design should concentrate more on activities and processes, and less on content and a predetermined product.</td>
</tr>
</tbody>
</table>

Table 8: Collis and Moonen’s lessons 14 and 15, based on Collis and Moonen (2001: 2-3)

In addition to following from the pedagogical principles of the Flexibility-Activity Framework and from a growing interest in constructivist approaches to language learning more generally, this shift in emphasis is also inspired by the fact that content-based use of learning technologies requires massive upfront expenditure and use of valuable teacher resources which might perhaps better be put to different uses of technology. The rise of the Internet/WWW precipitated this shift in emphasis not only because it provided access to vast quantities of already existing language learning content, but also because it provided alternative ways of learning and teaching for students and teachers. This shift in perspective fitted in well with growing frustrations about the authoring of content by teachers, which had once been heralded as a way of increasing acceptance of new technologies. Or as Collis and Moonen (2001) put it:

This “authoring” approach … did not bring a solution. Partly this is due to the limited scope of the didactical framework of the authoring
systems offered, partly to lack of time and imagination of teachers in
the creation of new materials.

(Collis & Moonen, 2001: 69)

The Hologram project may have been a favourable exception to this
experience, but the fact remains that after a concerted effort lasting for
approximately three years only about 8 to 10 hours of content for the
participating departments had been delivered. As we shall see later on, this is
only a fraction of the time available for students for self-study. These stark
figures are of course mitigated by the fact that the program was adopted by
several other institutions in the Netherlands, that materials were used and re-
used for a long period of time, and that the 8 to 10 hours represent ‘quality-
time’ in the sense that it was considered a great improvement over how
students would otherwise have spent the same time. Nevertheless, it goes to
show that one of the strongest limitations of content-based implementations
of IILL is that they are extremely resource hungry.

As Rosenberg (2001) points out, this shift from content to activity coincided
with the demise of computer-based teaching (CBT) and the simultaneous rise
of e-learning as a conceptual basis for technology-supported learning. A
primary feature of the contemporary language learning environment that we
begin to lay out in the next chapters is that it builds on this e-learning
environment as an overall conduit for learning.