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'A Good Neighbour is Better than a Far Friend' – Using computer-based learning environments (CBLEs) for learning neighbour languages

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Abstract: This paper discusses the Digi+ project, a bilingual Dutch-German CBLE, aimed at primary school pupils between eight and ten years old in the German-Dutch border region. It describes the set-up of Digi+ as well as results from the first pilot study that was held with one Dutch and two German schools comprising six teachers and 107 pupils. Data were collected on language background of the participants, their attitudes towards the neighbour language and culture and teachers' experiences and teachers' impressions of pupils' experiences of working with Digi+. Results show that pupils are enthusiastic about working with the bilingual CBLE and there is potential in the learning environment for enhancing neighbour language and culture education.

In diesem Beitrag wird das Projekt Digi+ vorgestellt, eine zweisprachige niederländisch-deutsche computerbasierte Lernumgebung (CBLE), die sich an GrundschülerInnen zwischen acht und zehn Jahren in der deutsch-niederländischen Grenzregion richtet. Neben dem Aufbau von Digi+ werden auch die Resultate einer ersten Pilotphase der Lernumgebung beschrieben, die mit einer niederländischen und zwei deutschen Schulen (sechs Lehrkräfte und 107 Lernende) durchgeführt wurde. Es wurden Daten zum Sprachhintergrund der TeilnehmerInnen, zur Einstellung gegenüber der Nachbarsprache und -kultur sowie über die Erfahrungen der LehrerInnen und SchülerInnen (aus der Sicht der Lehrpersonen) bei der Arbeit mit Digi+ gesammelt und ausgewertet. Die Ergebnisse zeigen, dass die SchülerInnen begeistert von der Arbeit mit der zweisprachigen CBLE sind und dass Digi+ das Potenzial hat, die Sprach- und Kulturerziehung der Nachbarn zu verbessern.

Keywords: Neighbour languages; CBLE; CLIL; language attitudes;
Nachbarsprachen; computerbasiertes Lernen; CLIL; Spracheinstellungen.

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1 Introduction

The growing attention for English in Dutch (Edwards 2016) and in German society and education (Hilgendorf 2005) has negatively influenced acquiring other languages, including neighbour languages. With increasing demand for skilled workers in different fields in the border regions who master the languages of both countries, however, there is a growing need to compensate for this decreasing attention for neighbour languages (Houtum 2000). Programmes have been developed that aim at improving language skills in the neighbour language but also strongly emphasise cultural awareness and openness towards the neighbour country to enhance the motivation to learn the language and culture and feel more connected to the region. Cultural awareness is defined here, following Guilherme (2000: 297), as "the ability to interact effectively with people from cultures that we recognise as being different from our own".

One such programme is the Digi+ project[1], which intends to stimulate and prepare children at a young age to acquaint themselves with the neighbour language and culture with the goal of developing a positive attitude towards the neighbour language, increasing the possibilities for them to continue studying the neighbour language and in the long term possibly participate in a cross-border labour market between the Netherlands and Germany. Digi+ does so by improving language skills of young children in the border region, but also by positively influencing attitudes towards the neighbour country through raising cross-border cultural awareness. This is done by using a Computer-Based Learning Environment (CBLE). Practice has already shown that CBLEs can be integrated to support language acquisition (Clark/Kirschner/Sweller 2012). Within Digi+, a bilingual Dutch-German CBLE has been developed, aimed at primary school pupils between 8 and 10 years old in the border region between Germany and the Netherlands. Digi+ is created based on several multilingual education approaches, amongst which the most important are *Content and Language Integrated Learning* (CLIL) and *inquiry-based learning.*

An obvious question is then, how does Digi+ contribute to enhancing neighbour language and cultural knowledge of primary school pupils in the border region? In this paper, we report on the onset stage of the project and answer the following research questions (RQs):

1) What could be the potential of Digi+ for neighbour language education, based on pupils' earlier experience with and exposure to the neighbour language?

1 The project is funded under the umbrella project Arbeidsmarkt Noord by the Eems Dollard Region through an EU Germany-the Netherlands Interreg V-A grant.

2) What are pupils' attitudes towards other languages in general and the neighbour language in particular, before starting to work with Digi+?
3) What are teachers' and pupils' experiences working with Digi+?

The paper draws on data from the 8-month pilot with Digi+ with three schools (one Dutch, two German; 107 pupils and six teachers). During the pilot period, data was collected on pupils' language backgrounds and their attitudes towards the neighbour language and culture as well as logbooks of teachers on their own and their pupils' experiences with Digi+. The paper sheds light on how using a bilingual CBLE can potentially influence the attitude towards neighbour languages and openness to engage with neighbour cultures.

2 Background

2.1 Language learning in the German-Dutch border region

Speaking different languages is said to offer several benefits in terms of cognition (e.g., Bialystok 1999) and being able to communicate in different circumstances (e.g., Rehbein/Ten Thije/Verschik 2010). As a result of being multilingual, one might possibly have better job opportunities, being able to seek a job across borders. In the Netherlands and Germany, the respective neighbour languages German and Dutch are of great importance, especially for mutual communication and job opportunities, and certainly in areas close to the border. Introducing the neighbour language in school curricula increases pupils' language awareness because they learn to recognize the differences and especially the similarities between the languages. In addition, it can be hypothesised that it could improve pupils' attitudes towards the neighbourhood language and culture, as these are no longer foreign. Pupils notice that the language and culture are different, but that this does not imply that the language and culture of the neighbour country is inferior to that of their own country. Knowledge of the neighbour language and familiarity with the culture of the neighbour country opens opportunities to study, work and/or live in the neighbour country which, in turn, increases the likelihood that pupils will stay in the region. Border regions can thus use language learning programmes to stimulate their economic potential or residential attractiveness.

The importance of teaching and learning languages is acknowledged by the European Union as becomes clear from the Council Recommendation of May 22 2019. To support language awareness in schools, vocational education and training institutions, the Council of the European Union identifies examples of good practice. One of them is the following:

> Establishing partnerships between early childhood education and care institutions and schools in border regions that will encourage children to learn the language of their neighbour from an early age and decrease language barriers in cross-border regions. (European Union 2019: 21)

According to the same document, "[p]romotion of multilingualism within these cross-border partnerships can prepare graduates to enter the labour market in both sides of the border" (European Union 2019: 22).

Although Germany and the Netherlands are important trading partners and companies indicate that a good command of neighbour languages is essential for trade between Germany and the Netherlands, the command of German in the Netherlands has declined sharply in recent decades (Duitsland Instituut 2017). Research by the Dutch Central Bureau for Statistics (CBS) also shows that both the Dutch-Flemish and the Dutch-German labour market are still only partially interconnected (CBS 2017). According to the Central Netherlands Bureau for Economic Policy Analysis (CPB), differences in language and culture (especially on the border with Germany) might be an important cause of this and the border areas could benefit if that hindrance to the cross-border labour market were reduced or removed (CPB 2016). Strengthening the learning of neighbour languages and culture has, therefore, become a priority, specifically for several Dutch provincial governments, as is apparent from the 'Germany Agenda 2020-2023' from the Province of Drenthe (the Netherlands): "Neighbourhood language and culture are important themes. It is important to indicate as early as possible that the possibilities for residents of border regions are also within reach in the neighbour country" (Province of Drenthe 2020: 19; our translation). As a result, early introduction to the neighbour language in education is gaining more and more interest.

In neighbour language education, pupils are introduced to the language and culture of the neighbour country. Pupils in the Dutch-German Eems Dollard Region, for example, are taught the neighbour language German or Dutch respectively as a second foreign language at school. Along the border on the German side, Dutch has been on the rise for years. Dutch has a positive image amongst the German population. More and more schools are offering Dutch as a foreign language (Wenzel 2014). The closer to the border a school is situated, the bigger the chance that Dutch is prioritised over other languages, for example French. However, this mainly applies to secondary education, where Dutch can be chosen as a second foreign language from approximately the age of 11 onwards. What is missing is an early introduction to the neighbour language in German primary schools and a continuous learning path. German language classes in schools on the Dutch side of the border have also drawn increasing attention. For example, through projects aimed at introducing German as a neighbour language, different projects that

develop lesson materials and train (guest) teachers have been developed (e.g., Nachbarsprache & Buurcultuur – Radboud University and University of Duisburg-Essen; Bevordering Drents and Duits in het Onderwijs – NHL Stenden University of Applied Sciences).

Implementing neighbour language and culture education does not imply that pupils learn to speak the neighbour language fluently straight away. At primary education level, the first goal is to raise language awareness. This entails awareness of language(s) in the environment and reflection on the concept of language itself (Candelier 2004). By paying attention to language awareness, (more) positive attitudes towards the neighbour language might be developed.

2.2 Border regions: language awareness and receptive skills

For neighbour language education, different pedagogical approaches play a role, such as language awareness (Candelier 2004; Knopp/Baranowski 2021), language comparison (Gentner 2010; Rittle-Johnson/Star 2011; Knopp/Baranowski 2021) and receptive multilingualism (Rehbein et al. 2010). Schools can choose a combination of approaches, to obtain the best possible fit for their curriculum, but they can also combine the approaches within one lesson (Duarte/Günther-van der Meij 2018a; Günther-van der Meij/Duarte/Nap 2020). Language comparison and receptive multilingualism are especially relevant in situations where closely related languages are involved, as is obviously the case with German and Dutch. Language awareness can be achieved, for example, by having pupils colour language portraits (Busch 2006) and reflect on them together. For language comparison, working with cognates, or words in different languages that have a common etymological origin, is very suitable. For example, Dutch-German cognates such as ‘schaap’ and ‘Schaf’ [sheep] or ‘kaas’ and ‘Käse’ [cheese]. This way Dutch acts as a leverage to learn German and vice versa. Receptive language skills can be used in the form of *lingua receptiva* (Ten Thije 2010). This is a form of multilingual communication in which people with different linguistic backgrounds both speak their own language and still understand each other. The advantages of using *lingua receptiva* are that different languages are used in a balanced way, the speakers can fully express themselves in their own language, there is intercultural exchange, and it promotes cultural and linguistic diversity (Rehbein et al. 2010). In education, *lingua receptiva* can be used well, for example by jointly solving assignments such as finding a treasure in a maze while both pupils speak their own language. Especially in related languages, it has been shown that children quickly develop receptive skills, can analyse language and also learn to mediate between speakers who do not understand each other well (De Angelis 2007; Wenzel 2014). In this way, children develop receptive language skills, practice language learning strategies and also develop positive attitudes towards the other language. Little research has been done so far on the use

of *lingua receptiva* in the classroom (Ten Thije/ Gulikers/Schoutsen 2020). However, a study by Knopp/Jentges/Laurentzen/van Mulken (2021) does show some positive trends, in which German secondary school pupils were able to make use of their multilingual repertoire in decoding texts in the related language Dutch. Two further approaches do not strictly relate to the context of neighbour languages. First, foreign languages can also be used in other subjects, in the form of *Content and Language Integrated Learning* (CLIL). CLIL refers to teaching subjects such as science, history and geography to pupils through a foreign language (Cenoz 2013), focusing on both content and language (e.g., teaching music lessons in German or history in Dutch). Second, an immersion approach refers to the situation in which the pupil is completely immersed in the neighbour (and possible other) language(s), for example a bilingual Dutch-German or trilingual German-Dutch-English school where part of the curriculum is taught entirely in a language or language(s) other than the national language. This approach is really aimed at learning the language(s) and requires a good command of the language of the teacher.

2.3 Attitudes towards German and Dutch

It is well-known that language learning, regardless of the approach followed, interacts with learners' attitudes to language learning in general, and to the community and the speakers using the foreign language in particular. This is for instance pointed out in attitudinal research in multilingual communities (Gardner/Lambert 1969), but also in a classroom context (Dörnyei/Csizér/Németh 2006; Boo/Dörnyei/Ryan 2015). In addition, giving more attention to minority languages leads to (more) positive attitudes towards those languages and multilingualism in general (Van Ruijven/Ytsma 2008). It is also known from different studies that positive language attitudes combined with increased linguistic awareness can lead to attaining better general school results of both monolingual and multilingual pupils (Candelier 2004; Hélot 2012). In the context of a language learning project like Digi+, monitoring language attitudes can provide more insight into the interaction between attitudes and the learning process. In addition, the project's ambition to stimulate children to take part in the cross-border labour market at a later age makes improving the attitudes towards the neighbour language and its speakers an important goal in its own right.

Despite their obvious relevance for foreign language learning, research on attitudes faces significant theoretical and methodological issues. Both in socio-psychological science in general, and research on language attitudes in particular, attitudes are generally considered mental constructs that can be tapped into using different approaches potentially yielding different outcomes (Garrett 2007; Kristiansen 2009). Existing research on language attitudes also evidences their multi-

dimensionality. This implies that language attitudes are generally more complex than just being positive or negative, but rather reflect more complex associations with independent values such as prestige or solidarity (Brown/Gilman 1960), or competence, personal integrity or social attractiveness (Lambert/Frankel/Tucker 1966). Finally, attitudes to a large extent depend on context (Giles/Billings 2004: 200–201). For a project like Digi+, this means that attitudes acquired outside of school are not necessarily transferred into the classroom or vice versa.

Research has found that attitudes towards languages (or language varieties) align with the attitudes towards their speakers. These results have given rise to the social connotations hypothesis (Trudgill/Giles 1978). Especially in situations in which direct interactions with members of a particular community are rare, these attitudes may reflect the general image and even stereotypes of the community within society. There is a remarkable asymmetry in the intensity with which attitudes towards the neighbour language and its speakers have been investigated in the Netherlands and Germany: In the Netherlands, the attitudes towards Germany have been investigated repeatedly ever since the 1950s, yielding ambivalent and partly controversial results (see Beerkens 2010: 40–41 for an overview). An empirically solid study by Doeleman (1998) on attitudes towards foreign accents confirms this ambivalent evaluation and shows a German accent to be associated with status in the Netherlands, but also with social distance and a lack of social attractiveness. In contrast, there are few studies describing the attitudes of Germans towards the Netherlands. This lack of academic interest appears to reflect a general lack of awareness in the German population of the Netherlands. Still, the few existing studies reveal generally positive attitudes of Germans towards the country. Thus, Groenewold (2001: 226) aptly summarizes the German attitude as an "oberflächliche batavophilie" (i.e., a shallow love for the Batavians, which are considered the Germanic ancestors of the Dutch).

These findings cannot simply be extrapolated to form a baseline for attitude measurements in the Digi+ target group. The project is carried out in the German-Dutch border area, where Beerkens (2010: 118) reports outspokenly positive attitudes towards the neighbour country and its language, in particular in participants engaged in cross-border professional contacts. Intensive patterns of cross-border mobility through commuting or consuming are common in many border towns. Some German towns, in particular, have witnessed extensive in-migration by Dutch citizens, to the extent that they can be considered 'sociolinguistic microcosms'.

In addition to particularities depending on the region where the project is carried out, the primary school pupils taking part in the project need not mirror adult attitudes reported in the literature, as the development of language attitudes relates

to children's general psycho-social development (De Vogelaer/Toye 2017). In younger children, preferences for regional varieties, for instance, appear to relate to the degree to which children are exposed to them rather than to the 'social meaning' associated with them in the community (De Vogelaer/Toye 2017; cf. also Beck 2017). Similar effects of exposure have been documented regarding the ability to detect foreign accents (Girard/Floccia/Goslin 2008). As regards attitudes towards foreign languages, Zenner/Rosseel/Speelman (2020) report increasingly diverging attitudes towards English loan-words and their Dutch equivalents in (Flemish) primary school children. Older pupils show a strong preference for English loan-words compared to younger pupils. This changing preference coincides with increased language awareness and English proficiency, which are likely correlates of exposure.

2.4 Technology-based early language learning

Children do well at learning languages as they acquire them naturally instead of having to learn them consciously like adults (Muñoz 2005). Receptive skills, such as mentioned in section 2.2, are skills that are not often taught at school, where the focus is either on language or on content. This leaves little room for combining the two or for language comparison (e.g., Duarte/Günther-van der Meij 2018b). Many of the strategies for dealing with language can be acquired through early (also receptive) multilingualism in a playful way, leading to multiple benefits for the cognitive and personal well-being of pupils. However, integrating multiple languages in the classroom poses several challenges to teachers, who may lack knowledge and material to implement such an approach in a classroom context (Herzog-Punzenberger/Le Pichon-Vorstman/Siarova 2017). Developments in (language) technology, and in particular CBLEs, offer opportunities for the implementation of neighbour language and culture education. Using CBLEs could offer a solution to the existing lack of (neighbour) language knowledge, skills and material that teachers (in border regions) indicate (Buendgens-Kosten/Elsner 2018). Practice has shown that CBLEs can function as a powerful means of acquiring complex knowledge and skills (Lajoie/Azevedo 2006) and at the same time support language acquisition (Clark et al. 2012; Van Laere/Agirdag/Van Braak 2016). First of all, CBLEs offer several options to integrate multiple languages which allow the use of multilingual approaches such as language comparison and receptive multilingualism. A CLIL approach can be used to integrate content and language learning. CBLEs also offer the possibility to present material interactively and multimodally (e.g., visually, auditory, etc.).

By offering different learning modes, language and content is learned in different didactic forms, which can have a positive learning output (Gilakjani/Ismail/Ahmadi 2011). The multimodal form of a CBLE allows pupils to choose how they want to

learn content. For example, they can not only read but also listen to a text. Pupils can individually choose the most suitable way to learn, which also allows for differentiation. Furthermore, the content can be viewed several times in digital form. This repetition can benefit learning results.

Although many multilingual CBLEs have been developed over the last decade (see Buendgens-Kosten/Elsner 2018 for an overview) there are some shortcomings, such that they are based on monolingual ideologies, language separation and more focused on language than content learning (Clark et al. 2012; Buendgens-Kosten/ Elsner 2018). With the Digi+ project we aim to address these issues by offering a CBLE that is connecting and integrating two neighbour languages and cultures and focuses on both language and content learning. More information about Digi+ is given in the methodology section below.

3 Methodology

3.1 The Digi+ CBLE

Digi+ is a bilingual CBLE for the German-Dutch border region. It explores two exemplary topics, Nature and History, which are both part of the school curriculum in Germany and the Netherlands, and offers them through German and Dutch. Digi+ is built on five principles, which will be explained below:

1) Content and Language Integrated learning (CLIL)
2) Language comparison
3) Multimodality
4) Inquiry-based learning
5) Culture and identity

In Digi+ a *CLIL* approach is used by combining learning of the neighbouring language and content (e.g., cereal cultivation and nutrition). Pupils can work in one of the two languages by choosing a Dutch or a German setting, but can also switch between languages at each step. All material is available visually (in text) and auditorily (audio-recordings). In both settings the neighbour language is integrated in different texts, audio fragments and assignments.

Language comparison is an important principle of Digi+. Pupils learn to compare Dutch and German and get familiar with the syntax and semantics of the two languages, also contributing to their language awareness. Language comparison is frequently used in the Digi+ assignments, e.g., through comparing names of different aspects of cereal cultivation as shown in Figure 1.

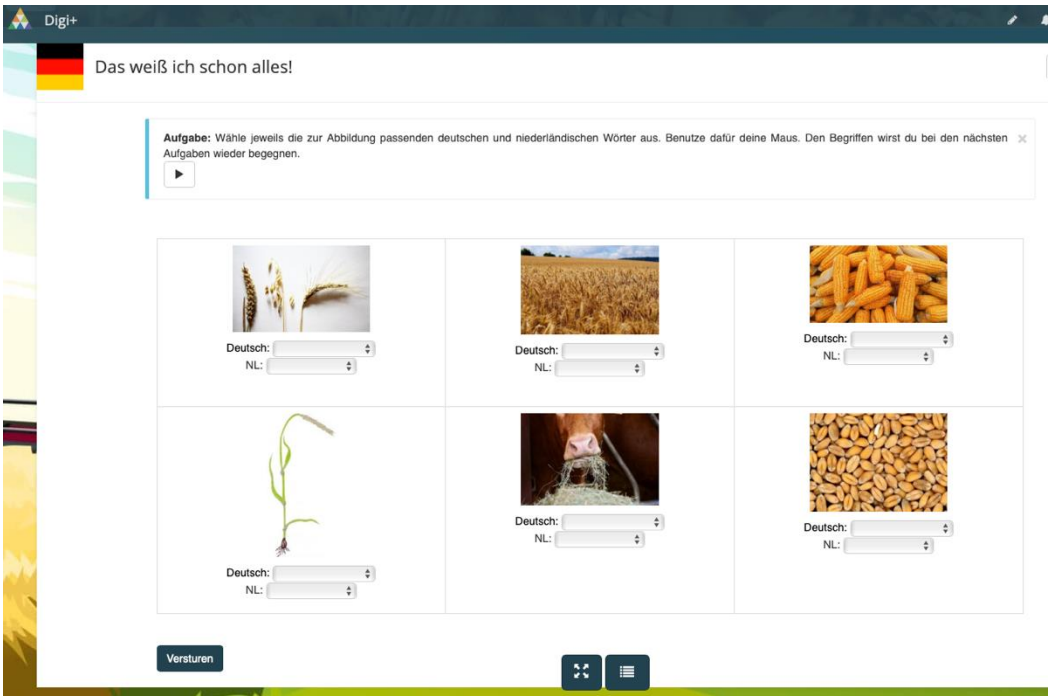

Figure 1: Example of a language comparison assignment in Digi+.

For optimal learning Digi+ offers all content *multimodally*, through interactive matching assignments and games, informative and narrative texts, videos and listening and speech assignments. Some assignments offer possibilities for printing from a pdf-file and are supposed to be completed offline, for example a word web that needs to be filled in or a recipe that needs to be followed.

Another principle of Digi+ is *inquiry-based learning* (Pedaste/Mäeots/Siiman/ Jong/Riesen/Kamp/Manoli/Zachcaria/Tsourlidaki 2015), in which pupils work as 'researchers' and 'designers' and together develop their understanding of the themes' concepts. Research and design are not the primary goal here, but merely function as a way of working that allows pupils to perceive, think, act and reflect based on curiosity. In addition to cognitive development, this process also gives them room for creativity, critical thinking and acting, collaboration and sharing information (for more information about this principle see Pedaste et al. 2015). In other words, this principle describes 'learning by doing', in that the children expand their already existing knowledge on their own, starting from their personal interests, like 'real' scientists do.

The fifth principle of Digi+ is *culture and identity.* Learning about culture and identity go hand in hand with learning other languages. Digi+ combines content and language learning with an introduction to the neighbour country and culture. This

is emphasised by introducing two virtual characters the pupils can identify with: Dutch Lieke and German Max (see Figure 2). Through Lieke and Max, pupils get in touch with the neighbour culture in a playful way and are taken on a journey across the border. Lieke and Max appear at strategically chosen places in Digi+ where pupils can see them, read about, or listen to them.

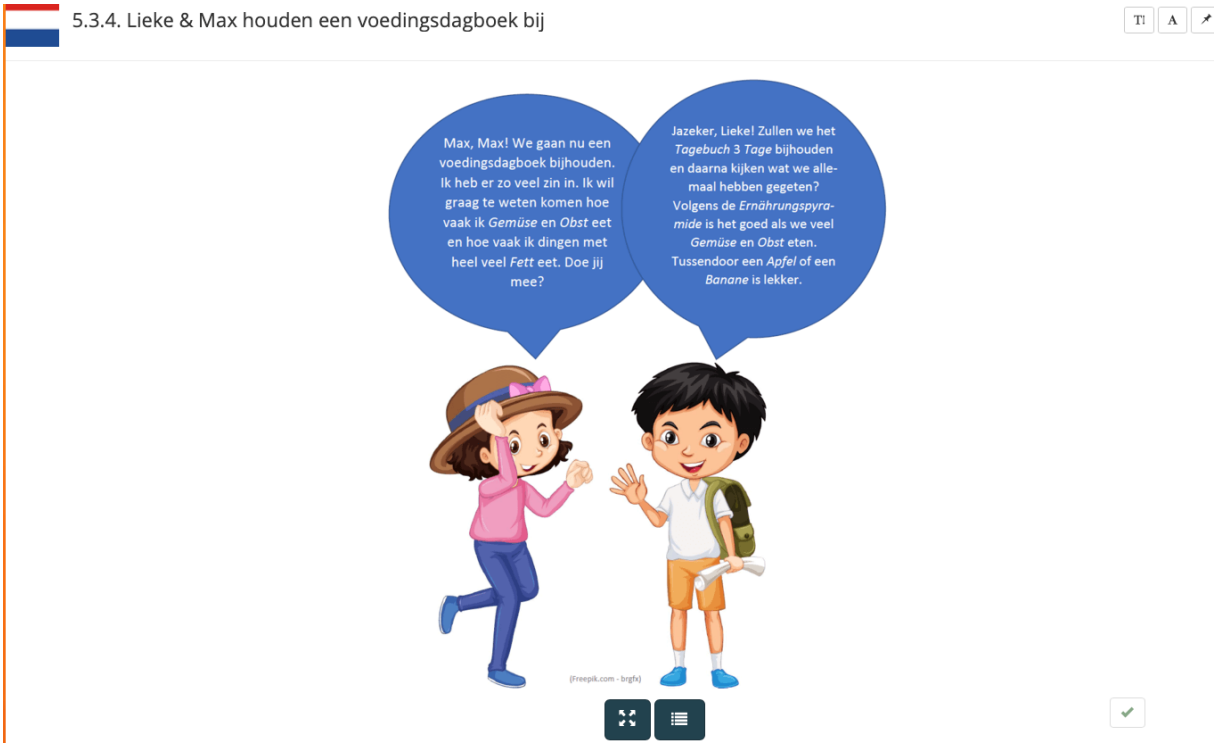

Figure 2: Example of a conversation between Lieke and Max.

Through the focus on German and Dutch culture and identity, pupils become aware that the two share many similarities and that a border does not mean that all traditions, lifestyles etc. are fully deviating on both sides of the border. This last principle is strengthened through the possibility of cross-border sharing of assignments between German and Dutch pupils (e.g., grain fact sheet or international dough recipe book).

3.2 The settings and participants of the pilot

To test the Digi+ CBLE, a pilot study using a quasi-experimental pretest–posttest design without control groups (Salkind 2010) was organised. Before and after working with Digi+, different measurements directly implemented in the learning environment by means of a survey tool were completed by pupils. The measurements could thus be processed by pupils without additional external applications. For the present paper, data are drawn from three different datasets gathered in the initial stages of the project. After the parents were informed about

the background of Digi+ and they agreed to the use of their children's anonymised data for research purposes, all pupils were asked to fill out a language background questionnaire. The questionnaire contained questions about the language(s) pupils use in their environment, neighbour language education at their school, pupils' attitudes towards languages (Dutch, German and English) and their self-assessed language proficiency in the neighbour language (see section 3.3). The questionnaire was administered by the schoolteachers, with additional instructions available in a handbook. Due to the Covid-19 pandemic, it was not possible for researchers to be present on-site during data-collection. In addition to quantitative measures, we also gathered information on the teachers' and their pupils' experiences on working with Digi+ through logbooks and classroom interaction transcripts. The teachers were asked to fill in an online logbook – a journal reporting on the teachers' experience with the project (see section 3.5). Teachers filled in the logbook as often as they could, ideally every time they worked with the Digi+ environment.

The pilot study involved 107 pupils. A total of 20 pupil accounts were created on the Dutch side (one school) and 87 pupil accounts on the German side (two schools). The Dutch school was located in the municipality of Westerwolde, in the province of Groningen, about four kilometres from the German-Dutch border. The German project schools were located in the state of Niedersachsen: a first school in the Emsland district, about five kilometres from the German-Dutch border; and a second one in the district of Aurich (in Ostfriesland), about 55 kilometres from the German-Dutch border. Not all 107 pupils participated in all measurements, either because they were unable to attend or because they joined at a later date. The total of 80 pupils who completed (parts of) the measurements are distributed as follows: 13 pupils from the Dutch partner school in Westerwolde; 34 pupils from the German school in the Emsland district; and 33 pupils from the German school in Aurich. The most important demographic data can be found below in Table 1, broken down by school.

Table 1: Class, age and sex of Digi+ participants per school.

	Class / Group	**Average age (y;m)**	**Sex**
Aurich (GER)	Class 3 (n= 33; 100,00 %)	≈ 8;7	Male (n=13; 39,39 %) Female (n=20; 60,61 %)
Emsland (GER)	Class 4 (n= 34; 100,00 %)	≈ 9;6	Male (n=13; 38,24 %) Female (n=21; 61,76 %)
Westerwolde (NL)	Group 5 (n= 5; 38,46 %); Group 6 (n=7; 53,85 %); Group 7 (n=1; 7,69 %)	≈ 8;10	Male (n=12; 92,31 %) Female (n=1; 7,69 %)

3.3 The background questionnaire

In order to answer our first research question, we designed a background questionnaire with 35 closed questions that could be answered partly with ‘yes’ or ‘no’ and partly with a wider range of choices. This background questionnaire was directly implemented in the CBLE and was completed by a total of 80 Dutch and German pupils from the three partner schools already mentioned. With the questionnaire, we determined important demographic data and language-related variables and gathered individual information about five different sections. The first three sections ‘Language in my environment’, ‘Language at school’ and ‘My languages’ were about the sociolinguistic background of the pupils. The sections were used to gain insight into pupils’ home language use (e.g., Which languages do you speak with your parents at home?), language education at school (e.g., Which languages are present at school or should be more present?) and favourite languages (e.g., Which additional languages do you want to learn?). In the fourth section ‘My neighbour country’ the pupils were asked, e.g., how often they travel to Germany or the Netherlands, how they evaluate their receptive and productive language skills and whether they can imagine studying or working in the neighbour country in the future. Apart from offering an overview of individual pupils’ exposure to languages other than the national language and to the neighbour language, the background questionnaire can be used to characterize the project schools in terms of the amount of linguistic diversity they show. Since the fifth and final section ‘My opinion about language’ is already part of the attitude measurement, we will discuss it in more detail in the following section.

3.4 The language attitude tests

Given the project’s focus on attitudes and to answer our second research question, an extensive survey of the pupils’ language attitudes was included in the initial tests. It is well-known that the outcome of attitudinal measurements often depends on the form of the test (e.g., direct enquiry into attitudes is described as problematic due to social desirability), and therefore attitudes were measured in two different ways (cf. Labov 1966): an overt measurement through attitudinal questions on a given set of languages, and a covert, verbal-guise test, in which speech clips in an unnamed language or language variety were evaluated. The overt measurement was included as the last part of the background questionnaire, and was a modified version of the measurement by Dekker/Duarte/Loerts (2021). The questions concerned three languages, viz. Dutch, German, and English, and additionally addressed attitudes towards languages that the pupils did not know (given the label ‘unknown languages’ for the rest of the paper). The attributes measured were the general estimation of the ‘importance’ of the language, its status (via the question

‘are speakers of the language smart?’) and its suitability as a solidarity variety (question: ‘are speakers of the language nice?’).

The verbal-guise test included speech clips in German and Dutch, and in the regional languages Low German (Niederdeutsch) and Low Saxonian (Nedersaksisch/Niedersächsisch). All speakers were male young adults. Pupils were asked to evaluate the clips on thirteen five-point Likert scales, a number allowing the detection of attitudinal dimensions through factor analysis (Zahn/Hopper 1985). Four of these scales directly related to the speech (whether the speaker was *intelligible*, sounded *beautiful*, would be a good *journal anchor* or whether the pupils would like to *speak like* the evaluated speaker). Nine other attributes did not directly concern the speech but were indirect questions relating to the speaker. These included questions typically used to exemplify attitudinal dimensions commonly used in speaker evaluation experiments, such as status (is the speaker *smart*, does he have a *well-paid* job, would he be a good *leader*), social attractiveness (is the speaker a *popular* person with many friends, is he *funny*) or personal integrity (is the speaker a *helpful* person, is he *trustworthy*, is he *friendly*) and an additional question addressing the speakers’ eligibility as a friend (would the speaker be a *good friend* to you).

3.5 The logbook and transcripts

In order to answer our third research question, we will briefly report on the results gathered from the logbook and classroom interaction transcripts, which are of a more qualitative nature. The main rationale for including this data is that one of the aims of Digi+ is to provide a positive learning experience with the goal of improving attitudes towards the neighbour language or language learning. The logbook and transcript data allow for a first monitoring of this. The questions from the logbook that were used for this paper are the following:

1. How did the session go?
2. What was the general mood during the session?
3. How would you describe the pace of the session?
4. How would you describe the difficulty of the session?
5. What went well?
6. What could have been better?

Teachers were asked to answer this battery of questions at regular intervals by using an external online survey tool with text boxes accompanying the questions. Besides the logbooks, qualitative data was collected through transcripts of audio recordings made in the context of group work on the topic ‘cereal cultivation’ at one of the German schools and the Dutch school. These recordings were made in the

classroom during Digi+ lessons by teachers using recording equipment provided. In total ten recordings were made (Dutch school: six, German school: four). Our qualitative data at present provide little insight into the learning experience of individual pupils. Hence, for the purposes of this paper, the data from the logbooks were used in an illustrative manner to provide insight into teachers' and pupils' experiences in working with Digi+. The transcriptions serve a similar illustrative purpose but focus on pupils' attitudes during group work.

4 Results

4.1 Participant backgrounds and linguistic diversity in project schools (RQ1)

The language background of pupils in Germany in the participant sample, especially in Aurich, appears more diverse than that of pupils in the Netherlands (Table 2). Of the 26 bi-/multilinguals in Aurich, 13 reported having a home language other than German and the other half reported growing up in a bi- or trilingual family with (n=9) or without German (n=4), with Kurdish, Arabic, and English as frequently mentioned languages. In the second German school (in the district of Emsland), less than half of the pupils indicated a bilingual or multilingual background, which includes seven mentions of English and three of Low German. In the Dutch school, only two pupils were taught or use a language other than Dutch at home (English and Arabic). Apart from one bilingual German-Dutch pupil in the Emsland school, the neighbour language plays no role in the patterns of bi- and multilingualism observed in our sample.

Table 2: Linguistic diversity in Digi+ schools, by home situation.

	Monolinguals	**Bi-/multilinguals**
Aurich (GER) (n=34)	8 (23,5 %)	26 (76,5 %)
Emsland (GER) (n=35)	21 (60,0 %)	14 (40,0 %)
Westerwolde (NL) (n=13)	11 (84,6 %)	2 (15,4 %)

The questionnaire then asked about the general language situation in the school context. 72 of the 80 pupils (90,0 %) answering this question stated that they only use the national language at school. Seven also mentioned English in addition to the national language, and only one pupil from the district of Aurich (=1,25 % of all surveyed pupils) mentioned Arabic as a language at school in addition to German and English. It is striking that, as a whole, very few languages are mentioned to be used at school, even though (1) in all schools children learn English as a foreign language and (2) the children attending the two German schools come from

multilingual backgrounds. Table 3 shows the languages relevant in school depending on the learner group (in Germany / in the Netherlands):

Table 3: Language use at school.

	German	German / English	German / English / Arabic	Dutch	Dutch / English
Pupils in GER (n=67)	60 (89,5 %)	6 (9,0 %)	1 (1,5 %)	0	0
Pupils in NL (n=13)	0	0	0	12 (92,3 %)	1 (7,7 %)

The questionnaire also contained items referring to more sporadic contacts with the neighbour country and its language. In Aurich, the question whether the neighbour country is visited was answered with 'No, never' by the majority of the pupils, resulting in the slightest cross-border contact. This can be attributed to the considerable distance to the border of about 55 kilometres. The schools in the proximity of the border report more intense contacts. The most frequent border crossings are found in the Dutch school in Westerwolde, where all but one pupil reportedly travel to Germany at least once a year. Thus, in the everyday lives of the Digi+ pupils, the neighbour language appears to play a marginal role at best.

Table 4: Frequency of cross-border travel.

	Never	Yearly	Monthly	Weekly	Daily
Aurich (GER) (n=33)	26 (78,8 %)	5 (15,2 %)	1 (3,0 %)	1 (3,0 %)	0 (0,0 %)
Emsland (GER) (n=34)	13 (38,2 %)	9 (26,5 %)	11 (32,4 %)	1 (2,9 %)	0 (0,0 %)
Westerwolde (NL) (n=13)	1 (7,7 %)	5 (38,5 %)	2 (15,4 %)	2 (15,4 %)	3 (23,1 %)

The Dutch pupils' more frequent contacts with Germany do not translate into a perception of the country as a future place to study or work. Pupils were asked if they could imagine commuting between the Netherlands and Germany to which most pupils on both sides of the border responded negatively (45/67=67,2 % in Germany, and 9/13=69,2 % in the Netherlands). With 23 of all surveyed pupils in Germany and the Netherlands (28,75 %) being unsure about this, this implies that only three pupils out of 80 (3,75 %) would like to study in the neighbour country. Comparable results are found regarding a job in the neighbour country. Here, too, most pupils are sure that they do not want to work in the neighbour country later on

(n=51 in Germany [76,12 %] and n=8 in the Netherlands [61,54 %]). Figure 3 shows the distribution on ‘No’, ‘Maybe’ and ‘Yes’ per school.

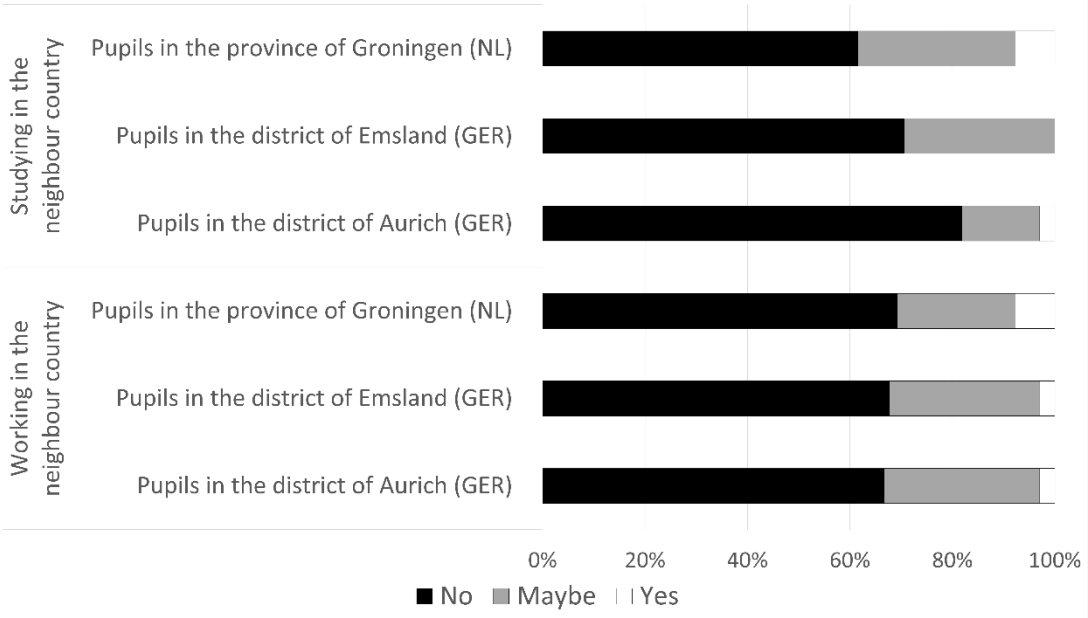

Figure 3: Pupils able to imagine studying or working in the neighbour country.

Referring specifically to the neighbour language rather than to the country, it was also asked how the pupils evaluate their receptive and productive skills. Figure 4 shows that the pupils in Germany generally rate their productive Dutch skills as lower than their receptive skills (but: when asked about existing productive skills, two more pupils indicated ‘yes’ compared to the question about receptive skills). The pupils in the Netherlands, on the other hand, state ‘no’ less often when asked about their productive proficiency of German than they do for their receptive, comprehension-based proficiency of German. This is rather unusual, since normally the receptive competence is rated higher than the productive competence.

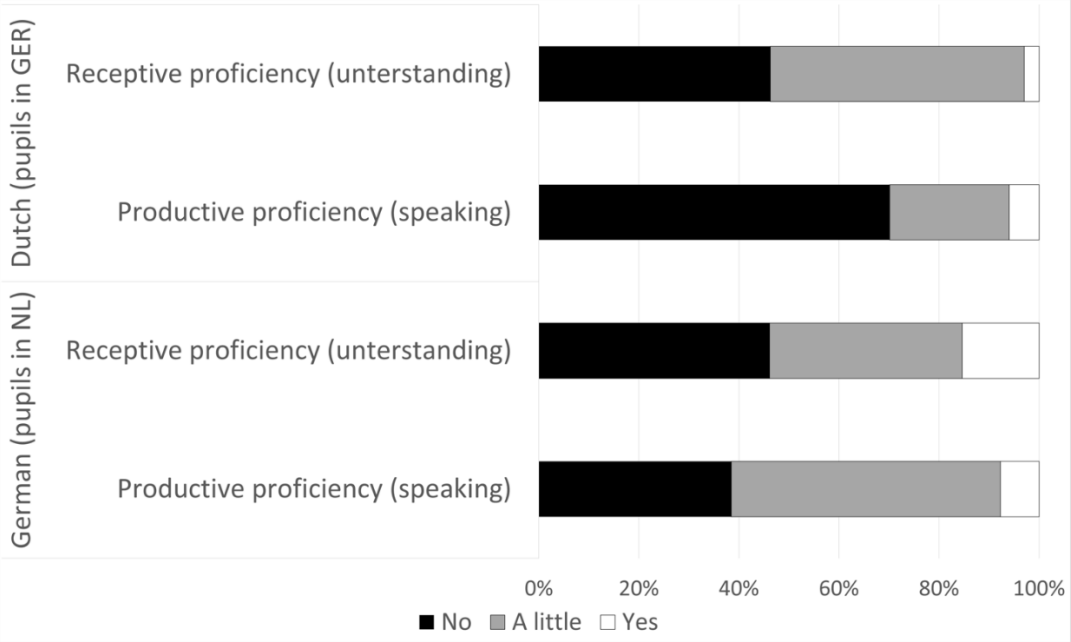

Figure 4: Reported proficiency in the neighbour language.

Taking everything into consideration, the fact that the pupils live in a border region does not seem to translate into meaningful contact with the neighbour country or language. Only one pupil is from a German-Dutch bilingual family, cross-border contacts are rare (even more so in the German pupils than in the Dutch ones), and proficiency in the neighbour language is rated rather low. A minority of pupils reports some exposure to the neighbour language at school: nine of the pupils from Aurich (27,27 %), six from the Emsland (17,65 %) and one from Westerwolde (7,69 %) answered the question whether the neighbour language plays a role at school in the affirmative. The results in the German schools could be due to voluntary Dutch language courses offered by the schools. At the schools, so-called 'Niederländisch-AGs' (Dutch study groups) have been established, in which pupils are playfully introduced to the neighbour language. On average, those who indicated 'yes' spend 1,5 hours per week on studying the neighbour language. Hence, for most participants, Digi+ would be their first experience with learning the neighbour language.

If we look at the potential for neighbour language education, based on pupils' exposure to the neighbour language (RQ1) we see that the participation in a (neighbour) language learning project seems to connect well to the pupils' interests in both countries. A vast majority (57 of 67 German and 8 of 13 Dutch pupils) report that they want to learn more languages at school. While English is ranking highest in both countries, topping the list of languages to be learned in both countries, the neighbour languages rank fairly high, too: Dutch is included in the 'wishlist' of foreign languages by 16 German pupils, and competing with Spanish (18) and

French (17) for the second place on the list, well ahead of Low German (11) or minority languages spoken in the community (e.g., Arabic [7], Polish [7]); German is mentioned four times by the Dutch pupils, which equals the number of mentions for English and Low Saxonian. When specifically asked whether they would like to learn the neighbour language (better), 28 of 68 pupils in Germany (41,8 %; 14/35 in the Emsland and 14/33 in Aurich) answered in the affirmative, which compares well to seven of 13 pupils (53,85 %) in the Netherlands giving the same answer.

4.2 Attitudinal measurements prior to working with Digi+ (RQ2)

As regards the attitudinal measurements, our data primarily provide a baseline to measure the extent to which language attitudes evolve in the course of the project, but they also allow some analysis in their own right. Note also that apart from a substantial asymmetry in the number of questionnaires obtained from the German and Dutch schools (see Table 1), representativeness of the data is challenged by substantial non-response for this part of the investigation, with only 63 German and 13 Dutch pupils returning (more or less) completely filled-out attitudinal questionnaires, and 53 German and 13 Dutch pupils taking part in the verbal-guise test. Still, exploratory analysis yields some interesting results.

Figure 5 shows the overt attitudes found in the German schools towards the national language (German), the neighbour language (Dutch), English, and 'unknown languages'. Significantly different evaluations are found on all three dimensions (ANOVA: $F(3,264) = 22{,}556$ - $p<.001$ for 'speaking X is important'; $F(3,264) = 4{,}008$ - $p = .008$ for 'people who speak X are smart'; $F(3,264) = 4{,}907$ - $p = .002$ for 'people who speak X are nice').

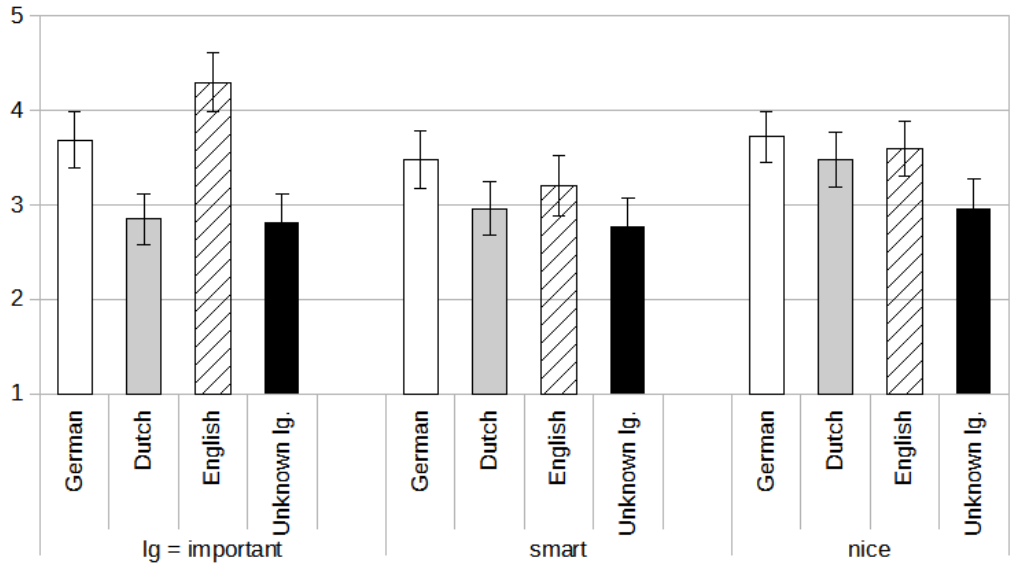

Figure 5: Overt attitudes towards German, Dutch, English and 'unknown languages', in German pupils (n=67). Legend: 1 = disagree; 5 = agree; error bars show 95 % confidence intervals.

Error bars indicate 95 % confidence intervals, allowing pairwise comparisons between attitudes towards individual languages. As regards the general estimation of the language as important, English receives a significantly higher score than German, which, in turn, is rated significantly more important than Dutch and unknown languages. When it comes to a feature reflecting the status associated with a given language, i.e., whether a speaker is considered 'smart', the only non-overlapping confidence intervals are those for German and unknown languages; differences with the intermediately rated languages English and Dutch are smaller. Finally, the question relating to a language's suitability to express peer-group solidarity, i.e., whether a speaker is considered 'nice', yields a clearly significant difference between German and English on the one hand, and unknown languages on the other. The confidence interval for Dutch overlaps with all the other languages.

As regards pupils' attitudes towards other languages and the neighbour language in particular before starting to work with Digi+ (RQ2), the overall picture emerging from the overt attitudinal questions is that the German pupils report somewhat more positive attitudes towards German and English than to Dutch and further, unknown languages. The hierarchy between the languages differs per dimension, with English being considered particularly 'important', and German receiving the most favourable evaluations on the dimensions relating to the speaker of a language ('smart' and 'nice'). Especially on the latter dimensions, overall differences appear remarkably small, with all scores lying in a narrow range between 2,75 and 3,75. The data gathered from the Dutch pupils are by and large similar to the German ones, but the number of filled-out questionnaires (n=13) is too small for differences to reach statistical significance, both within the Dutch sample and vis-à-vis the German data.

Apart from overt attitudinal questions, a verbal-guise test was administered to the pupils, in which they were asked to evaluate speech clips in German and Dutch, on thirteen 5-point Likert scales.[2] Rather than a priori assuming particular evaluative dimensions to be relevant in the pupils' attitudes, a Principal Components Analysis (PCA) was run to detect correlating attributes in the data, followed by a Varimax-rotation to obtain factor loadings that allow more straightforward categorization of the attributes to the dimensions. The analysis basically reveals two such dimensions. These by and large correspond to a dimension containing the attributes relating indirectly to the languages involved, by referring to the speaker of the speech clip, vis-à-vis a dimension with attributes relating directly to the languages, by including characteristics of the speech itself. The first dimension, which could

2 The test also included sound clips in the regional languages Low German (Niederdeutsch) and Low Saxonian (Nedersaksisch), but these will not be analysed here.

be called the 'speaker-evaluation dimension', yields high PCA factor loadings (> .700) for the attributes *helpful*, *leader*, *popular*, *smart* and *trustworthy* and intermediate ones (.400 < x < .700) for *well-paid*, *funny* and *friendly*. The second dimension, which could be called the 'language-evaluation dimension', includes the attributes *intelligible*, *beautiful*, *journal anchor*, and *speak like* (all with factor loadings > .700) (see section 3.4 for more information). Remarkably, the question whether the speaker would be a *good friend* to the pupils, which relates to the speaker of the speech clip rather than to the language, also loads high on this dimension. Traditional evaluative dimensions, such as status, solidarity, or social attractiveness, are not found in the data. This is in line with De Vogelaer/Toye's (2017) claim that such fine sociolinguistic evaluations only emerge at a later age.

Figure 6 shows the mean scores for all thirteen attributes, distinguishing evaluations of the national and neighbour language by both German and Dutch pupils. Attributes are ranked in line with their factor loadings, with those loading high on 'speaker-evaluation' on the left, and those loading high on 'language-evaluation' on the right. One striking observation is that the German pupils rate Dutch significantly higher than vice versa in the left panel (speaker-evaluation), but not in the right one (language-evaluation).[3] Thus, while the Dutch pupils show a generally more favourable attitude towards both their own language and its speakers in comparison to the neighbour language German, the German pupils only have an outspoken preference for their own language and rate the Dutch speaker remarkably positively.

3 Regression factor scores that can be calculated on the basis of the PCA-results show that the different mean scores between the German and Dutch pupils are statistically significant for dimension 1 (speaker-evaluation) but not for dimension 2 (language-evaluation).

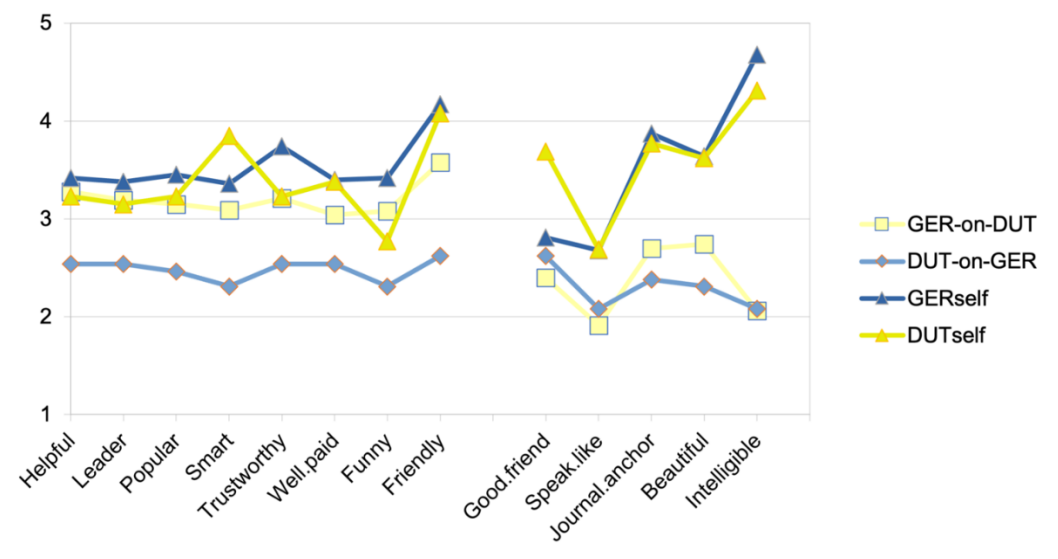

Figure 6: Scores for thirteen attributes to German and Dutch as a national vs. neighbour language, distinguishing a speaker- (left) and a language-evaluation dimension (right). Legend: 1 = disagree; 5 = agree.

Figure 6 also reveals some similarities between the German and Dutch pupils. In both groups, national and neighbour languages are evaluated differently, as the average ratings per attribute as shown in Figure 6 do not correlate (r-value (Pearson) in Dutch pupils' $r = .0328$; German pupils' $r = .1548$). In contrast, clear and highly significant correlations are observed between the average ratings per attribute that Dutch and German pupils provide for their respective national languages (GERself/DUTself in Figure 6, $r = .6841$), and for the neighbour language (GER-on-DUT/DUT-on-GER in Figure 6, $r = .7183$).

In addition to differences and similarities between German and Dutch respondents, it should be pointed out that both German groups in the study do not behave entirely uniformly. Although they both show higher ratings for the neighbour language than the Dutch pupils, the pupils from Aurich, the linguistically more diverse school which is further away from the Dutch border, rate the neighbour language Dutch higher for several attributes than the pupils from the border region Emsland. These differences between the German schools reach statistical significance (ANOVA with significance level $p < .05$) for two attributes on the language-evaluation dimension, viz. *intelligible* ($F(1,52) = 8,252$; $p = ,006$) and *beautiful* ($F(1,52) = 5,601$; $p = ,022$), and are marginally significant (ANOVA: $.05 < p < .10$) for several attributes on both the language-evaluation (*speak like*, *journal anchor*, *good friend*) and the speaker-evaluation dimension (*funny*, *popular*).[4]

4 Precise significance values per attribute are as follows: *speak like* $F(1, 52) = 3,227$ - $p = ,078$; *journal anchor*, $F(1, 52) = 3,179$ - $p = ,080$; *good friend* $F(1, 52) = 3,784$ - $p = ,057$; *funny* $F(1, 52) = 3,864$ - $p = ,055$; *popular* $F(1, 52) = 3,674$ - $p = ,061$.

The differences between the German schools indicate that different attitudes towards the neighbour language should not necessarily be explained as national differences, but may relate to other factors, such as the diversity profiles of the project schools. On the one hand, children's attitudes are expected to reflect their exposure to a certain language or language variety. On the other, few meaningful differences are observed in the exposure to the neighbour language. One hypothesis accounting for these observations would be that exposure to linguistic diversity in general may instil more positive attitudes also towards languages or language varieties that are not present in the social environment in which the attitudes are developed. Since attempts to quantify differences in the linguistic diversity reported in the individual pupils' background questionnaires did not yield significant differences between pupils with more and less diverse backgrounds, the school environment may be more important in this respect than pupils' personal background.

4.3 Teachers' and pupils' experiences working with Digi+ (RQ3)

In order to monitor the learning experience, we gathered qualitative data from logbooks in all three pilot-schools. In the following, a short overview of teachers' experiences will be given. All schools reported that the general mood was great (cf. question 2 as described above). Pupils seemed very excited and had 'fun' working with Digi+ and the neighbour language and were reported to hold on to this excitement throughout the lessons.

In terms of pace (question 3), it was reported that in some schools, some pupils were faster than others, resulting in difficulties for the teacher in managing the lesson at hand. This was reflected in the online progress monitoring system of Digi+, to which both teachers and researchers had access. This was however, a minor issue.

The difficulty of the sessions (question 4) elicited mixed answers. On the one hand, it was frequently reported that the difficulty of the session was 'alright' or 'appropriate', but on the other hand, reports of the material being 'too difficult' were also frequent. To put this in perspective: Seven out of 15 (46,7 %) Dutch feedback form entries indicated difficulties with the material, whereas only four out of 22 (18,2 %) German entries mentioned difficulties when asked how difficult the material was. Interestingly, the longer schools worked with the environment, the less frequently difficulties were reported. The types of difficulties encountered across the board mainly boil down to two points. Firstly, some technical limitations of Digi+ made the assignments difficult to complete. The second point was that

pupils sometimes reported that working with the target language was difficult, for example because the assignment was too linguistic. In other words: the required level of the neighbour language was too difficult as the following quote from one of the Dutch teachers shows:

> *The German sentences in assignment 4.4.1 were tricky. Some words were recognised, but a whole sentence is sometimes too much.*

On the question what went well (question 5), one of the most frequent responses was that the children were working very independently, while still asking the teacher or fellow pupils for help when needed. In addition, the practical experiments embedded in Digi+ (e.g., the germination of seeds) led to a lot of excitement in the pupils. The schools in both countries reported that the pupils stayed motivated throughout the session and were really focused on getting a high score on assignments. This is illustrated by the following quote of one of the teachers on the German side:

> *The fast pupils are often so motivated that they simply don't want to stop before they reach a 100 % score on the assignment.*

In reporting what could have been better (question 6), a very common response was that the pupils had difficulties adapting to the technical requirements of Digi+. Logging in to Digi+, learning how to navigate within the programme and how to submit answers to assignments, seems to have been somewhat of a challenge for a part of the participants. This seemed more often the case in Germany than in the Netherlands, which might be ascribed to the different school cultures. In the Netherlands, schools seem to be slightly more used to including IT in their lessons as opposed to the German schools, where reports of technical difficulties were more frequent. Apart from these technical difficulties, children trying to find loopholes to cheat within Digi+ were among the most frequent answers.

All in all, the general response does not point out any major difficulties with the content of Digi+, but rather peripheral matters like navigational issues, problems with logging in to the environment and other technical matters. In summary, teachers' and pupils' reactions were very positive and mostly reported an enjoyable experience working with Digi+.

The transcripts from the audio-recordings of group work during working with Digi+ also revealed some insights into how pupils evaluated working with Digi+. Dutch pupils indicated to be proud when they discovered words they knew in the German Word Snake and were happy when they remembered German words correctly (e.g. the meaning of *Mähdrescher* – a combine harvester):

Pupil: *Meester, ik heb maaidorser. [Sir, I have combine harvester!]*
Teacher: *Ja, waar? [Yes, where?]*
Pupil: *Dat is eh even kijken dat is Mähdrescher. [That's eh let's see, that is combine harvester.]*

Dutch pupils also showed self-confidence in using German, e.g., by correcting the teacher when he mispronounced a German word and independently repeating the pronunciation of German words to practice. Independence was shown by pupils looking up words in Google Translate, without the teacher having instructed them. The transcriptions further show a growing interest in the neighbouring country, as a Dutch pupil suggested visiting a German school to improve his German language skills. Not all comments were positive though, some pupils found the German language boring, others got frustrated because of their lack of German language skills:

Meester, ik snap hier geen anderhalve meter van! [Sir, I don't understand any of this!]

Although no extensive analysis of the qualitative data was possible at this stage, the brief analysis shows an overall positive experience working with Digi+ of both teachers and pupils (RQ3). Some results are in line with the study by Knopp et al. (2021), for example that recognising individual words is easier than understanding whole sentences and also the low tolerance of frustration when decoding unfamiliar languages. Pupils enjoyed the multimodality and the language comparison aspects of Digi+ and were eager to get assignments done correctly. Naturally, since the schools worked with the pilot version of Digi+, different technical issues also came to light causing frustration amongst the pupils.

5 Discussion and conclusion

The present paper presents an overview of first results from the Digi+ project. Digi+ is a bilingual Dutch-German CBLE aimed at primary school pupils between eight and ten years old in the border region between Germany and the Netherlands, developed to be used primarily in Nature and History classes. Among the theoretical underpinnings of the project are the well-known potential of *lingua receptiva* as a language mode in contact between speakers of closely related languages (e.g., Rehbein et al. 2010), as well as positive evaluations of the use of CBLEs in language learning (Buendgens-Kosten/Elsner 2018). Data are discussed that are taken from language background questionnaires, attitude measurements, and logbooks and transcripts from classroom interaction registering the first experiences with the CBLE.

The background questionnaires show that even in the border area little contact with neighbour language takes place in the pupils' private sphere, but some interest in the neighbour language can be observed, since pupils report an outspoken interest in language learning in general and mention the neighbour language as a desirable addition to the foreign language curriculum. An open issue is to what extent this relates to the proximity of the neighbour country, to positive attitudes to language learning in general triggered by linguistic diversity in the project schools, or to both. The factor analysis indicated that the pupils' attitudes did not pattern into the same dimensions as they are generally found when measuring the language attitudes of adults (cf. De Vogelaer/Toye 2017), but attitudes can nevertheless be interpreted as mildly positive towards the neighbour language. Especially within the identified 'speaker-evaluation' dimension, these positive attitudes turned out to be more outspoken in the German schools. Since these German schools generally report fewer direct contacts with the neighbour country, we attributed this to the more profound linguistic diversity in the schools, but it is still unclear whether this explanation can be generalized to other schools with similar demographics (but, for instance, a less outspoken emphasis on foreign languages in their curriculum). Roughly speaking, both section 4.1 and 4.2 suggest open-mindedness in the Digi+ pupils towards language learning in general, and at best mildly positive attitudes towards the neighbour language. In such a constellation, it seems that the learning experience may contribute substantially to the overall success, not only in terms of a deepened language proficiency, but especially with respect to the development of more favourable attitudes.

The results also show that, so far, there is a generally positive learning experience emerging through working with Digi+. Pupils have worked enthusiastically with Digi+, appreciating the use of both German and Dutch and the different learning modes. From the perspective of preparing pupils for a transnational labour market in the long run, introducing them to the neighbour language and culture from a young age seems to be potentially yielding positive effects. Through Digi+ pupils become familiar with the neighbour language in a playful manner, for example through language comparison games, and develop their receptive language skills through the use of *lingua receptiva*. They also get familiar with the neighbour culture, for example through comparing traditional German and Dutch foods and national holidays. On top of that, by means of the CLIL approach, pupils can acquire content-related knowledge. This allows for a meaningful and authentic use of both languages, for example by practising the neighbour language through small conversations.

This first pilot study shows an optimistic perspective on implementing Digi+ broader in the future, although further research will have to show how much pupils

learn in terms of language and content and whether they are more positive about the neighbour language and culture after working with Digi+. This will hopefully provide us with an answer as to whether introducing pupils from an early age to the neighbour language and culture can increase a positive (neighbour) language attitude and in the long run, assuming pupils will be more open to continue learning the neighbour language in future education, increase transnational job market opportunities. Data gathered later in the project will allow us to address some of the issues left open in this paper, the most important one probably being the effect on pupils' skills in the neighbour language. Other issues, such as a more precise estimation of the effect of background variables relating to individual pupils, require broadening the sample to additional test schools, which is needed to tease out factors operating on the individual from those operating on the school level. Attempts to roll out Digi+ in more schools are currently implemented; due to the Covid-19 pandemic, it is still uncertain to what extent these will be successful.

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