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# Finding and using students' funds of knowledge and identity in superdiverse primary schools: a collaborative action research project

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## ABSTRACT

Sociocultural diversity in classrooms can result in inequality, when discontinuities between school and home make children perform below their abilities. Funds of knowledge/identity theory makes a plea for building on the skills and knowledge that students acquire in their families, communities and peer groups, and that may not be recognised by teachers, when they are from different sociocultural backgrounds to their students. In a collaborative action research project the authors investigated how primary school teachers can use students' funds of knowledge/identity (FoK/I) in their superdiverse classrooms. Data were collected through pre-structured logbooks, teacher interviews and focus groups. The analyses result in a framework that suggests ways to find students' FoK, and that categorises FoK/I-related teaching practices along two dimensions: (1) individual students' resources vs. collective resources; and (2) scope of the teaching activities. The authors also identify sources of FoK/I and discuss the pedagogical competences teachers need to integrate FoK/I into their teaching.

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Funds of knowledge; funds of identity; (super)diversity; equity; primary school

## 1. Introduction

In the increasingly diverse educational contexts in contemporary societies, students may experience a gap between what they learn at home and what is expected from them at school (Banks, 1993; Cockrell, Placier, Cockrell, & Middleton, 1999). Teachers, on the other hand, with different cultural and social backgrounds to their students, do not always recognise the knowledge and skills that students acquire outside of school. This discontinuity between school and home can result in students, particularly those with an ethnic minority or lower social economical background, losing their interest in school and performing below their abilities (Bronkhorst & Akkerman, 2016; Lee, 2001; Vedder, Horenczyk, Liebkind, & Nickmans, 2006).

The funds of knowledge (FoK) approach was introduced and developed with the aim of bridging the gap between home and school, while avoiding deficit theorising. According to a deficit paradigm, differences in academic achievement by different

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groups of students are due to deficiencies within students, their families and/or their culture (Valencia, 2010). Those groups may include immigrants, indigenous students, other culturally minoritized groups and students from families with low socio-economic status. Central to the FoK approach, on the contrary, is the assumption that students are competent and have valuable knowledge and skills, developed through their life experiences outside school. Various ethnographic studies were conducted, showing the accumulated bodies of knowledge, skills and information available in students' households and communities (González, Moll, & Amanti, 2005; Moll, Amanti, Neff, & González, 1992). Also, several authors have documented how teachers can draw on those family and community FoK and use them for pedagogical purposes (Andrews & Yee, 2006; Joves, Siques, & Esteban-Guitart, 2015; Moje et al., 2004; Moll et al., 1992).

More recently, however, scholars have pointed out that family and community FoK do not necessarily coincide with students' interests and experiences (Esteban-Guitart & Moll, 2014; Rios-Aguilar, Kiyama, Gravitt, & Moll, 2011). For instance, Subero, Vujasinović, and Esteban-Guitart (2017) explain that having parents with knowledge and skills with regard to agriculture does not necessarily mean that children have incorporated those and that they are meaningful to them. Recent studies in the FoK field have therefore looked more specifically at children's FoK and shown that students' interests, talents and passions may also find their origin in sources other than the household or community (Andrews & Yee, 2006; Hedges, 2015; Hedges, Cullen, & Jordan, 2011; Moje et al., 2004; Subero, Vila, & Esteban-Guitart, 2015; Sugarman, 2010). In response to the wish of broadening the FoK approach, the concept of funds of identity (FoI) was introduced (Esteban-Guitart, 2012, 2016). The concept of FoI refers to 'the simple premise that people have and accumulate not only their households' funds of knowledge but also life experiences that ultimately help them to define themselves' (Subero et al., 2017, p. 251). In studies that are based on this concept, in addition to ethnographic research, methodologies such as having students produce identity artefacts (e.g. texts or drawings) or other arts-based methods are used to reveal students' interests and build on these to promote and support learning (Esteban-Guitart, 2014; Subero et al., 2017).

When we introduced the funds of knowledge and funds of identity (FoK/I) approach in our collaboration with primary schools in Amsterdam, The Netherlands, it particularly inspired teachers in schools with a diverse student population. Several teachers expressed the wish to identify their students' FoK/I more systematically and draw on these pedagogically. However, they felt the literature did not offer enough relevant support for their specific situation: classrooms that include students with diverse socio-economic status and cultural backgrounds and schools lacking the resources to allow them to do home visits. This resulted in a collaborative action research project with 13 primary school teachers in which we inventoried and created examples of good practice of working with students' FoK/I. Our aim was to develop an overview of methods for working with FoK/I that would be useful and inspiring for other teachers. We also aimed to contribute to the theory of FoK/I, through new insights in students' FoK/I, and pedagogical approaches to identifying and building on these. Our research question was: 'How do teachers in primary schools with a diverse student population find students' funds of knowledge/identity and use these in their teaching?'

### **1.1. Funds of knowledge**

While many theories about discontinuity between home and school emphasise students' deficiencies, the theory of funds of knowledge (FoK) focuses on students' competences. Moll et al. (1992, p. 133) refer to the FoK concept as 'these historically accumulated and culturally developed bodies of knowledge and skills essential for household or individual functioning and well-being'. In their research project teachers worked as researchers who, through ethnographical research conducted during home visits, studied the households of their students. These households proved to be a rich source of funds of knowledge concerning farming and animal management, construction and building, trade, finance, medicine, household management, and so on. These funds of knowledge were subsequently used in the classroom to relate the curriculum to the students' lives. In the literature several examples can be found that build on this approach (Andrews & Yee, 2006; Ares & Buendía, 2007; Hogg, 2015, 2016; Lee, 2001; Mercado, 2005; Olmedo, 2004; Rubinstein-Avila, 2006). For instance, Andrews and Yee (2006) collaborated with a teacher to investigate the lives of two minority ethnic children (one Bengali, one Pakistani) in their family and community in the UK. This allowed the teacher to see how these children were engaged in mathematical activities at home, resulting in knowledge that could be drawn on in class. Hogg (2016) discussed how, in cooperation with parents and students, teachers learned about students' FoK and consequently designed learning activities based on these. For example, one teacher scaffolded her students' learning about Roman warriors by encouraging him to use and compare what he already knew about Māori warriors, such as traditional burial practices.

Several positive effects of using students' funds of knowledge have been described. The use of funds of knowledge in the classroom can contribute to improving the relationship between students and teachers, because the teacher gets to know the student in a broader context than only the classroom and because exchanges between students and teachers become more active and personal (Barton & Tan, 2009; Irvine, 2003; McIntyre, Rosebery, & González, 2001; Moll et al., 1992). Drawing on students' experiences also invites them to actively share and participate in the learning process, building bridges between students' experiences and the formal curriculum, and thus supporting academic learning (Subero et al., 2017). Furthermore, visiting households allows the creation of a relationship of mutual learning and trust between teachers and families, and may reduce prejudices and stereotypes (González & Moll, 2002; Moll et al., 1992).

### **1.2. Funds of identity**

Two limitations of the FoK approach have been pointed out, and the concept of Funds of Identity (FoI) was suggested as a complementary and innovative view to solving these (Esteban-Guitart & Moll, 2014; Hogg & Volman, 2020). The first limitation concerns the focus of FoK research, which is on the knowledge and lived experiences within the household and the community. However, as pointed out in the introduction, family and community knowledge is not necessarily meaningful for students (Subero et al., 2017). Moreover, the family and the community are not the only possible sources of students' FoK. Moje et al. (2004), for example, identified students' experiences with their peer groups and popular culture as additional sources of their FoK. They thus distinguished

four sources of secondary school students' FoK: family; community; peers; and popular culture. Students' family funds of knowledge mostly appeared to revolve around parents' work in and out of the home, and students' travelling across countries. Community funds were related to ethnic identity and social activism, peer funds to the support students gave to each other, and finally popular culture to music, print magazines, news media, television and movies. Nowadays social media and the internet are obviously sources that are even more influential in students' lives, as has been pointed out by Poole (2017), who introduced the term FoK 2.0.

A second limitation of the FoK approach that is pointed out is of a methodological character. In the original approach, students' funds of knowledge are found through ethnographic research by teachers in the students' family or community (Moll et al., 1992). This approach may highlight parents' FoK but will not necessarily reveal FoK that students develop in other contexts. Moreover, this type of research is difficult to conduct and time-consuming for teachers, even more so when students in a classroom are from various communities. Therefore, in a number of FoK studies, alternative ways to learn about students' FoK have been used (e.g. Barton & Tan, 2009; Dworin, 2006; Smythe & Toohey, 2009). For instance, in Dworin's family stories project, children wrote stories about their families in English and Spanish, valuing both languages equally (Dworin, 2006). In another project, a teacher and children worked together in curriculum planning conversations to develop a series of lessons on food and nutrition, incorporating the students' FoK (Barton & Tan, 2009). And in a third example, researchers conducted a community scan by collecting census and demographic representations of the community as well as by interviewing teachers, principals, parents and community leaders in order to develop a pedagogy that takes into account the world of the children outside of school (Smythe & Toohey, 2009).

The concept of funds of identity (FoI) was suggested to overcome both limitations of the FoK approach. First, it entails a broader perspective, not limited to the family or community, when researching students' funds of knowledge. Esteban-Guitart and Moll (2014, p. 31) define funds of identity as 'historically accumulated, culturally developed and socially distributed resources that are essential for a person's self-definition, self-expression and self-understanding'. '*Funds of knowledge* ... become *funds of identity* when the participants appropriate them and use them to define themselves' (Esteban-Guitart, 2014, p. 753). Esteban-Guitart has organised FoI in five major types (2012, p. 177), showing their multifaceted nature. FoI can be geographical (when an area of territory such as the city of Amsterdam or the Meuse River is a source of self-identification); practical (an activity related to work, sports, music and so on; many teenage girls identify with the activity of horse riding); cultural (national flags or symbols; e.g. the lion as a Dutch symbol that is pictured on official documents, but is also used as a mascot during football); social (friends, colleagues) and institutional (belonging to a religion or a family). As a sixth, additional category, Poole and Huang (2018, p. 126) suggested existential funds of identity, defined as 'positive and negative experiences that students appropriate in order to define themselves and to help them grow as human beings'. An example would be how being bullied as a child is an experience that affects one's identity.

Second, the concept of FoI aims to overcome the methodological limitations of the FoK approach. These are addressed by FoI scholars through promoting a broader range of methodologies, in addition to ethnographic research, to reveal students' FoI. Examples

include students making videos, photographs and self-portraits, writing diaries and bilingual texts, and filling shoeboxes with significant items and bringing these into the classroom (Subero et al., 2017, p. 247). Such methods are often referred to as creating identity artefacts (Esteban-Guitart, 2014; Subero et al., 2017). Teachers can use these methods in their lessons to uncover students' knowledge, skills and interests and build on these to promote and support learning.

### **1.3. The present study**

In most studies on using students' FoK, classrooms are composed of students from one or two cultural communities, which makes doing ethnographic research in the students' communities possible (González et al., 1995; Hedges et al., 2011). However, in the increasing number of superdiverse cities all over the world, schools' student populations include students from several cultural communities. FoI research has suggested methods for uncovering students' funds of knowledge/identity in ways that are more within reach of teachers in such an educational context. However, this research has mainly consisted of case studies of a particular (group of) students' FoI (Andrews & Yee, 2006; Hedges, 2015; Hogg, 2016; Sugarman, 2010) or of educational projects that employ a particular method to identify these funds (e.g. Dworin, 2006; Smythe & Toohey, 2009; Subero et al., 2015, 2017). We collaborated with 13 primary school teachers, who wanted to find out how – in their superdiverse educational context – they could uncover students' funds of knowledge/identity and use these in their teaching. In exploring these questions, we also learned about the types of FoK/I that can be found in superdiverse classrooms. We noticed that, besides the use of methods and techniques, finding and using FoK/I requires particular pedagogical competences. Four sub-questions will therefore guide the presentation of our results:

- (1) How do teachers find students' funds of knowledge/identity?
- (2) How do teachers use students' funds of knowledge/identity?
- (3) Which types of funds of knowledge/identity are found and used?
- (4) Which pedagogical competences are needed for finding and using students' funds of knowledge/identity?

## **2. Methodology**

This study is based on a collaborative action research approach. Action research is concerned with improving practice as well as creating knowledge about practice (McNiff, Lomax, & Whitehead, 1996). Carr and Kemmis (1986, p. 165) describe action research in education as a cyclical process aiming at change 'in a specific situation, context, or working setting to improve teaching/learning'. Action research can be done in collaboration with different partners, such as teachers, colleagues, students or parents (Pine, 2009). In this research we collaborated with primary school teachers.

## 2.1. Participants and context

Thirteen primary school teachers from eight different primary schools in Amsterdam, the Netherlands, actively participated in this research with their students. Our university collaborates with several primary school boards in an Educational Research Lab (ERLA); we conduct practice-oriented research focused on issues related to diversity and equity in education. Schools belonging to two of those boards had expressed their interest in the FoK/I approach after the concept was introduced in an ERLA meeting. When we acquired funding for a collaborative research project addressing FoK/I, an invitation to participate was sent to all schools of those boards, and 13 teachers, supported by their principal, responded. No further selection took place.

Seven teachers were working with students aged 9 to 12 years old and five with students aged 4 to 9. Two teachers shared a class, but otherwise all teachers taught a different class. Twelve teachers were female and one male. The majority of the teachers were white Caucasians, but three teachers had a minority ethnic background (Surinamese, Antillean and Asian). They were aged between approximately 25 and 55 years old. The eight participating schools were situated in different areas of Amsterdam, meaning that the composition of their student population varied. Teaching in the schools in our research was based on different educational concepts. In the Netherlands the large majority of schools is state-funded, but there is a lot of freedom for schools in how they teach the curriculum. [Table 1](#) contains an overview of the schools and number of participating teachers and classes.

**Table 1.** Participants.

School (educational concept)	Student population	Number of participating teachers	Age of students (Grade)
1 S-school (traditional)	Culturally diverse; Low SES	3	8–9; 9–10; 10–11 (Grade 3, Grades 4/5, Grade 6)
2 B-school (traditional)	Culturally diverse; Low SES	1	8–9 (Grade 3)
3 Ac-school (Developmental Education) (DE)*	Homogeneous; High SES	1	10–11 (Grade 5)
4 W-school (DE)*	Culturally diverse; Mixed SES	2	4–6; 9–10 (KG, Grade 4)
5 Ar-school (DE)*	Culturally diverse; Middle SES	2	4–6; 11–12 (KG, Grade 6)
6 Re-school (Montessori)	Culturally diverse; Low SES	1	6–9 (Grade 1, Grade 2, Grade 3)
7 Si-school (traditional)	Culturally diverse; Mixed SES	2	7–8 (Grade 2)
8 Ro-school (traditional)	Culturally diverse; Low SES	1	10–11 (Grade 5)

Note: \*Developmental Education (DE) is a pedagogical approach based on sociocultural theory wherein students and teachers collaboratively work in the context of themes that refer to sociocultural practices and around which all learning is organised (Van Oers, 2009).

## **2.2. Data collection**

The study was conducted between September 2018 and June 2019. It consisted of two phases. During the first phase the teachers were introduced to the FoK and FoI theory in a starting meeting, and then gathered good practices of finding and using students' FoK/I. These could be either examples found in their own teaching practice or examples from colleagues. The teachers were provided with a format to describe these examples. The format asked to describe the context of the example, which knowledge the example was about and from which type of knowledge source, how it was found, and how it was drawn upon, which effect was observed from using the knowledge, and which mechanism the teacher thought could explain the effect. Finally, the format asked to mention possibilities for improvement. A total of 26 good practices were collected. In a second meeting the good practices were discussed and related to FoK/I theory and research.

The second phase was composed of two cycles, each lasting about eight weeks, in which the teachers experimented with finding and using students' FoK/I. For each cycle teachers made an action plan for how they intended to find and use funds of knowledge of students. The action plans for the first cycle were discussed in a (third) meeting, in which the teachers shared their ideas. The plans for the second cycle were discussed in a (fourth) meeting in which the teachers also shared their experiences during the first cycle and related these to the literature. During each cycle the teachers reflected on the enactment of their plan two to four times in a pre-structured logbook. Every teacher had the same logbook format to fill in, in which the following questions were asked: Which funds of knowledge did you draw on? How did you find the funds of knowledge? How did you draw upon these funds of knowledge? What worked well and what worked not so well? The number of times the teachers filled in the logbooks and the richness of the information in the logbooks varied. A total of 72 logbook accounts were collected. At the end of each cycle, every teacher was interviewed, meaning that every teacher was interviewed twice. One teacher did not have time to write in the logbook due to other priorities and two teachers gave very few details. In those cases we used the interview to get as many details as possible. This phase was concluded with focus group interviews with the participating teachers, in which we reflected with the teachers on the yields and challenges of working with students' FoK/I. Two interviews were conducted, each with half of the group of teachers.

Summarising, the data consisted of 26 descriptions of good practices, 26 action plans, 72 logbooks, 26 teacher interviews and 2 focus group interviews.

## **2.3. Data analysis**

We analysed the logbooks, the good practices and the interviews with the teachers and students in several rounds, using Atlas.ti 8 software to summarise and display the findings systematically. In a first round of analysis, a number of deductive predetermined codes (see [Table 2](#)) was applied to text segments of the interviews and logbooks.

Then we used open coding (Strauss & Corbin, 1990) for assigning (sub)codes for references to concrete instances of these categories. For example, codes that were assigned under the category 'source' were family, community, peers, popular



**Table 2.** Content of the codes.

Codes	Content and examples	Subcodes and examples
Source	References to the source of students' funds of knowledge, such as popular culture '[The lesson] is about rap music. It keeps them daily busy in their free time.'	See Table 5
Knowledge area	References to the types of students' FoK/I 'The children live and breathe [the videogame] Fortnite. Just when you finish a mathematics instruction and you tell them to start working, you hear them talk about how many kills they had yesterday. They make a whole planning about who comes online when to play Fortnite.'	See Table 5
Found	References to how students' FoK/I was found by the teacher 'I played with the children in the corner which at that moment was a flower shop. The student played she was a saleswoman and I came to buy flowers in her shop. She used the right words and sentences: "Would you like to buy a bouquet? That will be three euros". She even noticed that there were prices missing in the shop and that the latter did not have a name yet and no open/closed sign. When I asked her how she knew all this so well, she told me that she regularly went to a flower shop with her mum.'	See Table 3
Used	References to how students' FoK/I was drawn upon in class '[Three students] who often came to school by car inventoried what was required to make a petrol station [. . .]. During a group moment they told the other students what they had come up with. On the basis of this list we worked the following days [with the whole class] on making the petrol station.'	See Table 4
Teachers' competences	References to teachers' pedagogical competences needed to find and use students' FoK/I 'By recognising this special moment and inviting Meghan to tell more, the children and I got to know her better. In order to recognise such moments you need to be alert and also give students room for input.'	See Table 6

culture and self. Examples of codes under the category 'Found' (references to how students' FoK/I was found by the teacher) were student tells about experience, direct teacher question, theme evokes student input and observation. This was followed by a round of axial coding (Strauss & Corbin, 1990), in which we reduced the number of subcodes by taking together codes with a similar meaning. This resulted in the final categories that we report on in the results section and Tables 3–6. For 'knowledge', for example, we took together the codes history, music and health, resulting in the code 'specific knowledge'. For 'Used', we combined the codes mathematics, spelling and comprehensive reading, forming the code 'school-related skills'.

Data triangulation was used to enhance the reliability of the study; a combination of action plans, logbooks, good practices, interviews and focus groups was used as data sources. The interviews were recorded and transcribed verbatim to prevent interpretation bias. While the first author coded the data, the authors repeatedly discussed the coding scheme (and examples of how it was applied) in order to ensure the reliability of the analysis. When the first author was in doubt about a code, this was also discussed between the researchers. The trustworthiness of the findings was enhanced by discussing our preliminary results during a meeting with the participants in order to check whether it reflected the participants' reality.

### 3. Results

#### 3.1. Finding FoK/I

From the good practices, action plans, logbooks and interviews it became apparent that students' FoK/I were found by teachers in many different ways (see Table 3). In the phase of collecting good practices, teachers realised that they often found students' FoK/I accidentally. During their experiments, teachers looked for FoK/I purposefully, through conversations with parents and colleagues, and through gathering information from students themselves – through questionnaires, observations and conversations with students. Sometimes regular lesson activities motivated students to reveal FoK/I. And finding out about students' FoK/I continued to happen accidentally sometimes.

To learn about students' FoK/I some teachers asked *parents* at the beginning of the year about the talents of their children and what they liked to do at home. For instance, in one class several parents indicated that their child loved to play with Lego and could make beautiful constructions with it. Other parents told the teacher that their child was very creative and liked to draw or do crafts. One teacher learned from her *colleague* during a conversation that the children in the colleagues' class had much enjoyed an activity about the computer game Fortnite. Another teacher mentioned that, when she gets a new class at the beginning of the school year, she meets with the previous class teacher in order to learn about the class in general and about the students and their particular talents and interests.

All teachers purposively gathered *information from the students* themselves to learn about their FoK/I. One of the teachers asked students to fill in a questionnaire about their talents. Most teachers had one-to-one discussions with students about their hobbies or used informal moments to chat with them, as well as observed students. Observation of students consisted of noticing what students talked about during their role play, presentations and during breaks (for instance Fortnite, Dragon Ball Z, football), what they enjoyed doing (dancing, rapping, drawing, sports), and who was good at what during regular classes and when workshops were given by outsiders (using the iPad, archery,

**Table 3.** How are FoK/I found?

How are FoK/I found?	Examples
<ul style="list-style-type: none"> <li>● Through parents and colleagues</li> </ul>	<ul style="list-style-type: none"> <li>● Discussions with parents;</li> <li>● Discussions with colleagues;</li> <li>● Transmission of information when student changes teacher or class.</li> </ul>
<ul style="list-style-type: none"> <li>● Through students</li> </ul>	
<ul style="list-style-type: none"> <li>- Purposive teacher activity</li> </ul>	<ul style="list-style-type: none"> <li>● Questionnaire;</li> <li>● One-to-one discussion with student;</li> <li>● Informal discussion with group of students;</li> <li>● Observations (during lesson or breaks);</li> <li>● Student drawings.</li> </ul>
<ul style="list-style-type: none"> <li>- As part of a lesson activity</li> </ul>	<ul style="list-style-type: none"> <li>● Classroom discussions, response to learning materials (book, documentary, pictures, poster).</li> </ul>
<ul style="list-style-type: none"> <li>- Accidentally</li> </ul>	<ul style="list-style-type: none"> <li>● Participating in the activities of children (roleplay, sports);</li> <li>● Student tells or shows;</li> <li>● Students ask attention for a specific theme.</li> </ul>

drama, English language). It also included observing drawings by young children and trying to understand them.

Students' FoK/I were also found *in the context of a particular lesson or a theme*; classroom discussions were especially very helpful for this. It is common for primary teachers to sit down in a circle with students and discuss a topic: animals in the zoo, travelling habits, food waste, and so on. During such a conversation during a project on the Second World War, one student revealed himself to be very knowledgeable about the nuclear bomb. When talking about wasting food, a teacher discovered how one of her students was good at cooking 'wentelteefjes' (French toast), whereas most of the other students had never eaten those. In other cases, a student's FoK/I became apparent in a conversation on something students had watched on television (e.g. a documentary on a child's country of origin) or when visiting a museum.

Finally, students' FoK/I were sometimes found *accidentally*. While participating in a role play with young children about buying and selling flowers, one of the teachers discovered that one child was very knowledgeable about the topic as she often went with her mum to buy flowers. Other teachers described how younger children sometimes wanted to share and talk about something they were proud of, and asked the teacher to come and see something they had constructed (e.g. a garage or a museum). In some schools, older students asked their teacher if they could talk about a topic, such as a theatre play about Martin Luther King they were impressed by, or brought to school materials from the Second World War which their grandparents had kept. Students also made suggestions to the teacher about themes they were interested in (prehistory, dinosaurs, culture).

### 3.2. Building on FoK/I

The analysis of the good practices, action plans, logbooks and interviews showed that teachers built on students' FoK/I in different ways. Their practices can be characterised along two dimensions. The first dimension concerns a focus on individual students' vs. a group's FoK/I. Teachers' FoK/I-related practices sometimes entailed placing an individual student in the spotlight, but in other cases teachers built on knowledge or skills that were shared by a group (or even the whole group) of students. The second dimension

**Table 4.** How are FoK/I used?

	Individual student's FoK/I	Collective FoK/I
Moment	<ul style="list-style-type: none"> <li>● In individual conversation</li> <li>● In classroom conversation</li> </ul>	
Lesson	<ul style="list-style-type: none"> <li>● Student as expert: poet, rapper, using electronic equipment, knowledge about road construction, flowers, animals, religion, language</li> </ul>	<ul style="list-style-type: none"> <li>● Use in FoK/I-related activities: drawing, map, rap, poem, drama, story, newspaper, cooking, film, lapbook, game, poster</li> </ul>
Project	<ul style="list-style-type: none"> <li>● Student as expert: use of knowledge or skill to give a workshop or guided tour for other students</li> </ul>	<ul style="list-style-type: none"> <li>● Themes (jobs in and around the house, designing an island)</li> <li>● End of the year musical or other performance</li> <li>● Celebration of cultures/religions</li> <li>● Food market</li> <li>● Exposition</li> <li>● Presentation for parents</li> </ul>

concerns the scope of the FoK/I-related teaching activities. Building on students' FoK/I sometimes entailed just a brief conversation, sometimes it resulted in a lesson, and in some cases a whole project was developed, which might even go beyond the classroom and involve students from other classes and/or parents. Table 4 contains an overview.

Many teachers grasped an opportunity to give particular students the floor to share with the class something about themselves, often with the aim of allowing the student to gain confidence. For instance, after a school trip to the zoo, one teacher and the children talked about how animals hide food. A six-year-old girl who was new in the classroom, still learning Dutch and shy, starting talking about a tree, her hiding spot in her home country. The teacher decided to sit with her to have a one-to-one conversation and together they looked at different pictures of trees. Later on, the girl was able to tell her story to the entire class with the support of the illustrations, which gave her the opportunity to gain confidence and for other children to get to know her better.

Another setting in which teachers used FoK/I were lessons during which they invited a student to act as an expert; this was sometimes planned and sometimes happened unexpectedly. Students' expertise included knowledge about specific subjects such as insects, the atom bomb, religion, road construction or skills in areas such as using the computer or the iPad, speaking a foreign language and making poems. Ways in which teachers made the student act as an expert were giving a student a particular responsibility, making him/her an assistant, or asking the student to teach a lesson (e.g. an English language lesson). In one class 11- to 12-year-old students were following a lesson about making a rap. One girl who did not usually talk much in class and whose test results were below average made the most beautiful raps. As the teacher and other children realised this, they came to her to ask for help and advice. In projects, students were sometimes asked to organise workshops for other children, based on their talents. One student who experienced learning difficulties in regular class became a tour guide of the 'French museum' that was made in the class, as he spoke French fluently.

When drawing on the FoK/I of the whole group of students, creative methods were often involved, such as making a drawing, rap, poem, drama, story, newspaper, film, game, dollhouse, poster or dish. On the one hand, students' FoK/I often concerned creative skills; on the other, creative methods offer the opportunity for students to explore topics that are personally meaningful for them. For instance, students (aged 9 to 10) were asked to make a 'lapbook' about a Netherlands province of their choice. A lapbook is a file folder that students fill with games, mini-books and facts about a specific topic. The choice of the students was supposed to be based on personal interest. One student who did not like geography became very motivated to make a lapbook after she realised that she could focus on the province of her grandparents. Another teacher used popular Dutch song texts with blank spaces for children to practise conjugating verbs.

Several teachers worked with students' FoK/I for a longer duration in a project, often going beyond the classroom and involving parents or students from other classes. Two teachers of 11- to 12-year-old students decided to use FoK/I in their end-of-school musical. In one class the dances of the musical were designed by two girls who taught them to the other students. In the other class a girl wrote poems which were bundled in a booklet and sold at the musical, with the money going to charity. The class chose for the musical to be about culture. Students formed different cultural groups (Ghanaian, Antillean, Surinamese, mixed international) and created dances. The Surinamese group

wanted to do a traditional dance with drummers. One of the students, who plays in a band, composed the music and taught it to his classmates. With help of parents, the children prepared a dinner with food from all over the world for the audience.

Other projects involved a longer duration and a considerable end result too, worth sharing with other people, such as parents and other students. This was done in various ways. For example, in one school several lessons were spent with groups of children from grade one, two and three designing islands with all the facilities the students considered necessary. Parents were invited to come and see the end results. A grade six class invited parents to their museum about the Second World War, with items collected and games developed by students. In several classes the end-of-school musical or other performances for parents and families involved children using and showing their FoK/I.

Various learning goals were addressed in building on the FoK/I of (a group of) students. Students' knowledge and skills were used as an occasion to acquire new knowledge or practice new skills, academic (Dutch language, mathematics, reading, listening, geography, research, learning about a different culture), creative (drama, dance) or social-emotional (self-confidence, dealing with challenges). In another study we analysed the effects of using students' funds of knowledge on educational outcomes in the social and personal domain (Volman & 't Gilde, 2021).

### 3.3. Types of funds of knowledge/identity

In our research the FoK/I that teachers found and used were from two main sources: popular culture and leisure time; and family and community (see Table 5). Knowledge acquired through popular culture consisted of knowledge about computer games, such as Fortnite, Battleship and Minecraft. Teachers built on this knowledge for designing motivating learning activities: describing in detail a character from Fortnite as a Dutch language skills activity, or using Minecraft in a mathematical activity aimed at learning about the calculation of surfaces. In one class, Dragon Ball Z characters were very popular among boys. When the teacher learned that two parents were very skilled at drawing them, she invited the parents to come and teach her students. Music was also popular, especially rap among the older children (aged 10 to 12). Some teachers used songs and dances from YouTube to identify the FoK/I of their students. Besides popular culture, other leisure activities such as dancing, football and gymnastics were important sources of knowledge for many students. Peers and popular culture appeared hard to distinguish as sources, as students' interest in popular culture was always shared with peers and sometimes the entire class. For instance, Fortnite was very popular among entire classes and dancing was an interest shared by groups of students.

**Table 5.** Sources of FoK/I and knowledge areas.

Sources	Knowledge areas
Popular culture and leisure time	Language, music, culture, sports, relationships, collaboration, several substantial topics
Family and community	Language, religion, culture, daily travel, animals and pets, flower shopping, construction tools, sustainability, peace, emotions

Family and community appeared to be closely related and it was often difficult to distinguish sources. Knowledge from these sources, for example, concerned language, religion, travelling, animals and pets, flower shopping, construction tools, sustainability, peace and emotions. Teachers used this knowledge by having students teach each other some words in the language they spoke at home, interviewing a family member who worked at a utility company on the topic of sustainability, and discussing by which means of transport students go to school and what they do when taking the bus or the car.

It is noticeable that in the lower grades (ages four to six), teachers mostly used themes that were close to the children's experiences at home or in the community, whereas we only found one example of using popular culture in these grades (the use of Beyblades, a line of spinning top toys).

### 3.4. Teacher competences

In the logbooks, good practices and interviews, teachers also reflected on their actions and the pedagogical competences needed for finding and drawing upon FoK/I. Table 6 contains an overview.

Teachers indicated that, in order to find students' FoK/I, you first of all need to be aware of the existence of these funds. Secondly, it is important to be attentive to students, and to be alert for knowledge that students may possess. Thirdly, one must show sincere interest in that knowledge. One teacher described how she was talking with her four-to-six-year-old students about which animals live in the zoo and how in other countries these animals live freely in nature and not enclosed. One boy then named sheep. The reaction of the teacher was that sheep do not live in the zoo, to which the student replied that there are many sheep walking freely in Morocco. The teacher described how she saw that the student was disappointed that she did not give him more attention after his contribution. The teacher therefore decided to get a book about sheep, look for pictures of a herd of sheep in Morocco, and sit down with the student to ask questions, showing

**Table 6.** Pedagogical competences for finding and using FoK/I.

Pedagogical competences for finding FoK/I	
Paying attention	<ul style="list-style-type: none"> <li>● Being aware</li> <li>● Being alert</li> <li>● Showing sincere interest</li> </ul>
Showing something of yourself	<ul style="list-style-type: none"> <li>● Sharing own experiences</li> <li>● Vulnerability</li> </ul>
Flexibility	<ul style="list-style-type: none"> <li>● Openness</li> <li>● Flexibility</li> </ul>
Pedagogical competences for using FoK/I	
Being focused on meaningfulness	<ul style="list-style-type: none"> <li>● Taking into account students' experiences and relating the curriculum to students' lives;</li> <li>● Choosing a sociocultural practice as context for learning</li> <li>● Giving students room, space and freedom, encouragement</li> </ul>
Having trust and giving responsibility	
Thinking along	<ul style="list-style-type: none"> <li>● Asking questions, encouraging reflection and going into depth</li> <li>● Facilitating by providing materials</li> <li>● Offering structure (setting goals, rules; planning)</li> <li>● Coming up with ideas that relate to a student's specific FoK/I</li> </ul>

genuine interest in talking about the sheep he had seen. In the interviews, she pointed out that listening and watching non-verbal reactions are important competences in order to be able to find students' FoK/I. Teachers also mentioned more structured methods that invite students to talk about their experiences related to a chosen theme.

Several teachers mentioned that showing something of yourself, which implies making yourself vulnerable, can stimulate students to do the same. One teacher, who had his students making rap songs, also wrote a rap about his own life and his cultural background and performed it in front of his students. Several teachers mentioned the importance of showing vulnerability, for example by expressing their fears, and showing that they have gaps in their skills and knowledge for which they need support from the children. One teacher had observed that some of her students really loved football. After a football workshop organised by the Ajax Foundation (Ajax is the most successful football club of Amsterdam), she used football examples in mathematics, which students liked a lot. She also explained to her students that she was unable to keep the ball up, but that she would like to learn how to do it. Students then started coaching and motivating her, a common endeavour which ultimately positively affected the climate in her class.

According to all teachers, finding students' FoK/I requires openness and flexibility. Teachers explained how students come up with ideas that need more time than first planned by the teacher. For instance, when students of one of the teachers started writing a rap, they got so enthusiastic that they also wanted to make their own beat, which took extra time. Sometimes students come up with stories or knowledge in relation to a theme, showing their interest in it and then the teacher needs to decide whether or not to give the floor to the student at that moment. Teachers indicated that they had to practise letting go of the planning for a moment, in order to seize the opportunity to discover students' FoK/I. Some teachers also pointed out how keeping logbooks or being interviewed helped them reflect on and become aware of the actions they took to find and use students' FoK/I.

Teachers mentioned three important pedagogical competences they needed in drawing on students' FoK/I: being focused on the meaningfulness of learning activities; trusting students and giving them responsibility; and thinking along. Some teachers explained how they built on the input of their students in order to develop themes with which the children could easily identify, such as health, insects, emotions and so on. In this sense, making use of students' FoK/I is a way to improve the meaningfulness of learning in school. One of the teachers unexpectedly found her students showing an interest in handprints from prehistoric times, and therefore decided to elaborate on that theme. Another teacher described how, during a discussion about insects, several children appeared to have an interesting story about cockroaches, which made her decide to develop some lessons around this theme. In the schools that used the Vygotsky-based pedagogy of Developmental Education, it was common practice to develop such themes together with the students and to use sociocultural practices as contexts for learning.

Teachers also described that they learned to trust their students, and, sometimes hesitantly at first, gave students space and responsibility. For instance, a teacher encouraged three students, who were fluent in English, to develop and teach an English lesson. She had to trust that they were able to take over her role. Another teacher was motivated by the wish of her students to make a movie about their school year. Even though the idea actually scared her, she let her students take responsibility and control over the process.

Being able to think along is another competence that is required, when building on students' FoK/I, and that was described in detail by many teachers. They refer to facilitating and scaffolding the learning process by providing materials (books about a topic, pictures, information sheets), offering structure (setting goals and making a plan), talking with students and asking questions to encourage them to reflect, and going into depth. In the example of students making a movie, the teacher encouraged them and would think along when students asked for her help. She supported students' planning and group processes. Some teachers also mentioned that thinking along focused on individual students, in order to help them assume a role in a project. For instance, they encouraged students to think about their talents and how they could use those to make a contribution to the project.

#### 4. Discussion and conclusion

When teachers get more insight into their students' funds of knowledge and funds of identity, they can draw on students' experiences and resources in order to connect the curriculum with students' interests, prior knowledge and life experience, making their lessons more meaningful to students (Esteban-Guitart & Moll, 2014; Moll et al., 1992; Volman & 't Gilde, 2021). This is highly relevant with a view to inclusion and equal opportunities for a diverse student population in the increasing number of superdiverse cities all over the world. In a collaborative action research project we investigated, together with 13 primary school teachers from primary schools with a diverse student population, how they found students' funds of knowledge and used these in their teaching.

Our study resulted in a framework that categorises and illustrates FoK/I-related teaching activities, i.e. ways in which teachers can find and build on students' FoK/I. It also identifies competences that teachers need when they want to integrate FoK/I into their teaching.

Teachers in our study *found* students' FoK/I in a variety of ways: through conversations with parents and colleagues; by purposefully gathering information (e.g. through questionnaires, observations and conversations with students); through teaching activities during lessons; and often found accidentally. We categorised the ways in which teachers *built on* students' FoK/I along two dimensions. The first dimension distinguishes between the individual vs. collective character of students' resources: teachers either focused on an individual student or drew on FoK/I of a group of students or the whole class. The second dimension concerns the scope of the teaching activities. Teachers built on students' FoK/I in activities that varied from brief or longer conversations to whole lessons and even projects. The FoK/I that the teachers in our study found and built on were from two main sources: popular culture and leisure time (e.g. computer games, rap music, dancing, football language) and family and community (e.g. language, religion, travelling, pets, construction tools, emotions). Teachers suggested a number of competences that teachers need in order to integrate FoK/I into their teaching. In order to be able to find students' FoK/I teachers first of all need to be aware of the existence of students' FoK/I; they also need to be willing to show something of themselves and to be flexible. For building on students' FoK/I, three pedagogical competences were mentioned



as important: having trust in students; thinking along; and being focused on the meaningfulness of learning activities.

The knowledge that teachers uncovered during the project can indeed be characterised as funds of identity; it concerned knowledge that students experienced as meaningful and as part of who they are. Some examples were obviously funds of knowledge: knowledge that students acquire in their families and community, such as knowledge of language, religion or certain types of food. However, many examples concerned popular culture and peer group knowledge, as was already suggested by Moje et al. (2004). But other than Moje et al. (2004), we could not distinguish peers and popular culture as separate sources. This may be explained by the younger age of the students in our study, for whom leisure activities are largely undertaken with peers and often concern playing computer games. It also proved difficult to distinguish family and community sources, maybe again because of the young age of the students, who do not participate in the community independently, but rather through their families. The fact that in the lower grades teachers mainly used FoK/I from the children's homes and communities, rather than from popular culture, is interesting, given that Hedges et al. (2011) in their research in kindergarten (children aged 6 months to 5 years old) found that references to popular culture were the most numerous, including television programmes, fast-food restaurants and movies.

We did find some of the types of FoI that were distinguished by Esteban-Guitart (2012) in our data. However, they were unevenly represented. Cultural and practical funds were best represented, followed by geographical and social funds of identity. We found no examples of the institutional type. In the example of the end-of-school musical, students used many cultural symbols such as the flag, a dish and a traditional dance from their country of origin. In other examples, children taught words from their mother tongue to fellow students and parents came to talk about their religion and culture. Doing repair work in the home, shopping for flowers, playing a music instrument or practising a sport can be considered practical funds of identity. In this category we also classified leisure activities such as playing Fortnite or Minecraft, listening to or singing popular songs. As for the geographical category, children told the teacher about animals or a tree they knew or saw in their country of origin or where they went for visiting family, such as Morocco and Curaçao. Finally, children mentioned parents, grandparents and other family members in their stories and schoolwork. The category of existential funds that was proposed by Poole and Huang (2018) did not really occur. This may be due to the young age of the students, but teachers may also not be particularly keen to address experiences that are emotional and difficult to handle for students. Nevertheless, we think that the approach of this research project may also be a way to address these types of experiences in the classroom, although of course this should be done with care. The same holds for perspectives of students that teachers may find undesirable or inappropriate (e.g. discriminatory). This approach allows such perspectives to come to the fore, which makes it possible to discuss them and present students with alternative views.

This study has a number of limitations. First of all, several grades and schools working from different educational concepts were involved in the study. This may be considered a lack of focus, but on the other hand, this resulted in a wide range of possible ways to find and draw on FoK/I, that may inspire other teachers and that enabled us to come up with a meaningful categorisation. A focus on a particular grade or on a particular method of finding or drawing on FoK/I is, however, recommended for future studies. Secondly,

the methods that FoI researchers proposed as an addition to the ethnographic methodologies of the FoK approach (e.g. making self-portraits, writing diaries and filling shoeboxes, often referred to as identity artefacts [Esteban-Guitart, 2014; Subero et al., 2017]) were hardly used by the teachers in our study. This may be explained by the fact that they focused on methods that were close to their usual practice. Future research on the effects of particular methods of finding and using FoK/I, however, should include such arts-based methods, as they seem promising, and not that difficult to fit in. Finally, we did not study the effects of teachers' endeavours in revealing and drawing on students' FoK/I. Future research should investigate whether drawing on FoK/I results in effects at the student level, such as improved learning results, motivation for learning and self-confidence.

Finally, we would also like to point out some possible risks and pitfalls in how teachers apply drawing on students' FoK/I. First of all, some teachers seemed to be drawn towards revealing special talents of individual students, whereas the FoK/I approach emphasises that every student has knowledge and experiences that are worthwhile. Another pitfall is to overemphasise differences between students and adopt an essentialist or folkloristic approach when drawing on students' cultural background (Gay, 2003). The FoK approach is a very accessible and inspiring way for teachers to address diversity in the classroom. However, instructional surface characteristics of the FoK/I approach should not be isolated from its theoretical base. FoK/I theory emphasised that acknowledging and building on students' diverse cultural knowledge and skills should go beyond attention to food, dance and music. It also entails, for example, integrating multicultural content into the curriculum and responding to ethnic diversity in the delivery of instruction. Thirdly, drawing on students' FoK/I is not only about making teaching more motivating by focusing on issues that are familiar to students. Using students' FoK/I aims to go deeper and further than that. It aims to make students experience that the knowledge and skills they have acquired in their families, and communities, in their leisure time and with their peers are worthwhile, while at the same time connecting these knowledges and skills with the curriculum that students are supposed to master, and thus bridge the gap that may exist between students' experiences in and out of school.

To conclude, our findings contribute to the research field in several ways. First, our findings resulted in a framework of ways in which a FoK/I approach can be applied in classroom teaching in diverse classrooms. Previous research did not focus on classrooms that were as superdiverse as the classrooms in our study, and often described special projects instead of 'ordinary' daily classroom practices. Second, our findings suggest that the knowledge sources distinguished by Moje et al. (2004) and the categories of FoI distinguished by Esteban-Guitart (2012) and Poole and Huang (2018) are not necessarily relevant for all age groups. Relevant sources and types of FoK/I may differ depending on the age of students. A third contribution is that this study is the first to reflect in detail on the competences that teachers need when they start integrating a FoK/I approach in their teaching. The framework we developed also constitutes a contribution to educational practices. It can be a useful tool in teacher education and professionalisation programmes. It can inspire and support teachers in determining how to integrate a FoK/I approach into their teaching, and it can help teachers reflect on the competences they might need to develop in order to do so successfully.

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