



ELIAS

Early Language and Intercultural Acquisition Studies

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Executive Summary

More than ever before, educational institutions are called upon to prepare young children for the demands of an increasingly globalised world and the challenges of preserving our biosphere upon which all human life depends. In order to provide them with the personal and professional foundations they need to participate in a multilingual and multicultural society and to grow to be responsible European citizens, European education systems must impart sound knowledge of foreign languages, intercultural skills and tolerance, and individual as well as collective environmental awareness. It is critically important to introduce children to such knowledge and skills at the earliest stage possible, i.e. ideally at the start of a lifelong learning process. As numerous studies on early education have demonstrated, children's natural learning strategies and enthusiasm maximise their learning success at a young age.

The most effective method of imparting such knowledge and skills at an early age is a language immersion programme in bilingual preschools, carried out through native speakers of a second language (L2). ELIAS aims to advance Europe-wide establishment of bilingual preschools and collaboration with non-academic educational institutions. A research consortium from nine universities and a zoo monitors young children's learning progress in second language acquisition, intercultural communication, bilingual science skills and environmental awareness in ten bilingual preschools in Belgium, England, Germany and Sweden. Located on the premises of the Magdeburg Zoo, the unique bilingual Zoo Preschool thrives on its proximity to animals and provides an ideal environment for bilingual education for sustainable development ("Green Immersion"). Such collaboration is unprecedented in the world.

ELIAS aims to inform specialists in the European education sector, preschools, schools, research institutions and non-academic cultural institutions (e.g. zoological and botanical gardens, aquariums, museums) and the general public.

Ethnographic participant observation of preschool activities, and a number of standardised and non-standardised tests for language development revealed that:

1. At preschool level, children already learn and successfully apply different strategies of intercultural competence.
2. The children attain a high level of competence in the foreign language (English), whereby language comprehension is in advance of language production. The level of language competence depends on the amount of contact with the language, as well as the language specific teaching methodological principles of the preschool teachers, that is, the way language is used when interacting with the children. Children with migration backgrounds learn the language faster than children with a monolingual German background.
3. The native language is not affected by the intense input in the foreign language, on the contrary: The children's level of German increases developmentally according to their age. Children with migration backgrounds are not as disadvantaged as was initially feared: in line with other studies, it was shown that both languages of the children benefit from an increased language awareness.
4. The children in the zoo preschool show significant progress in terms of bilingual environmental competence ("Green Immersion"). This development was found to depend a lot on the age of the child as well as other individual factors.

ELIAS has produced a series of practical materials such as teacher training modules, Green Immersion teaching modules and a CD ROM, information brochures and guidelines, and a range of presentations on bilingual learning, all of which can be downloaded from the ELIAS website at www.elias.bilikita.org, and notably the two-volume book-publication "Bilingual Preschools", which makes all results accessible to the public after the project's lifetime.

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1. Project Objectives

Alexandra Hähnert, Kristin Kersten

In the increasingly multicultural societies of today, foreign language proficiency and intercultural competence are becoming more and more important. ELIAS aims to make a contribution to the implementation of efficient bilingual preschool programmes throughout the EU and to provide children of an early age with crucial knowledge of different foreign languages, intercultural competence, tolerant intercultural attitudes and a heightened awareness of the environment within an integrated programme.

The preschools affiliated with the project – ten intercultural bilingual preschools in Belgium, Germany, England and Sweden, and a monolingual preschool in England – are academically monitored and guided by a research team from nine universities in the four countries. The research team aims to single out the factors which render a programme most efficient in terms of language, culture, and content learning. The results obtained are transferable to bilingual programmes with any chosen foreign language.

ELIAS places a special emphasis on early environmental education. In an unprecedented pilot programme, research on bilingual science learning and the acquisition of environmental awareness was carried out in the unique zoo preschool at Magdeburg Zoological Garden in Germany.

Moreover, preschool staff were provided with teacher training in theoretical and practical issues of bilingual education. Teaching materials for bilingual science education were developed and are presented on the project website as well as on a CD ROM available at request. Another project product with practical relevance is an implementation manual for bilingual preschools. The research team, on the other hand, profited from the practical knowledge and experiences of the preschool staff and from their expertise about the children's development in their observations and assessment procedures. Thus, continual feedback between all partners warranted an increase in quality both in the preschool programmes and in the research studies.

A primary concern of ELIAS was to encourage bilingual learning and the implementation of bilingual programmes as widely as possible across European preschools, and to help establish the continuation of the programme into elementary school. The final symposium, with about 300 participants from ten different countries, contributed to this goal.

Initial target groups included project preschool staff, children and their parents, the zoological garden affiliated with the project and other institutions with a direct interest in bilingual education. In the long run, the project will continue to benefit European preschools and preschool initiatives, as well as elementary and secondary schools via the distribution of the research results, online and in print. ELIAS produced a pool of knowledge from which all European institutions involved practically or theoretically in bilingual education may draw, and thus tried to enhance European educational action plans at large. In this way, ELIAS makes an important contribution to the vision of an integrated Europe.

2. Project Approach

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ELIAS used a qualitative, ethnographic approach supplemented with several quantitative measures to capture the complex learning situation in bilingual preschools. Within this framework, the main methodological tool was participant observation (see below, 2.1, 3.1). Participant observation focused on intercultural communication (3.2), on bilingual environmental learning (3.3.), and on language learning (3.4-6). This section summarises the most important methodological approaches and the dissemination strategies. Assessment procedures and project results of all studies, on the other hand, are explained in detail in the next chapter (3).

In accordance with the ELIAS objective to examine the effectiveness of the immersive preschool programmes, several language assessments (L2 English, L1 English, L1 German) were carried out with a variety of age-appropriate tests. The test used for second language assessments is the ELIAS L2 Grammar Test, which was exclusively developed for ELIAS (3.4), the standardised Lexicon Test (BPVS, 3.5), and, since the bulk of the preschools are located in Germany, a standardised L1 Test (SETK) for L1 German (3.6). Training and guidance on data analysis were provided by different partners according to their expertise in the field. In addition to these quantitative measures, several surveys, such as interviews with preschool teachers and parent questionnaires, were conducted to elicit data constituting the learning environment of the children as well as their social background. Assessment materials can be accessed on the project website, www.elias.bilikita.org.

Another objective of the project was to provide children with an educational framework that fosters scientifically sound Education for Sustainable Development (ESD) in a bilingual learning context. Based on this innovative educational approach, the ELIAS team created a new technical term: *Green Immersion* (Kersten & Perret 2008). Apart from ongoing participant observation, the ELIAS team also conducted a pilot assessment that led to the development of a set of teaching techniques and materials, and a tailored developmental model on Green Immersion education, on which two observational studies on Green Immersion were based. The online version of those modules can be downloaded from the ELIAS homepage.

2.1 Methodology and Methodological Tools

A major research tool within the ELIAS Project is the so-called "ethnographic observation", i.e. the non-obtrusive observation of human behaviour in a field environment. The person is usually not aware that he/she is being observed (see e.g. Pitman et al. 1989). But why should field research be carried out? Why not focus on tests? As Ellis (1990a: 67) pointed out, there is a scepticism over the ability of this approach to 'produce the definitive answers that some researchers expect.' ELIAS therefore supplemented data from quantitative research (i.e. the L1 and L2 language tests) with qualitative data, based on our assumption that qualitative and quantitative methods are complementary rather than opposites.¹

Ethnography focuses on the collection and interpretation of data and questions and hypothesis often emerge during the course of the investigation, rather than beforehand (see

¹ In the German literature, this approach is called "triangulation" (see e.g. Flick 2008).

e.g. Pitman et al. 1989). That is, ethnographic research is a bottom-up approach, i.e. theory is derived from data ('data first').²

Within the ethnographic framework, a research strategy called "participant observation" is used frequently. Participant observation aims to gain a close and intimate familiarity with a given group of individuals (such as a religious, occupational, or sub-cultural group, or a particular community) and their practices through an intensive involvement with people in their natural environment, usually over an extended period of time.³

In the context of ELIAS, participant observation was chosen as the most important tool to determine how children acquire a foreign language in a bilingual preschool context. This was done because studies of very young children agree that written questionnaires (which are an important tool in ethnographic studies) are of no use for data collection, as very young children are unable to read (see, e.g., Boehm & Weinberg 1997; Garbarino & Stott 1989; Touliatos & Compton 1983, all in McKechnie 2000). While it is possible to interview and survey adults who may act as important informants about children's foreign language acquisition, these methods capture only indirectly a picture of that development. In contrast, the techniques of ethnographic observation, which allow exploration of research questions from the context itself in a manner that may be adjusted to be age appropriate, provide a promising approach to research with young children in foreign language settings.

Participant observation was carried out by researchers who spent time in their respective preschool at least once a week. Observers were present during the daily preschool routines and took field notes. Observers were familiar to the children and often considered part of the staff. For the children and the staff, the observer, however, is slightly separate from everyday life of the classroom, but still functions as a member of the group (see also Tabors 1997). By being a participant, the researcher is able to get to know all the children and the teachers; by being an observer the researcher is able to record interactions that may have otherwise gone unnoticed.

According to Pitman et al. (1989), there are six characteristics of ethnographic research:

1. The research is carried out in the context in which the subjects normally live and work, i.e. it is contextual.
2. The research is unobtrusive, i.e. the researcher avoids manipulating the phenomena under investigation.
3. The research is relatively long-term, i.e. longitudinal.
4. The research involves the participation of stakeholders other than the researcher, i.e. it is collaborative.
5. The researcher carries out interpretive analyses of the data.
6. There is interaction between questions/hypotheses and data collection/ interpretation, i.e. the research, is organic.

² The ethnographic approach has been criticised because ethnographies are based on the detailed description and analysis of a particular context or situation. It is therefore difficult for outsiders to access and replicate the results. However, as Pitman et al. (1989: 59) points out, five key aspects of ethnographic research have been developed which enhance external reliability, i.e. the replication of the research by others: For example, it is important to be explicit about the social position of the researchers within the group under investigation. Most importantly, however, the choice of the informants, the analytical constructs and premises, the social situations, the conditions and the analytical constructs and premises, and the methods of data collection and analysis have to be clearly stated.

³ Participant observations have a long tradition and were extensively used in the 19th and 20th century, esp. with respect to the studies of non-Western societies or sub-culture groups (see e.g. Spradley 1980, De Walt et al. 1998). With the introduction of "grounded theory" (e.g. Glaser & Strauss 1967), a more formalised qualitative research programme, many ethnographers have refined their methods, by making them more amenable to formal hypothesis-testing and replicability.

These six characteristics may also be applied to ethnographic research within ELIAS: For example, the participant observations were carried out during the two-year period of the project (longitudinal), the research took place in the preschools (contextual) and researchers ensured that the children's activities and the daily routines of the preschools were not disturbed (relatively unobtrusive research). As the interpretation of participant observation was also supplemented by parent questionnaires and regular conversations and interviews with the preschool teachers, the research carried out within ELIAS was collaborative. The research team carried out interpretive analyses of the data and constantly checked whether the materials and the interpretations were useful to the purpose of the research.

ELIAS developed an observation checklist called IQOS (Input Quality Observation Scheme) to assess the teachers' language input and its influence on the children's language development. The IQOS includes questions on the teacher's language use, contextualisation of language and negotiation of meaning.

The results of the observations were complemented with the results of the quantitative assessments in order to capture the complex picture of learning and education in bilingual preschools (see chapter 3).

2.2 Dissemination and Exploitation

Apart from the research studies, ELIAS developed training materials and practical manuals which can be employed in bilingual preschools in a supra-regional context. As we have often experienced, new institutions tend to "re-invent the wheel" over again, in spite of the fact that many of the initial difficulties could be avoided by referring to tried and tested methods. The ELIAS materials are intended to remedy this situation and help disseminate best practices in bilingual preschools. Materials that can be downloaded at the website include teacher training modules on background information for different relevant topics, such as introductions to intercultural competence, first and second language acquisition, teaching principles in immersive institutions, bilingual environmental education (Green Immersion) and material creation; a parent information brochure on immersive learning in preschools; guidelines for the implementation of bilingual preschools and primary schools, guidelines for teaching principles, a conceptual design for Green Immersion in bilingual preschools; a range of presentations on ELIAS topics and results; a bibliography, and, as stated above, online teaching materials for Green Immersion available online and on CD ROM.

The final book publication *Bilingual Preschools* (edited by Kersten, Rohde, Steinlen & Schelletter 2010) represents the dissemination tool with the most impact among all project results. It consists of two volumes. The first volume, *Language and Development*, includes the research results of all studies carried out within the ELIAS framework, i.e. the study on language input (Weitz et al.), on receptive L2 lexical knowledge (Rohde), on receptive L2 grammar knowledge (Steinlen et al.), complemented by a comparison between monolingual and bilingual children (Schelletter & Ramsey), the study on German first language acquisition (Steinlen et al.), on intercultural encounters in bilingual preschools (Gerlich et al.), on Green Immersion and animal-supported environmental education (Thomas et al. and Strunz & Thomas), and finally on the profiles of the different ELIAS preschools (Wippermann et al.). The second volume, *Best Practices*, includes practical guidelines and background information on fields relevant to bilingual preschools, which can be used for training purposes. It comprises an introduction to bilingual preschool education in Europe (Wode), a summary of the research results (reprinted in chapter 3 of this report, Steinlen et al.), guidelines for the implementation of a bilingual preschool as well as for teachers' language use (Kersten et al.), and introductions to second language acquisition (Rohde), to

intercultural communicative competence (Massler), to green immersion (Thomas) and to material development in bilingual preschools (Tiefenthal et al.).

To warrant continual learning opportunities for the most important target group, the children, ELIAS placed a strong emphasis on the continuation of bilingual programmes in primary schools. We thus created an implementation guideline for immersion in primary schools (Kersten et al. 2009/2010), in collaboration with Germany's most notable association for bilingual learning, FMKS (www.fmks.eu). These guidelines are provided in English and in German, and they complement the manual for bilingual preschools. In addition, several partners contributed to initiatives for new immersive primary schools in meetings with parents, administrators and political boards. Another initiative with a very strong long-term impact is the foundation of a new association of bilingual institutions in Saxony-Anhalt. Three partners were involved in the implementation and are currently taking part in this network.

Apart from these practical materials, the ELIAS team used different strategies to make the project known in the European context, such as repeated press articles and information, diverse small-scale and large-scale team meetings with practitioners and representatives from administrative and political boards, two symposiums, information events, lectures, presentations and a panel discussion for preschools, parents, students and a wider audience, university classes, as well as diverse academic presentations on conferences.

Ultimately, the findings of ELIAS are intended to contribute to the extending and improving of early bilingual education throughout the Community.

3. Project Outcomes & Results⁴

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This chapter provides an overview of the most important research results gained in the course of the ELIAS project. It summarises the major findings and their implications from the longitudinal study carried out in 11 preschools between 2008 and 2010. The chapter comprises an overview on the nature of language input by the L2 teachers in the bilingual preschools (section 1), the most important findings of the children's L2 vocabulary and grammar comprehension (sections 2, 3 and 4), the acquisition of the mother tongue in the project's seven German-English preschools (section 5), a report on intercultural encounters in the bilingual preschools (section 6), and a documentation of the concept of "green immersion," i.e. bilingual environmental education in the project's only zoo preschool at Magdeburg Zoo in Germany (section 7). A more detailed academic description of each study can be found in the respective chapters in volume I of the project's final publication: *Bilingual Preschools: Language and Development* (Kersten et al. 2010). Each section in this chapter corresponds to the chapter in volume I with the identical title.

The project results described here were presented in comprised form at the project's final symposium. These presentations as well as all test materials and supplementary materials used in the studies are available at the project's homepage at www.elias.bilikita.org.

3.1. The Input Quality Observation Scheme (IQOS): The Nature of L2 Input and its Influence on L2 Development in Bilingual Preschools

3.1.1 Introduction

Second language input has been dealt with in several studies supporting different views of the role that input may play in second language acquisition. The necessity of input in second language acquisition is undisputable; the subject of debate has rather been on what the input should look like and how it turns into acquisition. One of the most influential theoretical positions has been the Input Hypothesis (Krashen 1981), where he claims that comprehensible input is the single crucial and necessary factor in acquiring a language and that input becomes comprehensible through simplification and with the help of contextual and extralinguistic clues. The role of comprehensible input in second language acquisition was further stressed by Michael Long (1980), but with a greater emphasis on interactive input. Finally, Swain pointed to comprehensible output as a crucial factor in negotiation of meaning that leads the learners to native-like speech (Swain 1985).

One of the ELIAS project's aims was to investigate the nature of input provided in bilingual preschools and, therefore, to develop an instrument which is able to capture the quality of the input offered by the L2 teachers. The assumption was that the quality of input matters in

⁴ This section is reprinted in an adapted form from Steinlen et al. (2010): Results of the ELIAS Research Studies: A Summary, in K. Kersten, A. Rohde, C. Schelletter, A.K. Steinlen (eds), *Bilingual Preschools: Best Practices*. Trier: WVT, 35-76, by permission of the publisher.

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SLA, i.e. that a qualitatively more beneficial input correlates with a more successful L2 development. As quantifiable data can be compared more easily, the ELIAS team developed a quantitative observation tool to gather quantifiable data in the different preschools which would describe the input and interactive features used in the preschools. Already-existing quantitative observation methods served as a first point of departure: For example, Ullman & Geva (1983) combined two instruments in one scheme with TALOS (Target Language Observation Scheme) whose first part is rated in real-time in the classroom and its second after the lesson. Such a comparison ensures a better control of interrater agreement. The most well-known and used observation scheme is COLT (Communicative Orientation of Language Teaching, Allen, Fröhlich, and Spada 1984). COLT was developed with the purpose of investigating the effects of instructional variables on learning outcomes and aimed at a systematic description of instructional practices and procedures in different L2 classrooms.

However, the ELIAS project is concerned with bilingual preschool settings which differ in many respects from the L2 classroom. Therefore the existing observation schemes could not be transferred directly to the ELIAS project's needs but were used as a basis for the development of the *Input Quality Observation Scheme* (IQOS), which accounts for the peculiarities of the preschool setting.

Just as COLT or TALOS, the IQOS is an instrument that uses a systematic approach to observations, i.e., it clearly states what is to be observed, by whom and when the observations should take place, and how the observed behaviour should be recorded (Bortz & Döring 2006: 270). The aim of the IQOS is to compare different L2 teachers with regard to their language use and to relate the obtained data to the children's L2 development. A quantitative observation tool was chosen over purely ethnographic observations in order to make the data gathered in the various preschools more comparable.

The IQOS incorporates both low-inference and high-inference categories (see Mackey & Gass 2005: 191ff.). Low-inference categories do not require any judgement and comprise general information, such as the categorisation of a situation and activity or the duration and the overall focus of the activity (i.e. form, when the activity is clearly language centred; form in a communicative context, when specific linguistic elements are emphasised and embedded in the context of a game/song, or meaning, e.g. genuine discussions or conversations which clearly focus on the content). Furthermore, these categories include information on the number of children who are participating, their average age, etc. The low-inference categories are used in order to obtain background information on the setting of the activity and to facilitate a general description of the observed sequence. High-inference categories, on the other hand, require the observer to decide whether a certain feature is present to a "very low," "low," "high" or "very high" degree. The high-inference categories cover aspects such as quantitative data (i.e. L2 amount, absence of L1 use), input characteristics (i.e. adapted speech, varied input, ritualised language, verbal acknowledgment of children's interactional moves and focus on form), the promotion of comprehension (i.e. contextualisation, explanation & comparison, and ensuring children's comprehension), output (i.e. encouragement and maintenance of L2 output, implicit corrective feedback, absence of explicit corrections and absence of forcing correct imitation) and, finally, whether the children actually listen to the L2 preschool teacher.

Apart from the quality of L2 input, the quantity of L2 input also plays a crucial role in foreign language learning which may be expressed as L2 contact (indexed in month of L2 exposure) or as L2 intensity whose impact on L2 development, motivation, L1 development or transfer has been shown in many studies (e.g. de Jabrun 1997, Kecskes 1998, Pavlenko & Jarvis 2002). Usually, L2 intensity is indexed as the number of L2 classes per week, for example in studies which compare total vs. early immersion programmes and which show that a more intensive exposure to the L2 leads to better achievements in the L2 (e.g., Genesee 1987, Lapkin et al. 1998, Wesche et al. 1994). Similar assumptions may be posited for the preschool context: The higher the L2 intensity is, the better the children will perform in their

L2. However, in contrast to the school context, L2 intensity cannot be measured as the number of L2 classes in preschools because the L2 is the medium of communication and not restricted to classes. For the preschool context, L2 intensity would rather include factors such as L2 teachers' and children's attendance time in the preschool per week, opening hours of the preschool and number of children in the institution. This is the first time that the effect of L2 input intensity on preschoolers' L2 abilities has been assessed.

3.1.2 Method

The IQOS was used by the observers during their weekly observations. The checklist was used with every L2 teacher who participated in the ELIAS project and who provided input to the preschool children. The observers selected an activity in which an interaction between the L2 teacher and the children took place, and in which the input was rated by means of the checklist. Observed interactions typically lasted less than 10 minutes, so that several sequences could be rated during one observational sequence.

The IQOS includes 9 low- and 15 high-inference categories. In every observed activity, each of the high-inference categories is given a score on a Likert scale from 1 to 4, with 1 indicating a 'very low' presence of the observed category, 2 indicating a 'low' presence, 3 a 'high' presence and finally 4 signalling that the category was present in the observed situation to a 'very high' extent. It was hypothesised that a very high use of a certain feature would be particularly conducive for L2 development.

The IQOS categories were scored in real-time, i.e. filled out during the observed activity. If this was not possible, for example because the observer participated in the activity, the checklist was completed shortly after the observation. The teachers knew about the observations as the checklist was used openly but were not familiar with the research topic. Furthermore, both children and teachers were familiar with the observers, hence, the influence on the teachers' and the children's behaviour due to observations could be kept to a minimum.

The checklist results were obtained between February and April 2010 in nine ELIAS preschools (i.e. in all preschools except for the two comparison groups in England). The preschools were situated in Germany, Sweden and Belgium. In total, 21 teachers were observed. Every L2 teacher was rated within at least 15 activities, with the number of observed activities per teacher ranging from 15 to 36. In total, 372 observations were used for analysis. Interrater reliability was highly significant. The internal consistency of the IQOS ranged between .819 (for all 15 categories) to .761 (for all 5 supercategories), using Cronbach's Alpha. Hence, reliability was satisfactory for a newly designed tool.

3.1.3 Results and discussion

Considering the data obtained for all 21 L2 preschool teachers, their medians of the overall scores (henceforth IQOS scores) ranged from 30 to 51 (60 was the highest and 15 the lowest possible score that could be achieved). The data is not normally distributed which indicates that all teachers predominantly used means to render their input comprehensible and adhered to any other features which seem to be supportive for L2 development. The teachers' input differed quite dramatically in terms of individual category scores. Except for the category "absence of translation / absence of L1 use" (rated between "2" and "4"), all category scores alternate between 1 and 4 (for 336 observations), thus exhausting the full range of possible ratings.

The IQOS scores were also related to the amount of progress over a period of ± 12 months concerning the children's receptive L2 grammar and lexical knowledge. Has qualitatively more beneficial input actually led to a higher amount of progress in L2 grammar and lexical knowledge, respectively?

First, the 148 children who completed the ELIAS Grammar Test at both test dates (T1 and T2) were subdivided into three IQOS-score groups, i.e. a group with a low, a mid and a high IQOS score. The results showed significant differences between the three groups, i.e. the children of the high IQOS score group displayed a significantly greater increase of receptive L2 grammar knowledge than children of the mid or low IQOS score groups. The same holds true for children with mid IQOS scores, who developed significantly better (in terms of L2 grammar knowledge) than those children who had received the least beneficial input (IQOS score low). The results, therefore, suggest that a qualitatively more beneficial input amounts to more progress in receptive L2 grammar knowledge.

Second, the 200 children who completed the BPVS at T1 and T2 were subdivided into three IQOS-score groups, i.e. a group with a low, a mid and a high IQOS score. In contrast to the results of the ELIAS Grammar Test, the results for the BPVS II did not indicate any significant differences between the IQOS score groups. In other words, the BPVS scores did not improve as a function of increased input quality, as indexed by the IQOS.

How can these differences in the results be accounted for? For example, new vocabulary may also become accessible to learners with qualitatively less beneficial input. Whereas rich sentence structures are indispensable for the development of morpho-syntactic knowledge, receptive word learning and the development of the mental lexicon (in terms of breadth, see Quian 2002) may be less dependent on rich input. Word meanings may, thus, be accessible merely from a high frequency of certain lexical items in the input and deduced from the use of these items within a clear context. Therefore, naming objects or activities without embedding these forms in structurally rich sentences may be sufficient for understanding (and passively recalling) these labels. Furthermore, it is vitally important to distinguish between receptive and productive lexical knowledge. Whereas the *productive* use of lexical items often requires the speaker to connect the words with each other and impose syntactic structures on their utterances (see Gass 2003: 227), the perception of words may not necessarily include any morpho-syntactic knowledge of the given lexemes (i.e. vocabulary knowledge in depth, see Wesche & Paribakht 1996).

As for input intensity, the ELIAS Input Intensity Score was also related to the amount of progress over a period of ± 12 months concerning the children's receptive L2 grammar and lexical knowledge. It was hypothesised that a higher Input Intensity Score would show in higher scores as obtained in the BPVS II and in the ELIAS Grammar Test. The children were subdivided into four groups which differed with respect to their Input Intensity Score (i.e. high, upper middle, lower middle, or low). As shown in the chapters on lexical and grammatical L2 development, the results did not show any significant differences between the four input intensity groups as to the amount of progress in L2 knowledge, i.e. the children who had more opportunities to access L2 input did not seem to develop better than those with fewer opportunities for L2 input. Apparently, it seems that input quality has a greater impact on the development of L2 receptive grammatical and lexical knowledge than the mere amount of L2 input per week (input intensity). However, more studies are needed to examine the effects of input intensity in more detail.

In sum, the IQOS was developed as an observational tool for bilingual preschool settings which aimed at i) identifying and describing differences in the nature and quality of the L2 input offered to children in these settings and ii) further analysing the effects that these differences may have on the children's L2 development. As the results indicated, the IQOS is an appropriate tool to examine the nature of input provided in such a setting. Further studies are, however, needed to explore the feasibility of the IQOS in more detail.

3.2. Receptive L2 Lexical Knowledge in Bilingual Preschool Children

3.2.1 Introduction

It is not the speech sounds or the rules of grammar that require the most extensive learning, but the lexicon (Miller 1996: 5), yet in 1984, Meara stated "interlanguage theory has traditionally had very little to say about the lexical behaviour of non-native speakers" (Meara 1984: 225). One of the reasons why L2 lexical acquisition or L2 vocabulary learning⁶ was not given much attention well into the 1980s may have been that it was not clear which research questions should be asked in connection with the L2 lexicon: Unlike L2 phonological or morpho-syntactic development, where similar developmental sequences were able to be identified for large populations of L2 learners (Ellis 2008, Wode 1993 for reviews), lexical development evades the notion of developmental stages and appears to be highly individual (Rohde 2005, Singleton 1999). In the past 25 years, however, not least due to new approaches such as minimalism (Radford 2004), the lexicon has no longer been viewed as a separate issue, as an isolated inventory of content and function words. Rather, it has been regarded as playing a dynamic part in morpho-syntax. It is the choice of lexical items that drives the syntax, determining what structures are and are not possible in a sentence (Cook & Newson 2007: 8). Due to this "new dynamic image," the lexicon has gained new ground, leading to a number of research questions in vocabulary learning (Ma 2009, Singleton 2009).

The task of the naturalistic L2 learner resembles the task which confronts the infant: Lexical units in the speech stream have to be isolated and connections have to be made between these units and the meanings they are intended to communicate. The difference is that the L2 learner can draw on her experience of making such connections between lexical forms and meanings in her L1 (Singleton 1999: 48). The involved languages in the ELIAS study (i.e. French, German and Swedish) are typologically and genealogically related to the target L2 English to varying degrees, therefore, a considerable amount of cultural overlap can be assumed between them, so that a large number of concepts that has been lexicalised in the learners' L1 can be expected to be at least similar in the L2 and to facilitate the formation of new concepts (ibid.).

3.2.2 Method

The BPVS II (Dunn et al. 1997) is a standardised test instrument to determine the receptive vocabulary of 3- to 15-year old L1 speakers of English as well as the vocabulary of children learning English as an additional language (EAL) in Great Britain. It consists of 14 sets with 12 cards, every card contains 4 pictured items, one of which is asked for when the BPVS II is administered. Thus, maximally, 168 words were tested. Each child is tested individually by two experimenters in a quiet, familiar preschool room. Testing usually does not exceed 10 minutes. The examiner asks the child to point to the appropriate picture when giving the respective prompt (e.g. "Show me *baby*"), the second examiner records the responses. Testing starts with the initial set, the *basal set*, for every child, and is discontinued after the *ceiling set* in which 8 or more incorrect answers have been provided.

In 2009 and 2010, a total of 200 children, 96 girls and 104 boys (48% girls and 52% boys) from seven bilingual preschools in Germany, one in Sweden and one in Belgium were tested on the BPVS II twice at an interval of 5 to 15 months. The children's age range was between 34 and 88 months at T1 (test 1) (mean: 56.4 months, SD = 13.1 months) and they had been exposed to English between 1 and 50 months at the time of T1 (mean: 14.2 months, SD = 9.7 months).

⁶ Both expressions are used synonymously in this chapter. There appears to be a tendency to refer to "vocabulary" in lieu of "words" or "lexicon" in L2 contexts as "vocabulary" often refers to specific word lists used in classroom scenarios (Hatch & Brown 1995: 1, Lipka 1990). However, I do not see a substantial difference between "lexicon" and "vocabulary," especially in view of the fact that the term "L2 mental lexicon" (Singleton 1999) is well established.

At the time of T2, the children were between 42 and 98 months old (mean: 67.3 months, SD = 13.3 months) and their contact time to English was between 10 and 61 months (mean: 25.1 months, SD = 9.3 months). In addition, twenty children from a monolingual English background in a preschool in Hertfordshire, England (HS) also took the BPVS II twice. At the time of test 1, the monolingual English children were between 3-5 years old (mean: 52.9 months).

3.2.3 Results and discussion

The purpose of this study was to examine the development of L2 receptive vocabulary in children with different L1s (i.e. German, French and Swedish) who were exposed to the L2 English in a preschool context. The results suggest that children learn an L2 as early as preschool and steadily improve their receptive vocabulary. The study revealed significant differences for the children's L2 vocabulary at two test times with respect to L2 contact duration (in months) and L2 intensity (which took the opening hours of the preschools and the L2 preschool teacher-child ratio into account). The L2 contact and the L2 intensity results share one characteristic: Both measures reveal that contact and intensity only make a difference in receptive vocabulary knowledge after an extended period of time. Within the first year of L2 contact, children appear to build up a considerable receptive lexicon but then only gradually add to their vocabulary so that a significant improvement can only be stated in the third and highest contact group (25-72 months) in the programme. It is obvious that the contact time in terms of the total time a child has spent in a programme is not particularly revelatory as the actual exposure to the L2 may be rather scant, if e.g. English is only heard once or twice a week. The proposed ELIAS Input Intensity Score (see Weitz et al., volume I) avoids the shortcomings of the "L2 contact measure" by determining the potential time of exposure for the children of the different European preschools. A third measure complementing L2 contact and L2 intensity is the L2 input quality (see *ibid.*).

In line with the results of the other studies in this volume, girls and boys did not perform significantly differently in their acquisition of a receptive lexicon. It is true that the girls may have had an advantage at test time 1 but, more importantly, at test time 2 the boys' and the girls' results did not significantly differ.

Furthermore, the comparison between children with and without a migration background did not produce any significant differences either. This is a very encouraging result as it is often informally reported that children with a migration background are disadvantaged in a preschool setting in which yet another "new" language is introduced. It is perhaps even more surprising that even the children who do not speak the ambient language at home do not lag behind in L2 acquisition. It is these children who are reportedly likelier to be disadvantaged in learning contexts as neither their L1 (a minority language) nor their L2 (the ambient majority language) may be age adequate (Apeltauer 2004).

This study of the development of children's L2 receptive vocabulary knowledge within the ELIAS project is necessarily limited in scope. That is also why the contribution of this study to the general issues in lexical/vocabulary acquisition has to be rather modest.

Lexical principles: The *whole object assumption* is not explicitly tested with the BPVS II, however, both L1 and L2 children tacitly assume that the tested labels refer to the entire objects in the pictures rather than to parts or shapes of those objects. The *taxonomic assumption* is not tested either but the BPVS II contains a large number of basic level terms (*cat, tractor, gate, cow, tortoise, penguin*) reflecting that children in both L1 and L2 acquisition first predominantly acquire and extend new labels on the basic level (Rohde 2005: 153, Witt 1990).

Vocabulary breadth vs. vocabulary depth: When compared to *the vocabulary knowledge scale* (Wesche & Paribakht 1996), step 3 in the VKS ("I have seen this word before...") corresponds most closely to the task of selecting one out of four pictures upon hearing a particular word in the BPVS. Thus, the BPVS can only test the breadth of learners'

vocabulary as only core meanings have to be identified when mapping an L2 label to a picture and no deeper semantic knowledge of a word is tested.

The L2 mental lexicon: Initially, L2 word associations are more strongly based on formal (phonological and/or morphological) similarities between L1 and L2 words than on semantic relations that hold between words (e.g. hyperonymy, synonymy, antonymy). While it is true that the BPVS II is not intended to elicit information on learners' mental lexicons, the children's responses may yet allow the conclusion that, left to their own devices, the children use phonological similarity plus the semantic information in the picture in order to identify object words. Upon hearing English words such as *cow* or *dancing* and seeing, amongst other possible choices, pictures of the animal and the activity, e.g. German L2 learners of English tend to notice the similarity between German *Kuh* and English *cow* (the initial plosive is similar and both words have a CV structure) or the phonological and morphological similarity between German *tanzen* and English *dancing*. These formal similarities prompt them to first establish (receptive) lexical entries for the two L2 words *cow* and *dancing*, following in fact a principle or an assumption akin to the *taxonomic assumption* which could be referred to as the "phonological similarity assumption" in order to establish a mental lexicon: Similar sounding words in two languages refer to the same object/activity.

Growth rates: Despite the conspicuous qualitative differences between the programmes tested in the ELIAS study, it has been shown that there is in fact a progress in the children's development of receptive vocabulary over time. This result is in line with the scant evidence from naturalistic L2 acquisition which indicates that at the onset of L2 acquisition there is veritable vocabulary surge, whereas growth rates take a dip as early as six months into the acquisition process (Rohde 2005, Wode et al. 1992). An early peak of growth rates and a henceforth slow acquisition of vocabulary may be due to an early satisfaction of children's communicative needs in the L2 and may go along with possible fossilisation process.

More detailed studies in the preschools are clearly required to bear out such a speculation. The problem, however, is that all the studies within the ELIAS project have shown that it is very difficult to control for a number variables related to both the individual children and the respective preschool programmes.

3.3. Receptive L2 Grammar Knowledge Development in Bilingual Preschools

3.3.1 Introduction

The present chapter focuses on bilingual preschools in Germany, Sweden and Belgium, which offer partial immersion programmes in English. The staff members are preschool teachers from the respective countries, but usually one preschool teacher is a native speaker of English or has near-native-like competences. The children from these bilingual preschools investigated in this study are all non-native speakers of English. The bilingual preschool teachers abide by the "one person-one language" principle (e.g. Ronjat 1913). The foreign language is used according to immersion principles, i.e., English is not taught as a subject but, rather, used as a medium for classroom communication and for teaching. In the initial stages of immersion education, when the children have no or only a very limited knowledge of their L2, the preschool teachers contextualise their use of English as much as possible as the children must rely on non-linguistic contextual cues to comprehend the L2 input directed at them. As the children's ambient language outside the preschool is not English (but German, Swedish or French), their L2 acquisition situation is not comparable to being exposed to English in a country where it is spoken as the dominant language or the first language (L1) for most of the population (see e.g. Rohde 2005).

Learning a foreign language entails developing many types of knowledge and mastering many different skills, e.g. phonetic, phonological, lexical, morphological, syntactic, discourse-pragmatic as well as sociolinguistic skills. The present chapter focuses on children's

development of grammatical skills. Although the learner's primary concern in the earliest stages of L2 acquisition may be on the acquisition of the lexicon (Hatch 1983; Singleton 1999), mastering the grammatical principles of the L2 is also crucial for efficient communication in the language (Klein & Perdue 1992).

Furthermore, the present chapter investigates children's development of receptive (rather than productive) grammatical knowledge of the L2, for both practical and theoretical reasons. It is generally assumed that during the very first stages of L2 acquisition under investigation here, learners' productive skills lag behind their receptive skills. In particular, child L2 learners have been shown to go first through a 'silent stage' during which they are not yet able to produce many utterances in their L2 although they may well already have acquired some 'tacit' knowledge of the language (Ellis, 2008). This is also the case for the children in the bilingual preschools in the ELIAS project. These children typically produce very few English words and sentences (see e.g. Wode 2001, Rohde 2005). It was therefore deemed not feasible to analyse production L2 data because these are still scarce. Instead, the focus of the present study is on preschoolers' grammatical comprehension abilities with respect to their L2 English. The ELIAS Grammar Test, which has been used in this study, is a picture pointing task. This testing format has been successfully used with children between three and seven years of age, often in the form of standardised measurement instruments, to assess grammatical comprehension. The focus of this study is on the performance in the ELIAS Grammar Test by bilingual preschool children's as a function of L2 contact duration, L2 input intensity, sex and their home language background.

3.3.2 Method

In 2009 and 2010, a total of 148 children (51% girls and 49% boys) from seven bilingual preschools in Germany, one in Sweden and one in Belgium took the ELIAS grammar comprehension test twice at an interval of 5 to 12 months. The children's age range was between 3 and 6 years (mean: 54.4 months) and they had been exposed to English between 1-42 months at the time of Test 1 (mean: 14.2 months). In addition, twenty children from a monolingual English background in a preschool in Hertfordshire, England (HS) also took the ELIAS Receptive Grammar Test twice. These monolingual English children served as a benchmark against which the performance of the bilingual preschool children could be compared. The benchmark children were of approximately the same age as the bilingual preschoolers. At the time of test 1, the monolingual English children were between 3-5 years old (mean: 52.9 months).

The children in the preschools were tested individually in a quiet room they were familiar with. First, the child looked at three pictures. The child then listened to a sentence that corresponded to one of the pictures. Responses were made by pointing to the picture which the child thought to be appropriate to the sentence. Before testing, the children were given two training items consisting of three pictures of different objects and an appropriate single word utterance to ensure they knew how to make the responses. The three pictures in each set differed in the following way. Two of these pictures contrasted only in the target grammatical dimension (e.g. absence/presence of the plural inflectional marker -s: cat/cats). The third picture was a distractor (see Rohde 2005). The children were tested on nine grammatical phenomena (see Table below). In total, there were 54 test items (9 grammatical phenomena x 3 picture pairs x 2 test presentations per picture set). The session did not take longer than ten minutes.

Abbreviation	Phenomenon	Example sentence
AGRc	Subject-verb agreement: copula verbs Singular/plural	<i>the deer is white</i> <i>the deer are white</i>
AGRv	Subject-verb agreement: full verbs Singular/plural	<i>the sheep eats</i> <i>the sheep eat</i>
GEN	Possessive case: Absent/present	<i>the girl is kissing the boy</i> <i>the girl is kissing the boy's dog</i>
NEG	Sentences: Affirmative/negative	<i>the boy is running</i> <i>the boy is not running</i>
PLU	Inflectional morpheme: +/- plural -s	<i>cat</i> <i>cats</i>
POSS	Possessive pronoun singular: Masculine/feminine	<i>his cat</i> <i>her cat</i>
PROog	Personal pronoun singular (object) Masculine/feminine	<i>the girl is kissing him</i> <i>the girl is kissing her</i>
PROsg	Personal pronoun singular (subject) Masculine/feminine	<i>he is singing</i> <i>she is singing</i>
SVO	Word order	<i>the boy is touching the girl</i> <i>the girl is touching the boy</i>

Tab. 1: Nine grammatical phenomena were tested in the ELIAS Grammar Test. The phenomena are listed alphabetically. Column 1 shows the abbreviations, column 2 explains each phenomenon and column 3 provides example sentences ("prompts").

3.3.3 Results and discussion

The purpose of this study was to examine the development of grammatical comprehension abilities in children with different L1s (i.e. French, German and Swedish) who were exposed to the L2 English in a preschool context. The results clearly demonstrate that it is feasible to learn a second language as early as preschool, using immersion methods.

First, increased L2 contact duration (as measured in months) positively affected the results of the ELIAS Grammar Test. This result clearly demonstrates the feasibility of a bilingual programme in preschools which offer English as an L2 in an immersion context (see Wode 2001, Rohde 2005, Rohde & Tiefenthal 2002, Burmeister & Steinlen 2008, Steinlen 2008, Steinlen & Rogotzki 2009).

Second, the results clearly showed strong effects of L2 input intensity on the results of the ELIAS Grammar Test. In agreement with findings from the school immersion context (e.g. Curtain 2000, Wesche 2001), L2 input intensity is apparently also an important factor for L2 learning in a preschool context, which, in addition to L2 contact duration, may account for differences in the children's performance in the ELIAS Grammar Test.

Third, the children's sex did not influence the results because boys and girls performed equally well in the ELIAS Grammar Test. This finding agrees with results from other studies on lexical acquisition (comprehension and production, e.g. Natorp 1975, Rohde & Tiefenthal 2002) and small-scale studies on L2 grammatical comprehension (Steinlen 2008, Steinlen & Rogotzki 2009) in a bilingual preschool context. We suggest that under optimal conditions, the variable sex does not play a role in foreign language acquisition settings taking place in preschools.

Fourth, no differences were found for children with a non-migrant and children with a migrant background with respect to their performance in the ELIAS Grammar Test. The results showed that L2 receptive grammar of children with a migration background developed the same way as L2 receptive grammar of their non-migrant peers did, i.e. their scores of the ELIAS Grammar Test differed as a function of L2 contact. This finding is surprising, given that migrant children (especially minority language children) in German primary schools seemed to be less successful in foreign language learning than their monolingual peers (see e.g. Elsner 2007). In order to account for these results, we suggest that the learning situation in a preschool context is particularly beneficial for migrant children because the L2 is not

taught but used as a medium of communication and can therefore be acquired from the way it is used.

Fifth, the children did not identify the nine grammatical phenomena equally well. For example, in both tests, the grammatical phenomena SVO and NEG were better identified than AGR or PRO. Similar results were obtained in a study on L2 grammatical comprehension of Turkish and Cantonese EAL children in London (Howell et al. 2003) and in tests administered to monolingual English children (Fraser et al. 1963, Lowell & Dixon 1967, Nurss & Day 1973, Au-Yeung et al. 2000, Howell et al. 2003). Apparently, some grammatical phenomena are easier to master than others, independent of the language acquisition setting. Several possible explanations have been suggested, i.e. underrepresentations of grammatical phenomena in the L2 input (as in the case of 3rd person pronouns where often proper names were used instead), perceptual salience and frequency (as in the case of the negator), or transfer from the L1 to the L2. In terms of a theoretical framework, Processability Theory (Pienemann 1998) may be used to account for the variability within the data (especially for the morpho-syntactic phenomena) although this model has not been used with comprehension data yet.

Finally, many aspects have not been dealt with in this study and are left for further research. For example, a large amount of individual variation was noted in this study (as shown in the standard deviations, for example). Such a finding has been reported in many studies (e.g. Paradis 2005, Tabors & Snow 1994). Among the many factors to be considered, personality traits may serve as one explanation. It is imperative to consider the child's biography, her character and her relationship to native and non-native speakers in the preschool context in order to adequately account for these individual variations (e.g. Burmeister & Steinlen 2008, Wong Fillmore 1979).

Furthermore, this study did not examine how or whether the children's L1 (i.e. French, German and Swedish) affected the results of the ELIAS Grammar Test. It may be expected that typological differences or similarities between grammatical phenomena may facilitate or hinder the development of L2 grammar. For example, from Canada, Bild and Swain (1989) reported that non-anglophone pupils whose L1 is a Romance language acquired French faster than children whose L1 is a non-Romance language.

Last, the results of the grammar test need to be related to the parents' questionnaires, in order to show whether, for example, the parents' socio-economic background, their attitude to English and L1 background may affect their children's grammatical comprehension development. In the literature, the parents' background and their involvement in their children's education have shown to be an important variable in predicting their children's academic achievements in a school context (e.g. Edelenbos et al. 2006, Lopez 2005), although such effects have not been studied yet for foreign language acquisition in a preschool context.

In sum, the ELIAS Grammar Test is a useful tool which, for the first time, assessed the comprehension of English grammar by bilingual preschoolers in three European countries. Undeniably, the children showed great success in foreign language learning in such a context, as compared to their monolingual peers in England. Moreover, it could be shown that such an immersion setting is also advantageous for migrant children whose L1 may not correspond to the official language of the host country. Finally, the study showed similarities between L1 and L2 acquisition, especially with respect to the comprehension of different grammatical phenomena, whose ease or difficulty of comprehension may depend on processing strategies that the learner has available at a certain point in time. It seems that the learning language abilities activated in preschool are the same as those activated in non-tutored second and in first language acquisition (see also Wode 2001).

3.4. Lexical and Grammatical Comprehension in Monolingual and Bilingual Children

3.4.1 Introduction

This section focuses on the results of lexical and grammatical comprehension tests in preschool and school-age monolingual and bilingual children living in the UK. The tests used are the same as those described above, namely the British Picture Vocabulary Scale II (BPVS II, Dunn et al. 1997) and the ELIAS Grammar Test which was developed for ELIAS Project.

The ELIAS project aimed to capture the development of children growing up in a German speaking environment learning English at preschool in an immersion setting. Including a group of monolingual children in the two receptive tasks served the purpose that the results of the preschool children can be compared with monolingual comparison groups, which is particularly important for the ELIAS Grammar Test, where no information on monolingual performance is available. In addition, a group of children with a dominant German background living in the UK will also be considered in comparison to the monolingual English subjects. These children have been exposed to English for longer but also attend a preschool where both German and English are spoken by native speakers, hence the setting is similar to that of the immersion preschools in Germany.

The tasks used as part of the ELIAS project are receptive language tasks, hence they evaluate children's receptive lexical and grammatical skills. This is because the German children's language level is not yet advanced enough to include tests of their productive skills. The aim of the chapter is to provide a background against which the German children acquiring English as a second language can be compared.

In order to assess children's lexical and grammatical development, the development of monolingual as well as bilingual children needs to be taken into account. In general, comprehension develops earlier than production (Benedict 1979, Goldfield & Reznick 1990) and word learning is guided by different constraints (Markman et al. 2003). Bilingual children learn words in both languages and there has been some discussion as to whether they accept cross-language synonyms (Pearson, Fernández & Oller, 1995, Quay, 1995). Evidence suggests that bilingual children use translation equivalents from early on (Au & Glusman 1990, Köppe 1997, Schelletter 2002) and a number of studies of bilingual language development have argued in favour of the bilingual child separating the languages from the start (de Houwer 1990, 1995, Meisel 1989, Paradis & Genesee 1996, Sinka & Schelletter 1998).

Studies concerned with bilingual children's vocabulary skills have found that while bilingual toddlers are comparable to their peers in terms of their lexical development (Pearson et al. 1993), bilingual children perform below the level of monolingual children on standardised vocabulary tests of one of the languages (Hoff & Elledge 2005, Pearson & Fernández 1994). The extent of bilingual children's word knowledge depends on the length and amount of exposure of each of the languages.

With regard to receptive grammatical skills, MacWhinney (2005) has described sentence processing in terms of 'cues', language forms that are evaluated in order to work out the structure and meaning of the sentence. For example, different cues can be used to work out which noun is the agent in a sentence. In languages with a consistent word order, the order of nouns is a clue. In languages where nouns have case marking, this can be used as a cue instead. Different cues in the sentences can be in competition with each other (The Competition Model, Mac Whinney & Bates 1989). Children initially attend to the cue they perceive as the strongest one and acquire the adult pattern gradually. For example, young children tend to make a choice of agent based on animacy rather than word order or case marking but their processing changes as they get older.

MacWhinney & Bates also make a distinction between 'local' and 'global' cues. Local cues are forms such as plural marking which can be evaluated locally. Agreement, on the other hand, is a global cue which requires processing of the noun as well as the verb in order to process the sentence correctly. Agreement is therefore a later acquired cue for sentence interpretation.

It is hypothesised that the bilingual children will score lower than the monolinguals in receptive vocabulary, particularly as the bilinguals had more exposure in their other language German compared to English. We also expect the two groups to differ in the way they make use of different grammatical information to interpret sentences as the bilingual children have processed sentences in German as well as English and the two languages differ in terms of the strength of different sentence processing cues (MacWhinney 2005). We expect both groups to improve in their lexical and grammatical skills when tested the second time round.

3.4.2 Method

Between March 2009 and May 2010, 60 children between the ages of 3 and 5 years were tested. Thirty children attended institutions in Hertfordshire (UK) that function monolingually in English. The remaining children attended a bilingual German-English nursery that is part of the German school in London. In the monolingual group there were 10 children at each of the age level 3, 4 and 5. There were 5 girls and 5 boys at each age level. The children were recruited from two preschools and an infant school. All of them were English monolinguals. At the first set of tests the average age for the group is 53 months.

In the bilingual group, there were seven 3-year-olds (3 girls and 4 boys), twelve 4-year-olds (8 girls and 4 boys) and eleven 5-year-olds (3 girls and 8 boys). All children attended preschool groups where a native English and German speaker were present. The background of the children differs between those where German is the language spoken by the mother or both parents (German dominant) and others where English is the home language English dominant. Overall, there were 22 children who were German dominant and 8 children who were English dominant. The overall average age of the bilingual group is 56 months. The focus of the analysis in this chapter is between monolingual English and German dominant bilingual children, for this reason the English dominant bilingual children are not considered.

All children were tested using the BPVS II (Dunn et al. 1997) and the ELIAS Grammar Test. The range of grammatical phenomena tested is given in table 1 below. A second set of tests was delivered after the first set; the monolingual children were re-tested after about 7 months, and a subset of five German dominant bilingual children (4 girls and 1 boy) were re-tested after up to 12 months. At this second set of tests the mean age of the monolingual group was 59 months and 66 months in the bilingual group at the time of test 2.

As can be seen in table 1, nine grammatical phenomena were tested in the grammar comprehension task. The phenomena are listed alphabetically. Column 1 shows the abbreviations; column 2 explains each phenomena and column 3 provides example sentences (prompts).

Abbreviation	Phenomenon	Example sentence
AGRc	Subject-verb agreement: copula verbs; singular/plural	<i>The deer is white</i> <i>The deer are white</i>
AGRv	Subject-verb agreement: full verbs; singular/plural	<i>The sheep eats</i> <i>The sheep eat</i>
GEN	Possessive case: absent/present	<i>The girl is kissing the boy</i> <i>The girl is kissing the boy's dog</i>
NEG	Sentences: affirmative/negative	<i>The boy is running</i> <i>The boy is not running</i>
PLU	Inflectional morpheme: +/- plural -s	<i>Cat</i> <i>Cats</i>
POSS	Possessive pronoun singular: Masculine/feminine	<i>His cat</i> <i>Her cat</i>
PROog	Personal pronoun singular (object): masculine/feminine	<i>The girl is kissing him</i> <i>The girl is kissing her</i>
PROsg	Personal pronoun singular (subject): masculine/feminine	<i>He is singing</i> <i>She is singing</i>
SVO	Word order	<i>The boy is touching the girl</i> <i>The girl is touching the boy</i>

Tab. 2: Structures tested in the grammar task

4.3 Results and Discussion

For the first testing of the BPVS II the results show that the monolingual children scored above their L1 age equivalent by about 8.7 months on average. This difference is higher in the 3-year-olds (14.7 months) and lower in the 4-year-olds (4.1 months). For the 5-year-olds, the difference is 7.3. For the bilingual children, there was a steady developmental increase in mean raw score by age. The difference between the age groups as well as between monolinguals and bilinguals was significant. This finding is in line with previous studies (Pearson & Fernández 1994, Hoff & Elledge 2005) that have found a similar difference between monolingual and bilingual children. A comparison between the results for boys and girls on the other hand showed no significant difference.

The scores of the bilingual children were also compared to the BPVS II norms for children with English as an additional language (EAL norms). Their EAL equivalents were 13.5 months ahead of the EAL norms. Across the age groups the difference is 11.4 months for the 3-year-olds, 6 months for the 4-year-olds and 10.5 months for the 5-year-olds. These results show that the bilingual children are ahead of children learning English as an additional language.

For the second round of testing, the average raw score for both monolingual and bilingual speakers had increased. As would be expected, the children's scores improve significantly, indicating that this period sees a considerable growth in vocabulary in all three age groups and in both, monolingual and bilingual children. During this period, it is proposed that the older children's abstract vocabulary develops, allowing them to progress to stages of the test which test increasingly abstract concepts. In both rounds of the test, most of the children achieved a score higher than is expected for their age group. In the second round, it became clear that their achievements had become significantly more advanced.

Given that the bilingual children scored lower than their monolingual counterparts in the first round, it is conceivable from the second round of testing that this group will catch up with the monolinguals eventually, depending on their further amount of exposure. It will be interesting to examine the lexical productive skills of both groups to see whether the difference in lexical skills is even more evident, as would be expected.

Regarding grammatical skills, there was no overall significant difference between monolingual and bilingual children in the ELIAS Grammar Test, though the monolinguals achieved higher scores than the bilinguals. There were differences in the individual phenomena tested though, such that the bilinguals scored lower on comprehension of

pronouns in particular. Both groups were quite low on agreement (the bilinguals scored slightly above the monolinguals in this category) which confirms MacWhinney's (2005) assertion that global cues such as agreement are acquired later than other cues. Both groups show a significant increase in their receptive grammar skills between the first and the second test. This shows that the ELIAS Grammar Test is a useful tool which captures the development of grammar skills in this age group for both, monolingual and bilingual children. Further work needs to relate these findings to children's productive grammar skills in order to determine further the relationship between comprehension and production.

The monolingual English children were included in the receptive tasks carried out as part of the ELIAS project in order to obtain a measure of comparison for the German preschool L2 learners of English. The fact that differences were found in the results between different age groups as well as the monolinguals and a group of preschool German-English bilingual children living in England confirms that the tests are able to capture developmental trends as well as differences between monolinguals, bilinguals and second language learners. Further analyses, particularly with regard to the different categories of the grammar task, would need to show more specifically in what respects the non-native speakers show slower development and in what areas prior knowledge of another language facilitates acquisition.

3.5. SETK 3-5: A developmental language test on German for 3-to-5-year-old children

3.5.1 Introduction

Since the 1960s, immersion programmes have been in operation in the French speaking areas of Canada, in which English children are sent to schools where all or a majority of lessons are taught in French (e.g. Lambert & Tucker 1972). Although these programmes have been shown to be very successful in terms of academic and L2 achievement (see e.g. Wesche 2002 for an overview), a frequently asked question by parents is the following: "What about English language skills? Will they suffer if my child attends a French immersion class?" (Canadian Parents for French 2006). A similar question is often asked by German parents of those children who attend a bilingual preschool: "Will the German language skills of my child suffer because the native English teachers in our preschool exclusively use English?"

For an immersion school setting, this question has already been answered: Many studies have shown that the children's L1 does not suffer, at least with respect to their L1 reading and writing skills or with respect to their cognitive development (see e.g. Genesee 1987; Turnbull et al. 2001, Zaunbauer et al. 2005, Zaunbauer & Möller 2006, 2007, 2010). However, such an assessment has not yet been conducted in bilingual preschools. The aim of this study is, therefore, to examine whether the children's L1 German is affected by the use of English in bilingual preschools in Germany.

The SETK 3-5 (Grimm et al. 2001) was used in the ELIAS project. It was chosen over the other tests because it has a standardised measure of language abilities that is appropriate for German children from 3 to 5 years of age, that is, it includes the age range of German preschoolers from 3.00 until 5.11 years. The SETK 3-5 has originally been designed to identify and diagnose children at risk for language impairment as early as possible. As explained in more detail below, the SETK 3-5 relates language production and comprehension to phonological working memory. According to Fried (2004), the SETK 3-5 currently is the most appropriate tool for analysing children's L1 German skills because it is less time consuming than other tests and it can also be administered by persons other than language test experts. In the ELIAS project, however, the SETK 3-5 was administered by speech therapists.

Apart from age-appropriate development, two additional aspects of L1 development have been explored in the study, namely how it may be affected by sex and home language

background. As regards sex, we examine whether the L1 German skills of preschool boys and girls differ and if so, to what extent. A well-known stereotype purports that girls are better than boys in terms of acquiring their L1. For instance, Bornstein et al. (2004) found that girls older than age five consistently outperformed boys on multiple specific and general measures of language achievement. For German, Blossfeld (2009) reported that the German skills of preschool girls were better developed than those of their male peers. However, the empirical evidence for the supposed advantage for girls is not consistent. A meta-analysis of several hundred studies examining girls and boys from ages 4-18 found that alleged advantages of girls were either slight or non-existing (Hyde & Linn 1988). For the preschool context, Grimm et al. (2001) reported that the results of the norm group of the SETK 3-5 indicated no sex-related differences in the acquisition of the L1 German (see also Kretschmann 2004). In her detailed review on the effects of sex on language development, Klann-Delius (2005) concluded that empirical studies did not conclusively support the notion that the L1 acquisition process proceeds faster or better in girls than in boys. In this study, the gender issue is further investigated, in part because this question has not been examined in an acquisition setting where preschoolers not only further develop their L1 skills, but also simultaneously acquire an L2 (in this case English).

Second, this chapter will also examine whether the children's home language background has an effect on their German skills as assessed by the SETK 3-5. To this end this study will assess whether the acquisition of German by migrant children is affected by the fact that these children attend a bilingual preschool and are exposed to yet another language (English) than the ambient language of the host community (German) and their home language (e.g. Turkish, Arabic, Russian). It may be hypothesized that children whose home language or L1 is not German will show deficits in the acquisition of German because, due to their exposure to English, these migrant children may not receive enough German input.

In summary, the focus of this study is on the German skills of children who attend a bilingual preschool. To our knowledge, it is the first study that examines whether the L1 skills of preschoolers develop in an age-appropriate way although their ambient language in preschool is not only German but also English. In addition, this study investigates to what extent the German skills of preschoolers in a German-English bilingual programme are affected by the variables migrant background and sex.

3.5.2 Method

The SETK 3-5 (Grimm et al. 2001) is a standardised and norm-referenced instrument which examines the language proficiency of German-speaking preschool children. This battery has been standardised on a group of 495 German-speaking children between 3;0 and 5;11 years of age and has been found to have high validity and reliability (with Cronbach's Alpha between .62 and .89). The test consists of two different test versions depending on the age of the children (a version for 3-year-olds and a version for 4- and 5-year-olds). In particular, it assesses the domains of linguistic understanding, production, and memory. The SETK 3-5 includes different subtests, i.e. linguistic understanding is measured by the subtest *understanding of sentences*, for linguistic production there is the subtest *formation of morphological rules* and linguistic memory is measured by *phonological working memory for non-words*. Testing took place in a quiet room at the child's preschool and lasted between 15 and 30 minutes per child.

In 2009 and 2010, 83 children (45 girls and 38 boys) from seven bilingual preschools in Germany completed the SETK 3-5 twice at an interval of between six to twelve months. The age range of the children was between 3-5 years at the time of test 1 (mean = 52.3 months, SD = 6.0 months). At the time of Test 2, the children were between 4-5 years old (mean: 59.7 months, SD = 5.9 months). Of the 83 children, 12 children had a migrant background. Their home languages were Arabic, Cantonese, Croatian, Estonian, Hebrew, Russian, or Turkish.

3.5.3 Results and discussion

The purpose of this study was to determine whether the L1 German of children, who were exposed to the L2 English in a preschool context, develops age-appropriately. Therefore, the SETK 3-5 (Grimm et al. 2001), a standardised and norm-referenced German language test, was administered twice during the duration of the ELIAS project.

First, the results of the SETK 3-5 for 71 German monolingual children showed an age-appropriate development for German which was not negatively affected by the use of L2 English in the bilingual preschools. Similar findings were reported from the primary and secondary school context, at least with respect to the children's development in L1 reading and writing (see e.g. Genesee 1987; Turnbull et al. 2001 for Canada, and Zaunbauer et al. 2005, Zaunbauer & Möller 2006, 2007 for Germany).

Second, the results of this study also showed that the children's sex did not influence their performance on the SETK 3-5 test; boys and girls in the bilingual preschools performed equally well. This finding agrees with several other studies which found no significant differences between boys and girls in L1 acquisition, at least with respect to 'no risk' children (e.g. Tomblin 1997, Grimm et al. 2001).

Third, this study also examined whether the children's migration and/or home language background had an effect on their German skills. Based on a literature review, it was hypothesised that children with a migrant background would obtain lower scores in the SETK 3-5 than monolingual German children because their L1 skills were less developed than those of their monolingual peers (e.g. Penner 2005, Kaltenbacher & Klages 2007, Knapp 2006, Schöler et al. 2004). Additionally, it was speculated that the reduced amount of German input (resulting from the fact that the preschool staff also consisted of teachers who only spoke English) would result in lower SETK scores by children with a migrant background because the amount of input has been shown to play an important role for the acquisition of German in a German preschool (e.g. Becker 2010). Surprisingly, the results of this study showed that this was not the case. The progress rates of children with a migrant background did not differ significantly from the progress rate of children without migration background and both groups improved significantly over time. However, note that these results are only preliminary as only the data of twelve migrant children could be used. Furthermore, the twelve migrant children investigated here came from five different preschools in Germany. It cannot be ruled out that in these particular preschools, all variables which contribute to successful foreign language learning were available, e.g. sufficient German input (Chilla et al. 2010, Tracy 2000), parental support (e.g. Apeltauer 2004, 2007, Biedinger 2009, Kuyumcu 2006), long preschool attendance (see also Becker 2010), maintaining and fostering the children's L1 (e.g. Apeltauer 2004, 2007), and preschool staff that is adequately trained in order to provide appropriate language support. Finally, it is possible that the migrant children's German skills were positively affected by the strongly contextualised input children in bilingual preschools are typically exposed to (e.g. Chilla et al. 2010, Wesche 2002). One can speculate that just like the strongly contextualised English input appears to have helped the children in the bilingual preschools in Germany to show measurable progress in their comprehension of English, strongly contextualised German input may have helped especially the migrant children to show measurable progress in German.

In conclusion, the objective of this study was to assess the children's knowledge of German, using a standardised and normalised test battery, i.e. the SETK 3-5 (Grimm et al. 2001). This language test was administered to 83 children in seven German bilingual preschools, which all offered English as a foreign language. Although parents of children in such bilingual preschools often worry about the development of their children's L1, the results of the SETK 3-5 indicated that the children's L1 German was not negatively affected by the use of English and developed, indeed, age-appropriately. Thus, foreign language acquisition in a preschool context may well be an asset with respect to the development of the children's L1 German. It

is, therefore, feasible to introduce an L2 in a preschool context, without being detrimental for the children's L1.

3.6. Intercultural Encounters in Bilingual Preschools

3.6.1 Introduction

The ongoing process of European unification requires an intensified cooperation of the member states, and the phenomenon generally labelled "globalisation" has led to an increased exchange of products and workers. Moreover, it appears that the issues of migration and the problems of refugees resulting from wars, deteriorating living conditions in some areas of the world, and the problems of the planet's ecology can only be addressed in a context of international cooperation. All of these developments make it either necessary or desirable for a steadily growing number of people to be able to interact and communicate in societies that become increasingly multicultural. Based on the assumption that lack of intercultural knowledge and appropriate strategies for intercultural interaction will create problems and hamper communication processes both in a personal realm and in an institutional framework, intercultural competence has become a central concern in the modern world.

Convinced that fruitful and successful communication across cultural boundaries requires specific forms of knowledge and a repertoire of appropriate strategies, scholars from various academic disciplines have studied the determinants and the processes that govern intercultural interaction. Their research efforts have supplied educational institutions throughout the world with the knowledge necessary for the development and implementation of training programmes to create or enhance the skills of their citizens. It seems only natural to expand the scope of such activities into the early learning phases and sensitise young children to the specifics of intercultural encounters.

3.6.2 Children, intercultural competence and other languages

As a matter of fact, preschools and other child care centres, networks, or programmes may be particularly useful in achieving positive effects in the context of intercultural activities since they are a nexus of rich and complex social and linguistic interactions in the communities they serve (Burns 2009: 27f.). If such institutions feature specific educational frameworks, such as language immersion programmes, the learning effects may enhance each other's effectiveness. With their exposure to a second (foreign) language (L2), children do not only acquire a skill that may turn out to be useful in their future careers. Learning another language will also enable them to access and relate to a cultural reality that differs from their habitual world view. In engaging in a new language, "speakers are enacting sociocultural phenomena; in acquiring language, children acquire culture" (Buttjes & Byram 1991: 18). In a setting in which children are embedded in a multilingual environment where native speakers represent their cultures by way of the language(s) they speak, children will find themselves exposed to a broader variety of behavioural models and cultural stimuli than in a monolingual context.

In a bilingual preschool working under the premise of an immersion programme (see Wode, this volume), intercultural contact would above all refer to the interaction between individuals whose cultural difference is manifested by the fact that they speak different languages. Since it is a common assumption that different languages generally imply different national backgrounds with their distinctive national cultures, the sense of cultural difference would be based on national, ethnic or racial characteristics. While there are doubtless other features that could be used to distinguish between people, these categories are exceedingly powerful and act, in the words of psychologist Gordon Allport, as "labels of primary potency" that overshadow "all finer discriminations that we might otherwise perceive" (1979: 179). Seen from this perspective, members of a given nation share a common set of specific rules, rituals, symbols, and myths.

These specific features constitute the basis for a world view that may contrast with that of other national groups and thus may become a stumbling block for communication across cultural boundaries.

Communicative obstacles based on this type of cultural difference have been noticed on various levels in the world of adults, most notably perhaps in the sphere of politics and the economy. Despite the diversity in definitions and descriptions, Wiseman reported a growing consensus regarding the concept and identified "knowledge, motivation, and skills to interact effectively and appropriately with members of different cultures" as the three main features which have come to be accepted as main components of "intercultural communication competence" (Wiseman 2002: 208). These criteria are best reflected in Michael Byram's model (1997) which, in the course of the past decade, has repeatedly served as a point of reference in the discussion of intercultural competence in the European context. Moreover, he is noted for his work regarding the implementation of intercultural competence in EFL classrooms. His research is of special importance to European teachers because it constitutes the basis for the concepts formulated in the Common European Framework (Council of Europe 2001). Byram sees "intercultural communicative competence" as a unit of culture-related knowledge, skills, and specific attitudes, combined with linguistic, sociolinguistic and discourse competences. What he regards as factual knowledge refers to "social groups and their products and practices in one's own and in one's interlocutor's country, and of the general processes of societal and individual interaction" (Byram 1997: 51). Among the required skills Byram lists an ability for discovery, interpretation, and interaction together with a critical cultural awareness. Finally, the attitudes he associates with intercultural competence comprise openness, curiosity and a readiness to refrain from passing judgment on cultures (both other people's and the speaker's own). Equipped with this set of intercultural skills and knowledge, he claims, individuals find themselves in a much better position to navigate the challenges of intercultural contact.

6.3 Intercultural aspects in the context of bilingual immersion programmes: ELIAS

6.3.1 Setting: Preschools and children

The ELIAS project (2008-2010) monitored the development of young children's first (L1) and second language (L2 English) acquisition and studied the behavioural patterns discernable in situations of intercultural contact in the settings of nine bilingual preschools in different European countries. The project's goal was to shed further light on the effectiveness of the bilingual preschool concept and to document the children's learning progress. Two other preschools were located in England and served as comparison groups for the language acquisition data. However, no data on intercultural behaviour was elicited there.

The number of children per preschool varied between 15 and 90; the average group size was 17. The age range was between 36 and 72 months. The percentage of children with a migrant background (L1 not the ambient or majority language) ranged from 6.7% to 18.2%. All preschools employed native speakers of English (from a variety of countries including Great Britain, USA, Canada, Australia, Malaysia, Trinidad and Tobago) to provide naturalistic language input. The children came from various family backgrounds, covering a wide range of the social spectrum.

6.3.2 Research

Since intercultural situations at the preschool level have so far not been extensively studied, there is little research to draw on. In view of the complex nature of such an endeavour and in the absence of an established research routine, the research team decided to pursue its own work with a pronounced descriptive dimension and chose an ethnographic approach

because it promises the best results for the specific conditions to obtain in the context of preschools (Corsaro 2005). By observing children interacting with each other in the bilingual preschools through participant observation, it was attempted to provide a rich description of the context of behaviour and development. It was assumed that by taking this approach previously unanticipated features of intercultural behaviour would be uncovered that deserve more focused observation and investigation. The ultimate goal was to derive a detailed and comprehensive description of the children's behavioural repertoire.

The observations and experiences accumulated during the project's pilot phase led to specific research questions:

1. Can intercultural competence be observed and described in the context of bilingual preschools?
2. What are the situations in which intercultural competence becomes visible?
3. What forms of intercultural behaviour do the children exhibit, i.e. what are the indicators for intercultural competence in children aged 3-6 in bilingual preschools?
4. Does continued exposure to situations involving contact with other cultures and their representatives lead to a change in these children's behaviour?

Additional questions, such as "How can changes in intercultural behaviour be explained?" or "How can intercultural competence be fostered in child-care environments?" could not be addressed in the limited time frame of the ELIAS project, but they remain important issues in further research on the topic.

The results from the first phase of observations led to a more refined set of categories with corresponding examples and descriptions. Following this, a detailed observation catalogue derived from theoretical underpinnings and practical experience was developed and distributed to the observers in all ELIAS preschools. With the help of this guide, the individual observers compiled a corpus with intercultural incidents in their respective preschools. The final version of the ELIAS ICC Field Guide was put into use in the last phase of observation which began in January 2010 and ended five months later.

The categories which emerged from this inductive process were then related to categories found in other studies on interculturality (Auernheimer 2005; Bennett and Bennett 2004; Byram et al. 2001; Byram 1997; Erl & Gymnich 2007; Kühlmann & Stahl 1998; Prechtl & Lund 2007; Witte 2009) and were ultimately shaped into a grid that covers the extent of relevant data collected during the lifetime of the ELIAS project. The main division into the superordinate categories of Attitude, Knowledge and Skills has been adapted from Byram (1997: 34). Section 6.4.1 provides an overview of the categories. For more detailed information on the research method used see Gerlich et al., volume I, and Gerlich (2010).

3.6.4 Results and Discussion

3.6.4.1 Categories of intercultural encounters in bilingual preschools

A variety of terms have been used by different authors to describe the complex phenomenon of intercultural competence (Byram 1997, Erl & Gymnich 2007: 7, Bennett & Bennett 2004: 153, Kühlmann & Stahl 1998: 217f., Prechtl & Lund 2007: 472, Ruben 1976: 340, Witte 2009: 55; for more details see Gerlich 2010). These terms have been used, adapted and complemented with our own observations. As a result, categories used for coding the data include (A) fear / rejection, judgmental statement, tolerance / acceptance, hesitation, regret, interest, no interest, motivation for contact, motivation for language; (B) factual knowledge, language knowledge, lack of knowledge, meta-linguistic knowledge / meta-communication; and (C) verbal communication strategy, non-verbal communication strategy, lack of communication strategy, negative strategy of communication, skill of discovery, deduction / transfer, mediation / translation, guidance. These categories were ordered according to the

threefold division into (A) Attitudes, (B) Knowledge, and (C) Skills, used by Byram (1997: 34) and Erl & Gymnich (2007: 7), which was found to be the most basic one and comparable in various sources. The data do not allow formulating stages or levels. Most of the descriptions of competence demand a kind of "Can Do" statement (compare BMBF 2007: 154; Council of Europe 2001: 25), a statement describing the existing feature(s) of the competence. Nevertheless, observation reveals several instances of behaviour that could be related to the term "competence" in a "Can't Do (yet)" statement. Therefore, each main category can be completed with its "Can't Do" counterpart, for example "knowledge" and "lack of knowledge," "tolerance" and "lack of tolerance," and so forth. It has to be stated, however, that not all counterparts were present in the current data set, and were therefore not included in the description.

A Attitudes

In accordance with Byram's proposition, the ELIAS framework is limited to "attitudes towards people who are perceived as different in respect of the cultural meanings, beliefs and behaviours they exhibit, which are implicit in their interaction with interlocutors from their own social group or others" (Byram 1997: 34). The subcategories classified under attitudes comprise reactions which may either facilitate or impede successful communication (Table 3). Inhibitors of intercultural communication were placed into the two subcategories: "fear / rejection" and "judgmental statement." Byram identifies curiosity, openness, readiness to suspend disbelief and judgment with respect to others' meanings, beliefs and behaviours as "precondition for successful intercultural interaction" (Byram 1997: 34). In the bilingual preschools, instances displaying behaviour of this type have been grouped as "tolerance / acceptance," "interest," "motivated for language" and "motivated for contact." "Hesitation" was added as a subcategory to cover situations in which no clear orientation towards openness or rejection could be detected.

Category	Definition
fear / rejection	children cry, flinch, avoid contact, yell or show other signs of discomfort when exposed to manifestations of cultural difference; children refuse contact with certain persons, languages, objects or actions related to another culture
judgmental statement	children utter phrases which express disrespect for or negative assumptions about another culture; children laugh about utterances, actions, beliefs or habits of persons from a different culture in a disrespectful way
tolerance / acceptance	children show openness or a welcoming reaction toward persons, objects and actions from a different culture; children respect rules of an intercultural situation
hesitation	children seem to avoid or seem cautious or shy towards persons from a different cultural background, their actions or objects associated with them, but they do not show signs of rejection
regret	children express sadness or disappointment about certain conditions associated with an intercultural situation
interest	children appear curious or want to gain knowledge about other persons, objects and actions that are connected to a different culture
no interest	children appear disinterested in displayed objects, themes or other newly introduced features
motivation for contact	children appear eager to become involved or to be in contact with L2 teachers or with children from different cultural backgrounds
motivation for language	children appear willing to learn the L2 spoken in preschool context or other languages; children show appreciation for language skills

Tab. 3: Definitions of ELIAS Categories for Attitudes

B Knowledge

Knowledge plays an important role in intercultural encounters because, as "relational knowledge," information about other countries is "acquired within socialisation in one's own social groups and often presented in contrast to the significant characteristics of one's own national group and identity" (Byram 1997: 36). Byram distinguishes between knowledge about the specifics of social groups and their cultures in a person's home country and their equivalents elsewhere on the one hand ("declarative knowledge"), and knowledge about the processes of interaction on the other ("procedural knowledge").

Since the preschool environment does not offer any extensive or systematic formal education about other countries and their people, the children's knowledge is based on informal socialisation in the form of information provided and stories told in the family, the preschool, or the neighbourhood. Often such stories are marked by stereotypes and prejudice (Byram 1997: 36). This knowledge may be supplemented and modified by practical experiences individual children have, but the children's cognitive abilities at this age limit the level of sophistication that can be expected with regard to their critical self-awareness, let alone with regard to Byram's "meta-linguistic knowledge" or "meta-communication." Due to these constraints, the factor "knowledge" does not contain a category for this dimension of intercultural competence. It does, however, include "factual knowledge of culture" which subsumes a child's knowledge of his or her own and/or another culture together with any kind of world-knowledge the children have acquired so far. As an important prerequisite of successful intercultural communication, "language knowledge" is listed separately in the survey grid. The category "lack of knowledge" was introduced to document those situations which indicated that the children had no appropriate frame of reference for their interaction. Table 4 gives an overview of the study's knowledge categories and their definitions.

Category	Definition
factual knowledge	children utter, reproduce, or recount facts relating to national or ethnic culture, identity, habits, rules, etc.
language knowledge	children utter, reproduce, recount words or phrases in a language which is not their L1; or in their L1, if L1 is not the majority language nor the target L2 of the preschool
lack of knowledge	children appear to have a deficit in factual knowledge on culture-related issues or language knowledge; this does not necessarily include a negative connotation or interpretation
meta-linguistic knowledge / meta-communication	children utter assumptions or factual knowledge about language, language construction, or communication; children talk about different languages and/ or about communication strategies

Tab. 4: Definitions of ELIAS Categories for Knowledge

C Skills and Abilities

The third factor in Byram's (1997) model, skills and abilities, by its nature strongly depends on the level of an individual's cognitive development. Since the skills of "interpreting and relating" (p. 52) which also depend strongly on a person's knowledge, and "critical cultural awareness" (p. 53) are advanced skills, they will be rare to find in preschool children. Being able to interpret, to explain, and to relate events experienced in the context of an intercultural encounter requires a degree of sophistication that young children simply do not possess. Byram's description of the skills of "discovery and interaction" (p. 52f.) likewise include complex intellectual operations that are beyond what can be expected of preschoolers. However, this is not to say that this part of Byram's model cannot be adapted to the age level under consideration. In essence, several of the abilities listed in Byram's model can be found in young children's behaviour and can therefore be incorporated into the observational framework. Some aspects of the skills of "discovery and interaction" (the ability to acquire

new knowledge of a culture and to transfer it to real-time communication and interaction) are so fundamental to human contact that they must be considered a basic ingredient of human interaction. Similarly, skills needed to reduce uncertainty and anxiety when confronted with unusual circumstances are also very relevant for the development of young children. Therefore, it should not come as a surprise to learn that children do indeed manage, more or less successfully, to "tolerate ambiguity, to deal effectively with situations even when there is little objective information present and outcomes are difficult to predict," "to empathise, involving cognitive, affective and communication components," "to adapt, especially adapting behaviour to the expectations of others" and "to make accurate predictions and explanations of others' behaviour" (ibid., p. 16). These considerations have made it possible to create a set of categories to describe such skills as were observed in the course of the project (Table 5).

Category	Definition
verbal communication strategy	children use verbal utterances to react to or interact with their chosen interlocutor/s from another culture, for example by choosing the adequate language, or by adapting their own language to the interlocutor's abilities
non-verbal communication strategy	children use mime and body language to react to or interact with their interlocutor/s
lack of communication strategy	children appear to lack a verbal or non-verbal strategy to interact with their interlocutor/s, which results in unsuccessful communication
negative strategy of communication	children use a successful strategy of communication to fulfil their intention, but the children's intention is to stop communication rather than to enhance it, e.g. by excluding other children
skill of discovery	children use a successful strategy to acquire knowledge or gather information, for example by asking questions
deduction / transfer	children combine factual and/or unconscious knowledge to establish inter-relationships between facts of which they had previously been unaware
mediation / translation	children use a successful strategy to solve a misunderstanding or a dysfunction in communication between individuals of different cultural background, for example by mediating, translating or explaining
guidance	children successfully use a strategy to include another individual from a different cultural background into a group, an activity, or to introduce him or her to certain knowledge; this strategy is not restricted to dysfunctional communication, and it usually includes other strategies, such as the skill to mediate and translate

Tab. 5: Definitions of ELIAS Categories for Skills

3.6.4.2 Category analysis

Due to limited space this section can only describe one example representative of the ELIAS data interpretation (see below). Interested readers may refer to Gerlich et al. (volume I) where each category is explained and illustrated with examples. It has to be noted that, due to the complexity of the situations observed, in most cases there were several categories which pertained to one situation. This is intuitively clear as, for instance, a certain skill of intercultural competence usually also involves a certain attitude towards the other person, etc. As the data samples frequently include more than one person, several attitudes and instances of knowledge or skills can be identified simultaneously. For this reason, and the observation effects described in Gerlich et al. (volume I), a quantitative analysis of the data would not yield valid results. Frequency measures were given, however, to make possible a rough comparison between situations which the observers noted very frequently (such as different strategies of verbal communication), and those which were observed only in exceptional cases (such as a negative strategy of exclusion, Table 6).

ATTITUDES	#	KNOWLEDGE	#	SKILLS	#
fear / rejection	12	factual knowledge	38	verbal communication strategy	41
judgmental statement	8	language knowledge	57	non-verbal communication strategy	14
tolerance / acceptance	35	lack of knowledge	32	lack of communication strategy	2
hesitation	11	meta-linguistic knowledge / meta-communication	30	negative strategy of exclusion	2
regret	3			skill of discovery	28
interest	28			deduction / transfer	19
no interest	2			translation / mediation	10
motivation for language	32			Guidance	7
motivation for contact	40				

Tab. 6: Categories used to describe intercultural competence in the context of the ELIAS project

The example of Sit. 9-10-21 shows clearly why, in a complex situation with several participants, more than one category of attitudes, knowledge or skills comes into play:

Situation 9-10-21:

09-49 is jumping on the mattress. 93 (L1): "09-08, do you know that 09-49 only knows very little German?" 09-08: "Yes!" 93 (L1): "Who told you?" 09-08: "Nobody." 09-08 pulls at 09-49's sleeve to indicate that he should go off the mattress. Then she jumps on the mattress and lets herself fall. 09-49 observes her and imitates her movements. 09-08 keeps ongoing eye contact with him and observes what he is doing. (They go on playing, 09-08 models movements for 09-49 and helps him imitating them. Both laugh and keep eye contact. 09-49 speaks in Hebrew from time to time and goes on laughing, playing with 09-08 and imitating what she does.) 09-08 pushes 09-49 for fun and invites him to do the same. He does, and both laugh.

Comment:

09-08 and 09-49 were really in contact with each other, mutually observing the other. 09-08 shows great sensitivity in talking to 09-49, her German was fitting to 09-49's level of understanding. The combination of action and talking helped 09-49 a lot to find into a play, together with 09-08. Although the children don't remember with whom they talked about 09-49's difficulties communicating in German, 09-08 did a great job adapting her speech to 09-49 level of understanding. The atmosphere was really relaxed and funny. For the first time I saw 09-49 really relaxed. [translated and adapted situation from data set]

The readiness of child 09-08 to help child 09-49 and to explain how to do things makes it possible for the two children to play together although they share neither language nor culture. Both show tolerance and high motivation to get in contact with each other. The girl understands the new boy's language level and his difficulties to understand. Both children use non-verbal and verbal communication skills, but the girl's adaptation of her language and the combination of different modelling strategies go far beyond such skills and show true guidance to integrate a child from a different culture into her own activities.

3.6.4.3 Discussion: The Study Outcome

As the preceding sections have shown, it can be said that children do actively engage in intercultural encounters and recognise them as such in many observed examples. Issues such as different languages, different places of origins or skin colour attract children's attention and prompt them to explore and negotiate the situations in which they arise. In the majority of the cases in which this happened, the children in this project mastered the multilingual, intercultural environment very well. On many occasions, they exhibited positive attitudes, knowledge about their own and other cultures, and skills with the help of which they solved problems arising in intercultural communication. An open and positive attitude towards cultural difference was found not only with regard to adult L2 teachers (who hold a

position of authority) but also in contact situations between children and their peers from migrant backgrounds.

Given this generally positive climate it seems only logical that instances of negative behaviour (e.g. by excluding, ridiculing or insulting others on the basis of their cultural difference) are a rare exception in the data set. There is no evidence that children would generally reject foreign language teachers or children from a different cultural background. Attending a bilingual preschool where exposure to different cultures and languages is a daily occurrence seems in no way to subject children to a condition in which they might feel scared, intimidated or uncomfortable. Children who did show initial reservations, fear or signs of rejection in early encounters with members from other cultural groups abandoned such behaviour as their involvement in intercultural situations intensified (see Thomas et al., volume I). All observers reported that the atmosphere in their respective preschools was friendly and accepting.

Children growing up in the framework of a bilingual preschool find themselves in an environment which sends important signals to everybody who comes in touch with it: Becoming accustomed to the fact that people speak different languages, and experiencing that it is possible and not at all exceptional to learn other languages. This furthers a positive attitude towards multilingualism and has the potential to sensitise young children to the benefits that arise from a varied linguistic competence. It may also help create an atmosphere in which children and students who speak an L1 that differs from the majority language come to be seen as an enrichment to life in schools and preschools, rather than a problem.

3.6.5 Conclusion

Observations collected in the context of the ELIAS project have provided a basis for the assumption that an intensive contact with members of a (national/ethnic) culture other than their own confronts children with the necessity of adapting themselves to a previously unknown form of interaction and provides opportunities for the formation of behavioural strategies and patterns that enable them to navigate and negotiate intercultural encounters with confidence and competence. As they grow up they may discover that their early experiences and successes in a multilingual and multicultural environment have given them an important tool to master the challenges of a world increasingly shaped by the transformative processes of internationalisation.

3.7. Green Immersion

3.7.1 Introduction

In a world that is emphasising the need for individuals to carefully consider their impact on the environment because of population explosions and increasing use of natural resources, it is important to be prepared to deal with these demands. Environmental education is a solution to an individual's need for developing their character of Action Competence (Stokes et al. 2001, WAZA 2005). To strengthen this development, environmental education should begin during the early stages of childhood (Wilson 1995). Therefore, preschools are the opportune institutions to prepare children. Currently, formal environmental education encompasses ecological, economical and societal aspects (Earth Summit Conference 1992). Even though these topics are complex and highly interconnected, preschool programmes have the opportunity to create fun and stimulating activities which invite a child to learn about these environmental topics in a child-friendly way. The children of today are those who will have to live in and deal with the environmental problems of tomorrow. Therefore, early environmental education may be the key for creating future individuals with the potential for positive role-playing in the sustainability of the environment.

The *Zoo-Kindergarten* in Magdeburg, Germany, combines early childhood environmental education and second language acquisition in their preschool programme. The children at the zoo preschool are presented with environmentally themed learning activities conducted entirely in their second language English. This method of education has been labelled "Green Immersion" (GI) by the ELIAS project (Kersten & Perret 2008). Over a period of 19 months a research study was conducted on the GI programme, which examined the effectiveness of the education of GI, how to effectively teach GI, and to note if children exhibited a difference in their environmental learning abilities. The overall research question was: How, and to what extent, do the children in the zoo preschool learn through the teaching of GI? The expected outcome was: When the children in the zoo preschool are provided with appropriate environmental education they should exhibit a development and expansion of environmental sensitivity.

3.7.2 Structure of the Research Study

Green Immersion (GI) is an environmental education programme that assists children in their understanding of environmental topics by presenting the children with a weekly, two-part activity, taught all in the foreign language, without translation. The environmental education themes GI presents to the children are based on current environmental issues. These broader environmental issues are broken down into child-friendly activities and supported with appropriate educational materials. The weekly activities are two-part sessions; a preparatory session on that week's environmental topic and a corresponding practical application session.

The study began in October 2008 with qualitative teacher observations of the children's learning growth. These observations noted the children's attitudes and the children's responses to the environmental topics. Five months into the research study a pilot study was conducted to evaluate the effectiveness of the materials, which was intended only as an assessment for understanding the zoo preschool children's comprehension of GI materials and the effectiveness of the teaching method. Later, a more quantitative checklist was developed. The aim of the new checklist was to observe both group and individual growth through the various levels of GI learning which were based on a model by Janßen (1988).

Janßen's model describes an individual progressing through six different levels of encountering nature and it was chosen because it accounts for language, which is a focus in GI. Progression through the levels signifies that an individual was acquiring more environmental knowledge and how they respond to that knowledge; i.e. by simply experiencing, then describing it, etc. To be incorporated into the GI research study, Janßen's model was adapted to fully appreciate the subtleties of GI.⁷ The original model had only one repetition cycle, from the highest level (Action Competence) back to the first level (Experiencing nature), signifying environmental learning is continuous; i.e., even though a learner has reached the highest level, with each new environmental topic/theme presented, they would go back to the first level of environmental learning, beginning the process of experiencing nature again. However, since GI has more emphasis on language acquisition, an additional repetition cycle was needed to show how the children learned and negotiated the second language. Hence, a second cycle was added between the third and fourth levels of the adapted GI model, as explained below.

The GI model was adapted such that the names of the various levels were slightly changed to better describe the level in English and, as mentioned previously, an extra repetition cycle was added to show language negotiation and acquisition. The six adapted levels of GI learning are the Emotional Level, the Describing Level, the Repetition Level, the

⁷ Janßen's model was as follows: Experiencing nature, Describing nature, Explaining nature, Understanding nature, Environmental awareness, Action competence.

Understanding Level, Environmental Awareness and Action Competence. The model shows how an individual – in this case a child – begins his or her environmental experience by *emotionally* engaging the environmental topic/activity. Then as the child grows in his or her environmental knowledge, that child *describes* the topic/activity in his or her own words.⁸ As the child continues, the next level would be an introduction to the new foreign language and to the accurate environmental facts. At this level the child is encouraged to *repeat* back the facts in either language. As the child acquires the language and environmental facts, the child is encouraged to *describe* the topic/activity again. Then as the child becomes more confident with the language and environmental facts, more language and facts are introduced and the process of *describing* and *repeating* occurs again. It is between these two levels, Describing and Repetition, where the extra cycle was added. Then, as the child acquires more knowledge of language and environmental facts, the child begins to better *understand* the environmental topic/theme. In the final two levels, Environmental Awareness and Action Competence, higher cognition takes place. In these levels the child begins to comprehend the interconnectivity of the various environmental issues, as obtained through the knowledge acquired in the GI programme as well as their own personal reflections. Then the child takes these connections and creates a personal guideline, applying the guideline in ever-expanding spheres of influence. To elucidate, first the child personally applies his or her environmental knowledge as a guideline of how to positively impact and interact with the environment, then progressing to include family members, friends and finally society.

The checklist was also created to observe each level as to the degree of participation in the group or the individual, on a Likert scale of 1 to 4; the degree of participation being how intensively the children participated in the activity at the various levels. Each level of GI learning had set goals and indications which helped to sort the observer's observations of the children's progression into more uniform results. The observations collected using this checklist covered a period of five months from January 2010 to May 2010.

3.7.3 Results and Discussion

During the first weeks of the GI programme, it was very interesting to observe that some children in the programme displayed unfavourable behaviours towards English, and consequently GI. The unfavourable behaviour towards GI stemmed from the fact that all GI activities were led by English speakers. As some children rejected the English activities, this led to a rejection of those teaching GI. Granted, the rejection of GI could have been unique to this particular situation, resulting from other factors.⁹ Unfortunately, these forms of adverse behaviours did have an impact on the children's GI learning abilities. Since these children avoided GI activities, which hindered them from emotionally engaging in the environmental activities, their growth through GI was either absent or minimal regarding the related activities. The L2 preschool teachers knew that in order to overcome these adverse behaviours and to begin realising the fundamental goal of GI, something needed to change. Therefore, the L2 preschool teachers began to create highly contextualised materials and sessions.

In the following months, there was a steady increase in the children's use of English and their interest, and even anticipation, of the GI sessions. It was considered that the changes in the teaching approach, as well as an increase in child-teacher familiarity, brought about this increase. The increase in the children's interest was very positive to note; reasoning that the changes to the GI programme were profitable for this group of children as they grew through GI learning.

⁸ Note that the description of the topic or activity does not have to be scientifically accurate. Instead, the child is to simply talk about the topic/activity. Also, the descriptions may be in either language.

⁹ For a more detailed explanation please see the Green Immersion chapter in volume I.

As mentioned in the introduction, after the first few months of GI in the zoo preschool, a pilot study determined whether the children were indeed following the GI sessions. More importantly, the pilot study helped to identify how the materials affected the learning of the children. The results obtained from the pilot study assisted the researchers in determining a new educational method: the creation of two teaching levels of Green Immersion. The first teaching level was created for those children just beginning their GI experience. The second level was intended for the more experienced children (experienced in both languages and environmental topics). With the creation of two levels, and corresponding appropriate materials, the children had more opportunities for becoming active participants in their learning. This active participation in the GI sessions is important for the child's growth through GI learning and hence for the child's environmental cognition. Active participation, or active learning, in a child helps to establish new connections and a new understanding of environmental topics (Wilson 1995, Bandura 1999, Breiting et al. 2009).

The same GI checklist, which was developed to observe the children's progress through GI, was also used to monitor the effect of materials. Learning with all five senses, i.e. sight, sound, taste, touch and smell, can help to enrich a child's learning experience and create a deeper meaning of the topic explored (Wilson 1995, Dumouchel 2003). For example, activities which use a variety of educational materials such as 'real' objects, photos and/or videos, provide children with more opportunities to experience that particular environmental topic/activity. With each opportunity they are able to connect in a different way, making that topic/activity a richer experience.

The study conducted on the GI programme in the zoo preschool showed that the children in the programme did learn and comprehend environmental topics, and that the children did in fact progress through the levels of GI learning; even into the higher levels of GI learning. The educational goals for this study were also reached: children in this preschool showed an increased appreciation for nature-related/environmental themes. Furthermore, the research goals for this study were achieved, in that the researchers determined that there was little difference in learning ability between girls and boys. However, there was a difference in learning ability between younger and older children. Finally, the results of this study also showed that materials which are used in a GI session do impact the children's learning ability, in both a positive and negative way. The study could also show which GI teaching materials encouraged a positive effect in the children's learning and growth.

3.7.4 Conclusion

The research conducted on GI helped to identify how a child acquires environmental knowledge in a bilingual setting. The data collected also indicated that the children in the GI programme increased in their environmental knowledge and environmental appreciation. The observations and data also helped to determine which educational materials positively stimulated the children in the GI programme, and which materials did not.

The limitations of this research study were such that only a small group of participants were observed, and of those participants none came from a background of 'high' environmental awareness. Also, the children were only observed over a 19 month period. In order to determine if the patterns observed in the zoo preschool's children were applicable to other groups, a larger study group would need to be observed and should be observed for a longer period of time. The GI checklist created for this research study was tailored to that particular preschool group. However, the checklist was adapted from a generalised model and should be applicable for other GI programmes. A difference which might be present in other GI programmes would be the speed at which the individuals progress through the levels of GI learning.

Children are the hope for a more environmentally sustainable future. They are the agents of the future and it is the present preparation which will assist them in becoming positive

participants in their future roles. However, children do not become action competent without guidance along the way. Whether parents provide an example of love towards animals and/or the environment for their children, or school teachers provide their students with the same example, it is much easier for a child to become an individual of action competence when they see it in everyday life. For those young children with parents or caregivers who provide surroundings fit to nourish growth in action competence, their future of being positive participants in a world of environmental issues will be more stable and certain.

4. Partnerships

Kristin Kersten

4.1 European Added Value and Geographical Coverage

The European added value was an important aspect of the project's setup. ELIAS contributes to European debates and actions in three major project areas, 1. the evaluation of the success of the programmes investigated, 2. the establishment of *best practices* in bilingual preschools independent of regional or national confinements, and 3. the recommendations derived from the evaluation and *best practices* for bilingual preschools in Europe.

Bilingual preschool programmes have received a considerable increase in popularity in European Countries over the past decade. We have, however, experienced that many newly established institutions face the same problems over again. These problems begin with the question of what is considered to be "bilingual" or "immersion", what kind of staff to use, where to find suitable staff, and how to put the idea into practice. It is our distinct impression that many new programmes try to "reinvent the wheel" without recurring to *best practices* from already well-established institutions. ELIAS seeks to provide improvement of this situation. The following sections summarise these steps with regard to the European added value.

4.1.1 Multinational Evaluation of Preschool Programmes

It was the aim of ELIAS to evaluate the success of different programmes on a scientific basis. Programmes all over Europe differ in various aspects, such as:

- the institutional framework set up in national education legislation
- the amount of L2 input (daily or weekly)
- the intensity of L2 input
- the combination of the L1 and the L2
- the language backgrounds of the staff
- the teaching principles used to convey the L2
- the group structure
- the age of the children
- the language background of the children
- the attitudes towards the programme, etc.

All of these aspects have an impact on the children's development in such crucial areas as language learning (both L1, L2 and others), intercultural learning and content learning. The ELIAS project evaluated intercultural competence and the level of language learning in each project preschool, as well as environmental learning in the Zoo Preschool. These results are crucial to filter out *best practices* in bilingual preschools with regard to the different aspects that have to be considered in a bilingual preschool setup.

4.1.2 Best Practices

ELIAS describes *best practices* in the partner preschools as highly impacting the children's progress, with regard to the above aspects. These practices are identified through the results of the evaluation and the analysis of the preschools' organisational structure. The results show that

- the amount of L2 contact
- the intensity of L2 contact and
- the teaching approach and

are among the crucial factors while considering in the setup of a programme, and the group and staff structure seems to play an important role as well.

To give a few practical examples, *best practices* with regard to these factors include a high amount of L2 contact with at least a few hours of daily contact to the L2, a so-called *one person – one language* approach (Döpke 1992) which avoids the translation of languages, a group structure in which the L2 teacher has the same responsibilities as the L1 teacher and, in shared groups, provides at least 50% of the linguistic input. *Best practices* inferred from all project preschools as well as additional experiences and the literature are described in detail in the guidelines for bilingual preschools in the project's final publication *Bilingual Preschools*, volume 2 (Kersten et al. 2010: How to Start a Bilingual Preschool: Practical Guidelines, pp. 77-101).

4.1.3 Recommendations

In these practical guidelines for bilingual preschools, we give recommendations for the widespread successful implementation of such programmes at a European level. They are beneficial for all institutions interested in the topic. An important goal of these recommendations is an impact on EU political debates and actions in the area of multilingualism and multiculturalism, as well as bilingual education for sustainable development, a new and auspicious concept which we termed *Green Immersion*.

In addition to these guidelines based on *best practices*, these recommendations address, among others, questions of:

- the permeability in the job market for teachers from different countries
- the centralisation of job offers and their dissemination
- the recognition of foreign job certificates within the EU for immersion educational staff
- the number and setup of administrative institutions involved in the implementation of such programmes
- the multi-language capacities of the above institutions (or the lack thereof)

All of those issues have been experienced as rather great obstacles for new institutions, leading to delays in the schedule and to subsequent financial problems, which might be avoided in the future through the help of more centralised administrative offers.

4.2 Experiences and Benefits

The experiences from the two years of the project's lifetime were beneficial in various ways. There are direct benefits for all team members resulting from the collaboration within the network, as well as many exchanges with additional groups and institutions.

4.2.1 Internal Benefits

First of all, it was of great interest to all project members to learn about different systems for early childhood education, which result in different preschool setups. Not only are the differences interesting, it is also enlightening and helpful to see that many approaches, philosophies and practical problems are actually experienced across national borders.

In several cases, the partners could provide help with such practical problems. As an example, university members were able to help with the search for L2 native speaking staff, with the translation of legal information, and with administrative processes such as those mentioned above. We have experienced that university titles help open doors for preschool requests in administrative institutions, when preschool initiatives on their own would not be heard. While this situation is deplorable on a large scale, the final success was naturally very beneficial to the project.

An immediate result for team members especially in the preschools is the increase in their own language skills through the continual input of their colleagues – and this works in both ways. This way, not only the children profit from the immersion setup; both L1 and L2 teachers are immersed in the other language/s as well and, as in a naturalistic setup, simply acquire the languages together with the children. This is especially true for newly implemented preschools with new staff, such as the Zoo Preschool in Magdeburg, where second language skills of the whole staff were limited in the beginning, and have greatly increased during the last year. Most members of the research team are fluent in their L2 English; nevertheless, the regular exchange with native speakers is beneficial for them as well. In some cases, such as in Belgium or Sweden, the team is even exposed to a third language due to the multilingual situation of the country and/or their preschool.

The multilingual background of the partners also adds an interesting variable to the research setup, in that language acquisition across different L1s but with the same L2, can be compared. This includes actual English L1 data from the preschool in Hatfield, England, which establishes the baseline for comparison.

Another very important field of experience resulting from the multinational setup, not only for the children but notably for all adults as well, were intercultural contacts between all team members. While one might argue the cultural differences within the research team, i.e. between European academics, are not vast, the preschool staffs include teachers from five different continents, providing not only very different varieties of English and their L1s, but also of cultural backgrounds. These backgrounds affect communication patterns within the teams, such as questions of politeness, of personal distance, role behaviour, teaching approaches, body contact with the children and among adults, to name but a few. For newly formed teams, such issues may present a challenge and a learning field for intercultural awareness. We experienced throughout the project time how differences were first identified, then addressed, and finally resolved by discussion and compromises. Some team members feel that this is an ongoing process. The important experience for all of us is to remain open, alert, interested in the other persons' point of view and willing to take their perspective. Through the close contact, the university teams were often involved in those processes as well, either as external advisors, or as part of the communication process themselves. In that way, the whole ELIAS teams profited from a heightened sensitivity for intercultural communication.

Another important aspect of exchange lies in the different fields of expertise that our international team contributed to the project. International aspects are tied with the interdisciplinary project approach. Every team member made a unique contribution to the success of the whole endeavour. Expertise covers practical experience, teacher training, different methodological foci in qualitative and quantitative research and the different thematic strands, language learning, intercultural competence, and ESD. We were able to

develop our new and unique expertise in the interdisciplinary field of bilingual ESD, or as we coined it, Green Immersion, from these starting points. The exchange over these fields was such that whenever a question arose in one of the work groups, we were able to recur to a member of another one to discuss the question, or to launch a discussion forum, to resolve the problem.

4.2.2 External Benefits

From the very beginning, the project experienced a great need for experiences and *best practices* for immersion preschools from different target groups. Partners were repeatedly approached by practitioners, associations, researchers and city administrations alike, and, from our part, we initiated and reinforced those contacts intensively. Even laymen who found the project on the internet contacted us to ask about advice concerning their own children. Team members were asked to give comments or advice on bilingual education, were invited to contribute to guidelines and curriculum developments, and gave presentations and training events. Team members were very happy to oblige as it is our conviction that every institution can learn from already established experiences in the field, and that we will gain, ourselves, inestimable new experiences with every new contact we establish, or project we advise.

To make ELIAS goals and outcomes, as well as the new environmental concept of Green Immersion, known to a wide variety of target groups, the project was presented at national and international conferences, notably including two European conferences on zoo-associations (EAZA 2008) and zoo education (EZE 2009), as well as a German conference on foreign language education (DGFF 2009) and the European association of second language acquisition (EUROSLA 2010).

As an official EU-project, ELIAS team members also came to the attention of the respective political bodies in their regions. As a result, not only did we receive help, encouragement and further dissemination opportunities, but team members were also recommended as experts on issues of early education to other political boards. That way, the network of contacts and the impact of the project could be considerably enlarged.

Through the project's dissemination activities, other universities and preschools adopted our project setup, so that we were able to enlarge the data pool beyond the original seven project preschools and included three additional partners (two bilingual preschools and a university) in the second period of the project, thus increasing the project's impact considerably and adding invaluable data and information to the project's framework. In addition, contacts were established with a renowned university in the Netherlands, with whom we exchanged ideas for collaboration. A result of this cooperation, two of our project partners were asked to write a handbook article on the teaching of English to young children (Kersten & Rohde, *forthc.*)

Another important issue in the preschools is the continuation of the bilingual programme into elementary education. Together with parent associations and the respective administrations, several partners launched initiatives for their respective regions. The continuation of successful educational programmes is indispensable if we wish to meet the long-term educational goals. Multilateral projects such as ELIAS can only function as a starting point and an incentive for broader application, if widespread effects are wanted. Only the continuous access to good educational programmes over the years of schooling can warrant their success. If ended after three or so years of preschool education, bilingual programmes cannot yield the multilingual and intercultural competences the EU requires of their citizens. They can lay a sound foundation and enhance cognitive competences in general, but if not taken up in elementary school, much of the children's immediate active knowledge gained during preschool education is in danger to diminish. To advance this situation, several project partners composed additional guidelines for immersion elementary schooling (Kersten et al. 2010). These guidelines are distributed on the project website and by the most well-

established immersion association in Germany, the FMKS (www.fmks.eu), who contributed their expertise to the guidelines as well. They are available in English and in German.

On the same note, the collaboration of Magdeburg University, the Zoo and the Zoo Preschool in the field of Green Immersion has received so much recognition, regionally and internationally, that this collaboration will be intensified over the years to come. We intend to create a competence centre for Green Immersion at the Magdeburg Zoo to enlarge the cooperation between curricular and extra-curricular educational institutions.

Last but not least, thanks to the initiative of the Magdeburg ELIAS team and a bilingual high school, a new association of bilingual institutions was founded in the region of Saxony-Anhalt in Germany. The goals of this association comprise joint efforts to work for easier administrative processes in the recognition of new institutions and of foreign teaching certificates as noted above, as well as the exchange of information and *best practices* in immersion teaching.

5. Plans for the Future

Eva Frey, Kristin Kersten, Holger Kersten, Ute Massler, Katharina Neils, Marion Salentin, Anja Steinlen, Shannon Thomas, Martina Weitz

ELIAS' main focus was on longitudinal research in bilingual preschools to describe the children's development in various areas of learning, and the practical recommendations resulting from it.

The research results were presented to the public in a final symposium which included formal presentations followed by a number of practical teacher training workshops. About three hundred participants from over ten different countries took part in the symposium, received materials, and were able to share their own experiences and expertise in the small work groups. The conference presentations and workshops are all available online on the website of the project and of Germany's platform for bilingual institutions, www.fmks.eu.

Furthermore, the two most important measures taken to guarantee sustainability beyond the project's lifetime are the ELIAS website and the final book publication. It gives a comprehensive overview of the ELIAS research results in all fields of study. These volumes include the symposium proceedings, background information and guidelines. They suit both practical and theoretical research purposes, thus enabling a wide range of different audiences to profit from the studies and from best practices identified in the ELIAS preschools and beyond.

The project's products which were created for this purpose are available on the website and can be put to use by other research groups that want to replicate and advance the studies. Contact with the ELIAS team is recommended when test materials are used. That way, the data corpus collected over the last two years can be further enlarged and the results reassessed and strengthened. Materials were created in such a way that they are easily applicable for a wide variety of different programmes. We recommend to use them not only in preschools but extend the usage to primary schools as well. Several ELIAS partners plan on doing so in the near future. Test materials include the observation checklist for teacher input, a training video sequence for raters, preschool and parent questionnaires which reveal a more complete picture of the different factors that play a part in preschool education, a newly developed grammar test, as well as observational field guides for intercultural encounters in bilingual preschools and for bilingual environmental education programmes.

Over the past year, the Green Immersion team has created nine online learning modules on such diverse nature and environmental topics as Water, Winter, Desert, The Food Chain, Plants, Tools, Movement, Continental Animals, and Adult & Young. All modules are published on the ELIAS website. In addition, all modules are available on a CD ROM, which also gives an introduction to Green Immersion to the teacher and cites a number of online resources for further use. All Green Immersion materials are adapted so as to apply to a broad audience including primary schools and kindergartens without zoo facilities. That way, the impact of the materials is much higher and reaches all different kinds of programmes with an emphasis on sustainable development.

The same is true for the teacher training materials and guidelines which provide a sound and broad introduction to the various topics with which bilingual programmes are concerned. Pedagogues, programme initiators, parents and administrators are able to gain an in-depth view into the multi-faceted tasks of a bilingual programme. This knowledge will help them establish routines in their own institutions according to best practices in the field, and might prevent them from falling into well-known traps that others have experienced before them. The original teacher training topics, i.e. introductions to intercultural competence, first and second language acquisition, teaching principles, green immersion and material creation,

were complemented by several teacher training workshops conducted at the final symposium. These were included on the website in the language in which the workshop took place, i.e. in English or in German.

The website and materials are linked to Germany's most important platform for bilingual education FMKS (see above) and the European Commission's electronic platform for the dissemination and exploitation of results of projects and results of programmes implemented by the Directorate General for Education and Culture, EVE. The ELIAS project can be accessed at

http://ec.europa.eu/dgs/education_culture/eve/alfresco/navigate/browse/workspace/SpacesStore/99c67c43-ebea-11de-9755-6551a31f04ba?searchPage=true

and visitors are redirected to the project's own website and materials.

6. Contribution to EU policies

Eva Frey

As globalisation continues to confront the European Union with new challenges, each citizen will need a wide range of key competences to adapt flexibly to a rapidly changing and highly interconnected world (OJ L 394, 30.12.2006: 13). Through innovative education and teaching methods, children can develop these key competences, defined as a combination of knowledge, skills and attitudes.

The authors of the 'Joint Interim Report 2004 of the Council and the Commission on "Education and Training 2010"' have identified early on that so-called "human resources" are the European Union's main asset for the creation and transmission of knowledge. This knowledge is a determining factor in each society's potential for innovation. Investment in education and training is a key factor of the Union's competitiveness, sustainable growth and employment and therefore a prerequisite for achieving the economic, social and environmental goals set in Lisbon for the European Union (*Joint Interim Report 2004*: 4). All Member States of the EU must contribute to the development of the Community as an advanced knowledge-based society with greater social cohesion while ensuring good protection of the environment for future generations.

ELIAS enhances such educational goals for children from their very first entrance in the educational system. The project has its main focus on early intercultural and language learning using a Content and Language Integrated Learning (CLIL) approach, as emphasised in the objectives of the Comenius Programme (OJ L 327, 24.11.2006: 50). With this focus, the project contributes to Priority 4 of 'Language learning and linguistic diversity' (*General Call for Proposals 2008 - 2010 2008*: 9) of the Lifelong Learning Programme (OJ L 327 2006).

Following the recommendations of the *Common European Framework of Reference for Languages* (2001), ELIAS developed innovative education and training materials, which ultimately aimed at fostering exchange and cooperation between education and training systems within the Community (OJ L 327 2006: 48). In addition, ELIAS provides tools and practices to advance a Europe-wide establishment of bilingual preschools and collaboration with non-academic educational institutions to offer greater public access to better preschool education.

The most important contribution of ELIAS, however, refers to the enhancement of several key competences which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment. The competences that ELIAS addresses in particular are language competence, science competence paired with awareness and action competence for the environment, as well as intercultural competence (*Common European Framework of Reference for Languages 2001*: 48):

A Communication in foreign languages

Mutual understanding in a Community characterised by linguistic and cultural diversity can only be achieved if people and bodies are able to communicate with each other successfully – be it by using a language other than their first language, or by using language mediation (*High Level Group on Multilingualism 2007*: 6). The communication in foreign languages is based on the ability to understand, express and interpret concepts, thoughts, feelings and opinions (OJ C 394 2006: 14). Bilingual or immersion education from native speakers of a second language (L2) is the most effective CLIL teaching method for L2 acquisition in preschools, since it also imparts other key skills such as content learning and intercultural awareness. Thus, this pedagogical concept promoted by ELIAS is ideal for Europe's knowledge-based society. It gives young children the earliest head start in their lifelong

learning process and prepares them to better exploit their foreign language skills in later school life. It is crucial to prepare children as early as possible for a life in a multicultural, multilingual society. Providing them with these necessary resources will help them develop into responsible European citizens. The project's investigations into the effectiveness of first and second language learning provide a realistic picture of the level of competence children can reach in bilingual preschool programmes.

B Basic competences in science

The ability and willingness to use the body of knowledge and methodology employed to explain the natural world, in order to identify questions and to draw evidence-based conclusions, is regarded as another key competence (OJ C 394 2006: 15). ELIAS fosters the development of these competences in young children by introducing them to topics such as animals and nature, simultaneously raising their awareness of environmental issues in an age-appropriate way. With the unique Zoo Preschool located on the premises of the Magdeburg Zoo, ELIAS has helped develop an ideal learning environment for science education. In that respect, a particularly important objective of the project was to enhance the cooperation between preschools and non-academic educational institutions which are exceptionally well suited to raise environmental awareness (EAZA 2008).

Since non-academic institutions such as zoos enable people to develop appreciation, wonder, respect, understanding, care and concern about nature (WAZA 2005; EAZA 2008), it is vital to build on this potential so as to establish a lifelong awareness of environmental needs (BMU 2007). All children should be provided with an educational framework that fosters scientifically sound Education for Sustainable Development (ESD). That is why the ELIAS project has developed a set of teaching techniques and materials that will help foster ESD. This method of education is what the ELIAS project has dubbed *Green Immersion*.

Additionally, the project design in Magdeburg involves two bilingual educators with additional special expertise in biology and zoo education – a fact that further strengthens the final outcome of the type of science education provided within the framework of ELIAS.

C Cultural awareness and expression

Last but not least, it is essential for a solid understanding of one's own culture to understand the cultural and linguistic diversity in Europe and other regions of the world. A sense of identity can be the basis for an open attitude towards and respect for the diversity of cultural expression. Basic intercultural competences include the ability to relate one's own points of view to the opinions of others (OJ C 394 2006: 15).

ELIAS aimed to provide insight into the development of intercultural awareness in very young children as well as to address issues of culture transmission. Crucial for this experience are preschool teachers who are native speakers of the preschool's second language. That is why bilingual preschools generally employ native speakers of the second language the children are supposed to learn. Native speakers provide children with authentic language input, in a way a non-native speaker could not provide. They also naturally model their own cultural background. Moreover, as children recognise the diversity of cultural backgrounds in the preschools, of children and of teachers, this can shape positive culture reception in the children. This ensures an education towards tolerance of different cultures and a heightened intercultural awareness. The effectiveness of increasing intercultural awareness is documented through intensive participant observation in the preschools.

At the end of the project, ELIAS has documented and evaluated a variety of innovative education techniques. The consortium has produced teacher training materials and guidelines that are open to the public. It is expected that all results produced in the context of the project will benefit educational institutions all over Europe and beyond.

7. References

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