



# Adoption of nutrition education programmes at primary schools

AN ANALYSIS OF THE ADOPTION OF NUTRITION EDUCATION PROGRAMMES AND THE ASSOCIATION WITH IMPLEMENTATION

by Marianne Brigit Reurik, 2020

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## Preface

From my 7<sup>th</sup> till my 18<sup>th</sup>. I went to a Waldorf School (Vrije School), a school-based on the educational philosophy of Rudolf Steiner. Around 100 years ago, he was the founder of anthroposophy. This philosophy, in short means, that you learn with your hands, heart, and head. It is a holistic way of teaching. Besides the standard reading, maths, and languages, you learn about gardening, music, and art. For me, it was the norm to eat fruit at school. In Kindergarten, the teacher prepared a large bowl of fruit pieces from where we got to pick some. Later, in primary school, everybody brought their fruit and vegetables to school for the lunch break. Some children brought a cookie or a rice cracker, but the norm was to bring fruit or vegetables. The same standard applied to the treats for birthdays, they mostly are made from fruit or vegetables. At high school, the norm changed a bit, and there was less control over what you ate. However, for most of us, it was the norm to eat at least one piece of fruit at school.

It confused me when I learned, throughout my study and other life experiences, that eating fruit and vegetable is not the norm for a lot of people. My upbringing and social environment probably biased me. It would be fantastic if eating fruit and vegetables is standard for everyone, because of the health benefits. At Wageningen University, as well as other places, they do a lot of research about improving nutritional knowledge and consumption of fruit and vegetables, which is inspiring. I would like to contribute to this research with my combined expertise in nutrition and health and science communication. At TU Delft, they do a lot of research on collaboration and co-creation, which I think is useful in the field of nutrition education because I know excellent nutrition education programmes have been designed, but implementation is not always happening.

During the process of my thesis, I hope to use the knowledge I already have and combining the field of nutrition and health with the field of science communication. Additionally, I hope to learn and improve my skills regarding data analysis, interviewing, and designing. But above all, I hope to contribute to the research about Taste Lessons and EU-Schoolfruit since I think they are both important programmes.

# Acknowledgements

During the process of writing this double degree thesis, I was supported by a large group of people whom I would like to thank. Without them the process would have been much harder.

First of all, I want to thank my supervisors from TU Delft and Wageningen University. As this was an integrated project much flexibility and patience was asked of you. Balancing criteria and expectations of both universities was not always easy, however, all of you supported me to reach this final report. I want to thank Annemien for her enthusiasm about my research and thorough feedback she provided ; Steven for always giving honest feedback and encouraging me to keep improving the quality of the thesis; Eva, for always asking the right questions and giving me the confidence I was on the right track; and Angeliek, for supporting me in the start-up phase of the project and with all practical issues I encountered during the process.

Next I want to thank the panel members that participated in this study. Because of their input I was able to get a deeper understanding of the adoption of school-based nutrition education programmes and the needs for support. Additionally, thanks to them I was able to create a tool based not only on theory but also on practice. This was of great value to me.

Then I want to express my gratitude to Taste Lessons support team, and specifically, Fieke. Even though, you were very busy you were willing to take time and help me in the process of the tool development. Thank you, and your team for all the input in the development of the tool.

Several experts and fellow students were asked for validation and feedback sessions. Thank you all for taking the time and your input in this process. Without you I would not have been able to create this end product of which I am very proud.

I was lucky to have three fellow students writing their thesis on Taste Lessons and EU-Schoolfruit as well, without them data collection and analysis would have been very lonely. They were always available for questions or just a talk about our experiences at the schools. In Delft I was supported by my fellow students in the 'afstudeerhok'. I want to thank them for brainstorming with me, helping me, eating my 'baksels' and all the support they gave me. Unfortunately, that came to an abrupt end because of the corona virus. But online coffee moments were a nice replacement, thank you Sophie for calling me whenever I (or you) needed it and keeping close contact.

I want to thank my family and friends for their support and encouragement especially during motivational dips. They also helped me to keep doing fun and relaxing activities. Special thanks to my sister, Eline, for being my personal cheerleader and advisor every time I got stuck.

Thanks to Krista and Bianca, for giving me a place where I could blow of some steam when my brain was overworked and being so supportive.

Last but not least, a final thank you is for Ruben, for always being there for me and believing in me.

# Abstract

Many nutrition education programmes currently face issues with implementation at schools. Little is known about causes for these issues. Research has shown that the implementation of innovations like nutrition education programmes is influenced by adoption, which in turn is affected by a multitude of determinants. The first objective of this thesis was to investigate the adoption of nutrition education programmes at primary schools and the association with implementation dose. The second objective was to create a tool to support the adoption of Taste Lessons. School-based nutrition education programmes are regarded as educational innovations in this thesis. An innovation is defined in this thesis as a novel, inventive and useable solutions related to people's needs. In this context, adoption is defined as the process which starts from the moment the teacher hears about the programme until the decision is made whether to use it. The number of lessons implemented by the teachers is referred to as the implementation dose in this thesis.

To reach the first objective, the adoption of Taste Lessons, EU-Schoolfruit and school-based nutrition education programmes in general, was evaluated. Data analyses were performed to investigate the association of the score on adoption determinants with implementation dose of Taste Lessons. Multilevel analyses were performed to compare the changes in intended programme outcomes over time between implementation dose categories. To reach the second objective, a Delphi study was performed to gain insight into the key stakeholders' needs in the adoption process of Taste Lessons. In addition to these insights, literature and expert consults were used to develop a tool. This tool aims to support the adoption of Taste Lessons.

Twenty-eight determinants important for adoption have been established. Several determinants that could be barriers for the adoption of Taste Lessons and EU-Schoolfruit have been identified. Significant positive associations have been found between implementation dose and the number of support staff, awareness of the programme's contents, descriptive and subjective norm, and correctness of the programme. A significant negative association has been found with the teacher experiencing support from professionals. The implementation dose was significantly positively associated with the change in children's nutrition knowledge. No significant association of the implementation dose with the change of children's fruit and vegetable consumption was found.

Based on the results mentioned above in combination with the results from the second part of the thesis, a tool to support the adoption of Taste Lessons was developed. The digital tool should show teachers how they can tailor the programme to their needs, inform them about the contents, effectiveness and substation of the programme, and stimulate them to take action for implementation.

The take home message of this research is that adoption determinants are associated with implementation dose, which in turn, is associated with the programme's effectiveness. Context specific strategies for support of the adoption phase in the dissemination of nutrition education programmes should be developed, of which the tool developed in this research is an example. The strategy should be based on literature and practice, to ensure the feasibility, desirability and viability.

**Keywords:** adoption strategy, nutrition education programme, innovation, implementation dose

# Glossary

TL – Taste Lessons

EUS – EU-Schoolfruit

NEP – Nutrition Education Programme

NNC – Netherlands Nutrition Centre

WHO – World Health Organisation

CBS – Centraal Bureau voor Statistiek

MIDI – Measurement Instrument for Determinants of Innovations

GGD – Gemeentelijke Gezondheidsdienst ( Area Health Authority)

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# Chapter 1 The thesis

## Background

Between 2014 and 2016, merely 20% of the Dutch children between the age of 9 and 11 met the fruit consumption recommendations from the Netherlands Nutrition Centre (NNC), and 25% met the vegetable recommendations (Centraal Bureau voor de Statistiek, 2017). Additionally, knowledge of nutrition and health in Dutch children is not at an acceptable level (Thijssen, Schoot, & Hemker, 2011). An association exists between the lacking knowledge and unhealthy eating behaviour (Battjes-Fries, 2016).

These facts are a cause of concern since an unhealthy lifestyle can result in overweight or even worse, obesity. In 2019, 10.1% of Dutch children aged 4 to 11 were overweight, and 2.1% were obese (RIVM, 2019). Overweight children have an increased risk of detrimental health and psychological conditions at an older age (WHO, 2018; Wu, Kirk, Ohinmaa, & Veugelers, 2017). Additionally, the eating behaviour of children determines eating behaviour in adulthood (Mikkilä, Räsänen, Raitakari, Pietinen, & Viikari, 2004). Therefore, it is of great importance to promoting a healthy lifestyle among children.

Primary schools are an important setting to stimulate a healthy lifestyle in children (Van Cauwenberghe et al., 2010). Children spend a lot of their time at school, and a large population from various socio-economic backgrounds can be reached (Bellisle, 2008; Van Cauwenberghe et al., 2010). Several school-based nutrition education programmes (NEP) that aim to improve children's health have been developed over the years (Van Nassau, Singh, Van Mechelen, Brug, & Chinapaw, 2015). Evaluations of these programmes showed varying but promising results. Positive effects of the programmes were found on children's diet as well as nutrition knowledge (Caballero et al., 2003; Evans, Christian, Cleghorn, Greenwood, & Cade, 2012; Reynolds et al., 2000; Warren, Henry, Lightowler, Bradshaw, & Perwaiz, 2003).

Children's and teacher's appreciation with the programme, children's engagement in interpersonal communication and issues with the implementation of the programme are among the reasons mentioned for the varying effectiveness of NEPs (Battjes-Fries, 2016; Bessems, Van Assema, Martens, et al., 2011a; Evans et al., 2013; Story et al., 2000). Of these reasons, this thesis addresses the issues with implementation.

Looking at other educational innovations, similar issues are found with implementation. A problem that often arises is related to the translation of evidence-based innovations to a real-life setting. Often, the focus of education innovation developers is on just telling the target group to use their innovation (Henderson, Beach, & Finkelstein, 2011a; National Research Council, 2012). The dissemination is based on the principle that good ideas spread naturally (Henderson, Beach, & Finkelstein, 2011b). However, dissemination of evidence-based interventions generally does not occur spontaneously (Glasgow, Marcus, Bull, & Wilson, 2004). Education innovation developers tend to mistake dissemination to the propagation of the innovation (Stanford et al., 2015). While dissemination is just the start, propagation is the main goal. Propagation of innovations has occurred when it is used successfully by the intended users (Stanford et al., 2015). Successful propagation promotes broader and sustained adoption of innovations (Henderson et al., 2011b).

The Diffusion of Innovation theory suggests that the development of an innovation is followed by dissemination, adoption, implementation, maintenance, sustaining and institutionalizing

phases (Oldenburg & Parcel, 2002; Orlandi, Landers, Weston, & Haley, 1990). Looking at this theory, it can be argued that a cause for the issues with implementation can be found in the adoption phase. This decision-making process before implementation is called adoption which is the individual process that starts with hearing about the programme and ends with the decision to use it (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004b). Teachers have to make their own decision to implement a NEP because nutrition education is not mandatory for schools in the Netherlands.

Two examples of NEPs are Taste Lessons (TL) and EU-Schoolfruit (EUS). EU-Schoolfruit aims to increase fruit and vegetable intake by delivering it for free to primary schools. Taste Lessons aims to increase children's nutrition knowledge by provided educational material. Similar to the effect evaluations of other NEPs mixed but promising results of the programmes were found (Battjes-Fries, 2016). Even though previous research on Taste Lessons found mixed results on the number of implemented lessons (e.g. implementation dose), a positive association between implementation dose and increase in children's nutrition knowledge was found (Battjes-Fries, 2016). These promising results call for a thorough investigation of the influence of adoption on implementation dose as previous research did not study this relationship yet. Furthermore, strategies to support the adoption should be studied.

Although the implementation of NEPs has been studied, there is still much uncertainty about the causes of suboptimal implementation. Moreover, little research has been performed on determinants that affect the adoption of NEPs, how they might affect implementation and how to support the decision.

## **Problem statement, objectives and research questions**

### **Problem statement**

The challenges addressed in this thesis is the implementation of nutrition education programmes in primary schools. Implementation of innovations in a school environment has been studied regularly (Aarestrup et al., 2015; Christian et al., 2012; Gray, Contento, & Koch, 2015a; Van Nassau et al., 2015; Wind et al., 2008). However, the literature on adoption determinants and the association with implementation in the context of schools is limited. The problem statement is as follows;

*The implementation of school-based nutrition education programmes is preceded by the adoption phase. Inadequate adoption of the program, therefore, might be the cause of the difficulties with implementation. Research into drivers and barriers in the adoption process of school-based nutrition education programmes is needed to tackle the difficulties and support adoption.*

### **Study objectives**

Based on the problem statement the objectives of this thesis have been formulated. The objective of this research is to investigate the determinants that affect the adoption of nutrition education programmes at primary schools from a social-scientific point of view by:

*(1) Evaluating the barriers and drivers in the adoption process of two case studies and nutrition education programmes in general and their association with implementation.*

And trying to tackle the barriers by:

*(2) Creating a tool to support the adoption of Taste Lessons*

### Research questions

Three research questions (RQ) have been formulated to give a focus to this study. Research question 2 is further defined by three sub-questions (SQ).

**RQ1.** Which determinants are important in the adoption process of nutrition education programmes at primary schools?

**RQ2.** To what extent are adoption determinants associated with the implementation dose of Taste Lessons, and implementation dose in turn with the effectiveness of Taste Lessons?

*SQ2.1. What are potential barriers for primary school teachers in the adoption process of Taste Lessons and EU-Schoolfruit?*

*SQ2.2. What is the association between the adoption and the implementation dose of the Taste Lessons?*

*SQ2.3. What is the association between the implementation dose of Taste Lessons and the intended programme outcomes nutritional knowledge and fruits and vegetable consumption?*

**RQ3.** How can the adoption process of Taste Lesson be supported?

### Note on double degree

This thesis is an integrated study for two master degrees, Nutritional Epidemiology and Public Health (Nutrition and Health) and Science Communication. Insights, methods and literature from both fields of study are used to answer the research questions. The first research question is generic and relevant to both fields of study. This research question with the results from the narrative literature research performed in chapter 2 and the results from the data analysis in chapter 3. The focus of research question 2 is on Nutritional Epidemiology and Public Health, where the analysis of two school-based nutrition education programmes will be performed, results can be found in chapter 3. The perspective of science communication is used to answer the third research question. The results of this part can be found in chapter 4, 5, 6, and 7.

## Scope

The adoption of two existing nutrition programmes has been studied to reach the objective of the study. Additionally, a group of teachers that did not use any nutrition programme was included to gain unbiased insights into essential determinants in the adoption of future nutrition education programmes. By including the three groups, insights in the importance of the adoption determinants will be based on multiple perspectives.



**Taste Lessons** is a school-based nutrition education programme. The NNC and Wageningen University developed the current programme in 2006. The programme is focussed at grade 1-8 of primary schools. Lessons are offered for each grade on five different topics: taste; nutrition and health; cooking; food production; and consumer skills. Experiments, cooking, tasting, and home assignments are among the diversity of activities in the lessons. About 4500 primary schools have participated in this programme over the last couple of years (Smaaklessen, n.d.).

**EU-Schoolfruit** was developed in 2010. The programme aims to increase fruit and vegetable consumption in children by providing free fruits and vegetables to primary schools. Children receive fruit and vegetables three days a week over 20 weeks. About 3000 of the 7000 primary schools in the Netherlands participate in this programme each year (EU-Schoolfruit, n.d.)



### The evaluation study

This thesis is part of a more extensive ongoing Dutch research which investigates the (long-term) effects of EUS and TL on fruit and vegetable consumption and nutrition knowledge of children aged 7-12. This study is designed as a quasi-experimental pre-test/post-test design with three parallel arms (*figure 6*). There are two intervention groups (i.e. group 1, EUTL and group 2, EUS) and one control group (i.e. group 3). Group 1 and group 2 both received EUS. Group 1 additionally received TL (EUTL). The control group did not participate in one of the programmes.

The study population of the larger study includes Dutch primary schools (n=38), teachers (n=61) and children aged 7-12 (n=1441). The schools participating in this study were invited with a newsletter from EUS or directly approached after being recommended by the (Dutch) Municipal Health Service. The schools were divided in three intervention groups (e.g. control n=10, EUS n=12, EUTL n=16). When they had experience with TL, they were put in the EUTL group. The control schools were randomly selected and approached from a list of all primary school in the Netherlands (Dienst Uitvoering Onderwijs, 2019) or recommended by the Dutch Municipal Health Service. Only schools that had no intention to adopt a nutrition-related programme were eligible to participate as a control school.

## Approach

A structured process was followed to answer the research questions. Having a structured process makes the process transparent and easy to repeat. Although the process of this thesis looks linear, it was an iterative process where each phase was reassessed several times during the research. Various quantitative and qualitative methods were used.

The process of this thesis was based on the Double Diamond model, which is a model created by the British Design Council in 2005. The Double Diamond approach is both theoretical and empirical embedded. The model consists of two diamonds with each a diverging and a converging step and therefore, four steps in total (*figure 1*) which helped the researcher to make decisions throughout the process. This model allowed the researcher to iterate and define conclusions. The diverging step in the first diamond was used to discover the topic of the research (e.g. literature research). This step was followed by a converging step – defining the problem and making choices what to include in the next steps. The diverging step in the second diamond was a developmental process. It consisted of idea generation and resulted in a broad overview of possibilities to solve the problem. In the last step, deliver, choices were made to focus on a specific solution of a problem and a final product was designed.

In figure 1, a schematic overview is provided with the research questions, methods and results of each phase in the double diamond. The methods will be discussed more elaborate in the chapters when they are used.

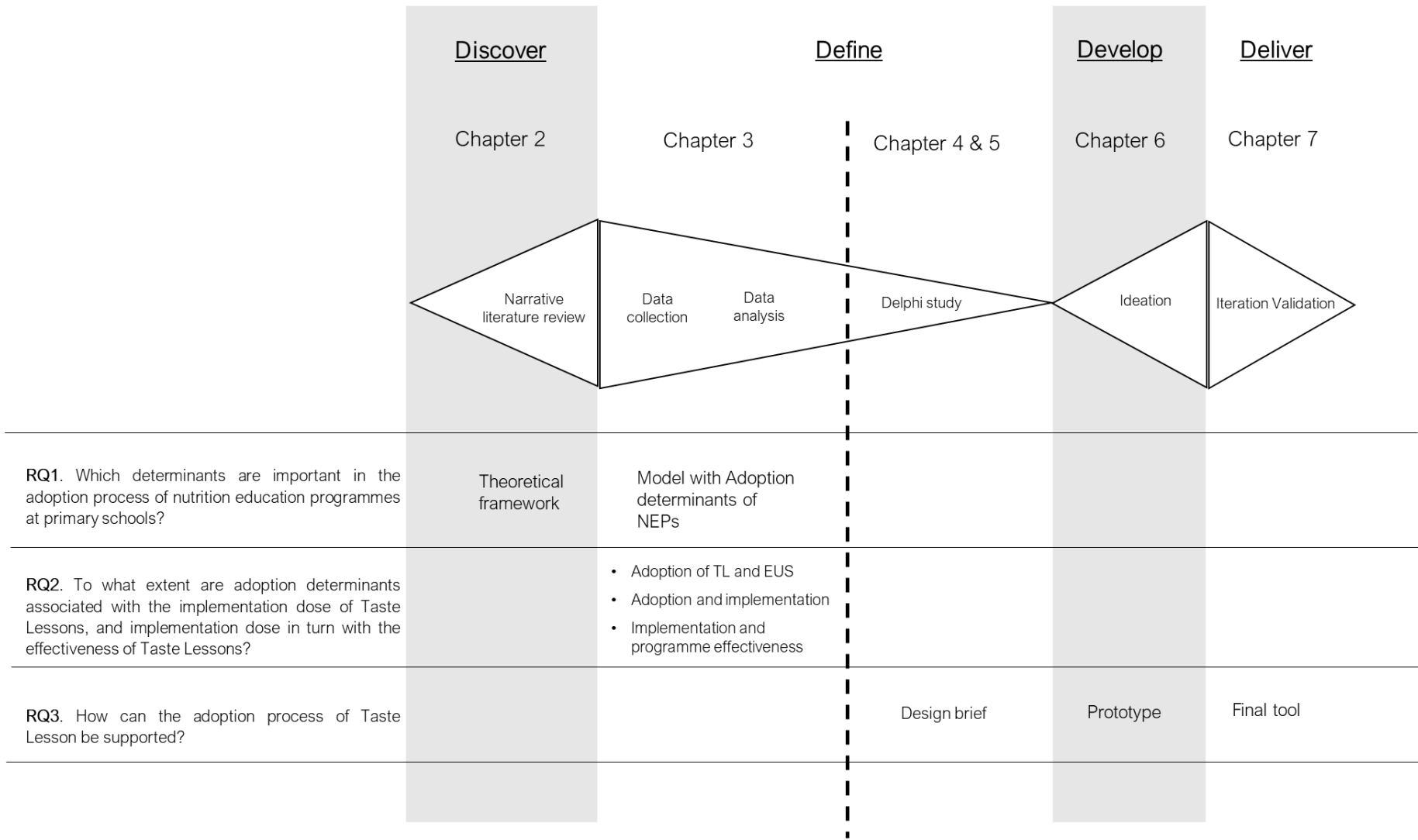


FIGURE 1 - DOUBLE DIAMOND THESIS DESIGN

# Chapter 2 Discover

This chapter is the first diverging step of this thesis. This phase aims to discover current literature on adoption drivers and barriers in the diffusion of innovations. Theories about the adoption of innovations were collected to create a theoretical framework which will be the basis of the following phase in this thesis, defining. Hereafter, the methodology of the narrative literature research and the results of the research are described. Subsequently, the theoretical framework and the description of the adoption drivers and barriers are elaborated on in the results part. The theoretical framework will be used to design questionnaires about the adoption of EUS, TL and school-based NEPs in general.

## Methods

A narrative literature review was performed to create the theoretical framework for this thesis. This type of analysis is a method to review and synthesize information from multiple articles systematically. The product of a narrative literature review can be a summary of the existent knowledge about specific research questions (Popay et al., 2006). The narrative approach was chosen because this literature research aimed to get insight into the existing knowledge rather than finding a knowledge gap (Bryman, 2012).

The steps followed in this narrative literature review are; (1) scoping the search; (2) performing a synthesis; (3) assessing relationships between frameworks; and (4) assessing the robustness of the integration.

**Step 1** The scope of this research was set by creating inclusion and exclusion criteria for the search. This process resulted in three guidelines for the search; (1) review articles are included that resulted in a framework that included adoption; (2) review articles are included that address adoption of innovations used by intermediaries; and (3) review articles that assessed adoption in similar contexts as primary schools are included (i.e. service organisations and health services). Identification of review articles was performed by using a snowballing technique (Wohlin, 2014).

**Step 2** The second step aimed to make a preliminary synthesis of the selected adoption frameworks. An overview of all the adoption drivers and barriers was created. Variables in the frameworks that were not related to adoption were taken out of the list.

**Step 3** The third step aimed to analyse the differences and similarities between the three selected frameworks. This step was the essential step in the narrative analysis. All the drivers and barriers were reviewed to create an understanding of the relationship between the models. The result of this step was one framework for the adoption of innovations. By combining multiple frameworks, the more robust foundation for this current research was created. These frameworks additionally, allowed operationalization of the selected constructs.

**Step 4** This step provided an overview of the strength of evidence of all the included adoption drivers and barriers. Additionally, the relevance of the constructs for the scope of this thesis on primary schools was assessed. The results of these steps are described in the next part.

## Results

The results of the four steps followed in the narrative literature review are described below. First, an overview of the search is given, followed by a description of the three selected theoretical frameworks. Next, the theoretical framework for this research is given. Last, the selected adoption drivers and barriers are described.

### Step 1 and 2 – Scoping and reviewing

The first search query resulted in 238 hits, of which the most relevant article was selected. Two additional search queries were created to retrieve other relevant frameworks, resulting in respectively 99 and 181 results, of which the first related article was extracted (*Table 1*). The three frameworks that have been selected look from a medical and social point of view at the diffusion innovations. All these frameworks are based on a systematic literature review of existing frameworks, literature and expert opinions. Two articles indirectly address adoption in their framework within the context of the diffusion of innovations (Fleuren, Paulussen, Dommelen, & Buuren, 2014; Greenhalgh et al., 2004b). The framework from Fleuren, Paulussen, Dommelen, & Buuren, (2014) is more focused on the adoption of an innovation for intermediaries. In contrast, the framework from Greenhalgh et al., (2004b) is focused on the direct user of the innovation. The framework of Wisdom, Chor, Hoagwood, & Horwitz (2014) is focussed directly on adoption.

TABLE 1 - RESULTS FROM THE NARRATIVE LITERATURE REVIEW

Inclusion criteria	Exclusion criteria	Search queries	Results	#1 Relevance
<ul style="list-style-type: none"><li>- English articles</li><li>- Articles published between 2000 and 2019</li></ul>	<p>Subject areas;</p> <ul style="list-style-type: none"><li>- Business, management and accounting</li><li>- Economics, econometrics, and finance</li><li>- Computer science</li><li>- Engineering</li><li>- Environmental science</li><li>- Agriculture and biological sciences</li><li>- Biochemistry, genetics and molecular biology</li><li>- Arts and humanities</li><li>- Energy</li><li>- Mathematics</li><li>- Immunology and microbiology</li><li>- Pharmacology, toxicology and pharmaceuticals</li><li>- Multidisciplinary</li><li>- Earth and planet science</li><li>- Chemistry</li><li>- Neuroscience</li><li>- Chemical engineering</li><li>- Materials science</li><li>- Physics and astronomy</li><li>- Veterinary</li><li>- Dentistry</li></ul>	<p>Diffusion AND innovation AND "systematic review"</p> <p>Determinants AND innovation AND review</p> <p>Adoption AND innovation AND theory AND review</p>	<p>238</p> <p>181</p> <p>99</p>	<p>(Greenhalgh et al., 2004)</p> <p>(Fleuren et al., 2014)</p> <p>(Wisdom et al., 2014)</p>



Additional literature was reviewed to get more insight into the background and utilization of the chosen theoretical frameworks. Below a summary of each of the frameworks is provided. After that, the relevant determinants for this research, of the three frameworks are explained.

**Measurement Instrument for Determinants of Innovation (MIDI)**

The framework of Fleuren, Paulussen, Dommelen, & Buuren, (2014) was used as a basis for the development of the theoretical framework, and it provides an extensive overview of the concepts related to adoption on multiple levels (figure 2). Additionally, the framework has been revised and evaluated over the years. The framework is called the Measurement Instrument for Determinants of Innovations (MIDI). In 2004 the development of the MIDI started by performing a systematic literature review on determinants related to the diffusion of innovations (Fleuren et al., 2004). In a Delphi study, forty-four experts on implementation were asked to reach a consensus on determinants that should be included in the framework. The group of experts included – programme managers, implementation consultants, and implementation researchers. After combining the findings of the literature review and the expert analysis, 50 relevant determinants for the diffusion of innovation were selected on four different levels – socio-political, organisational, adopting person (user), and the innovation. The determinants each affect different stages of the innovation process. According to this model, the innovation process exists of four steps, including; dissemination, adoption, implementation and continuation. The four levels of innovation determinants discussed before affect the innovation process—characteristics of the innovation strategy in its turn influence this relationship.

In 2014, the MIDI was revised (Fleuren et al., 2014). Over the years multiple empirical studies had used the MIDI to look at the implementation of evidence-based innovations for primary and secondary schools, and preventive health care for children (Broerse, Kamphuis, & Dommelen, 2009; Crone et al., 2006; Dommelen & Kamphuis, 2007; Garre & Kamphuis, 2010; Verlaan & Dommelen, 2006; Wiefferink et al., 2005). All the empirical data from these studies were combined with looking at the determinants that predicted implementation. After the analyses, twenty-nine determinants were left.

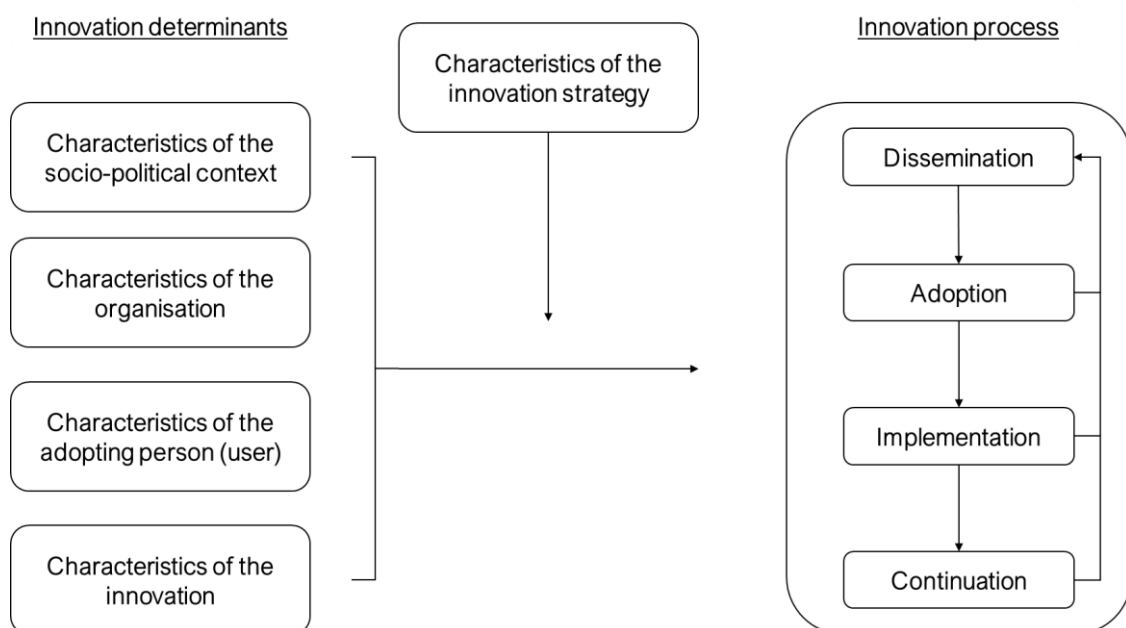


FIGURE 2 THE MIDI FRAMEWORK OF FLEUREN ET AL. (2014)

### The Greenhalgh Model

The framework of Greenhalgh et al. (2004b) is the second reviewed theoretical framework. Similar to the MIDI, it provides an extensive overview of determinants for the diffusion of innovation (figure 3). The researchers collected literature from thirteen different research fields to create a framework that is useful for all service organisations. They make the differentiation between diffusion and dissemination of innovations, where diffusion is passive, and dissemination is active. Implementation of innovations should include active steps and actions. The framework should be used as guidance in complex innovations.

The framework is quite complex with nine different parts (e.g. the innovation, the adopter, assimilation, communication and influence, system antecedents for innovation, system readiness for innovation, outer context, implementation process, and linkage). Each part has determinants for adoption and implementation. According to Greenhalgh et al. (2004b) adopters act in a complicated way (i.e. people are responding differently to situations), and they should be treated as such, in contrast to the old categories of adopters – innovators, early adopters, early majority, late majority, and laggards (Rogers, 2002). The *innovators* are described as people that are interested in new ideas and act in a cosmopolite social network. The early adopters follow them, this group of people often serve as opinion leaders within their local system. The *early majority* often asks the early adopters for advice on an innovation. The *late majority* follow them in adopting an innovation. The *laggards* are the last people that decide to adopt an innovation. The adoption often happens when most of their social network has adopted the innovation (Rogers, 2002). There is, however, limited empirical evidence that these groups could be used as explanatory variables for the adoption process. Individuals interact creatively and purposefully with complex innovations and can, therefore, not be assessed as categories (Greenhalgh et al., 2004b). The assimilation part represents the constant going back and forth in the adoption process. Communication and influence give insight into the diffusion and dissemination of the innovation. The linkage part is about the connection between the model components.

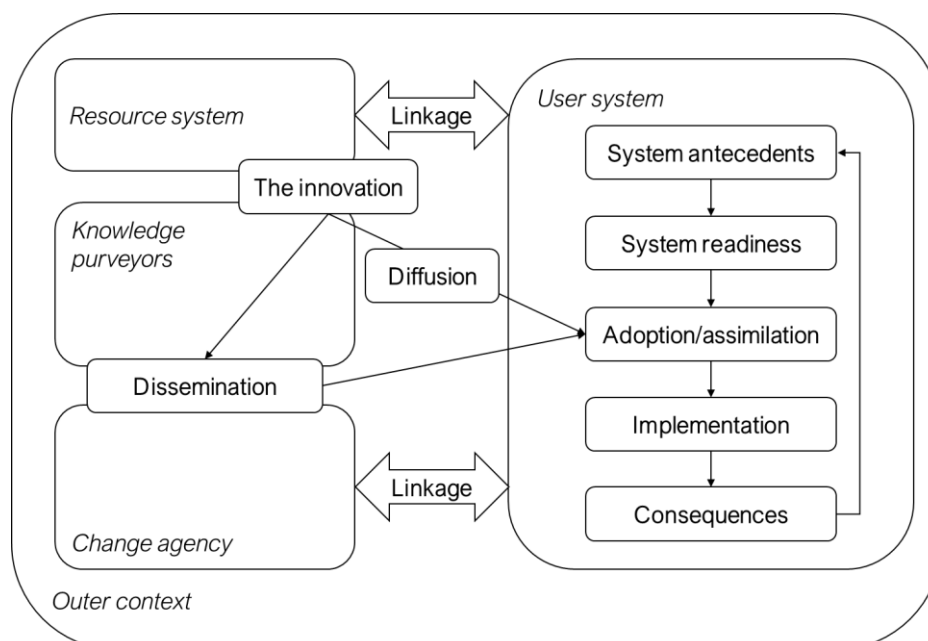


FIGURE 3 FRAMEWORK OF GREENHALGH ET AL. (2004)

### Predictors for Innovation Adoption

The frameworks described before are focussed on the entire process of diffusion of innovations. However, the focus of the current research is on adoption specifically. Wisdom et al. (2014) performed a narrative synthesis approach to create a theoretical framework to identify the determinants that affect adoption (figure 4). They used twenty different frameworks, of which ten directly addressed the adoption process and ten addressed adoption within the full process of dissemination. Overlapping themes between the frameworks were identified. The first theme is that multi-level understanding of adoption is desired. Second, there are two phases in the adoption process, starting with pre-adoption followed by the actual adoption decision. Third, a significant amount of adoption determinants overlap between the twenty frameworks.

The framework is divided into four levels for adoption determinants – external system, organization, innovation and individual. Each level has its determinants that are related to both pre-adoption and adoption. The framework was further developed in 2015, each of the 27 determinants in the model was associated with measures, a total of 118 measures were identified (Chor, Wisdom, Olin, Hoagwood, & Horwitz, 2015).

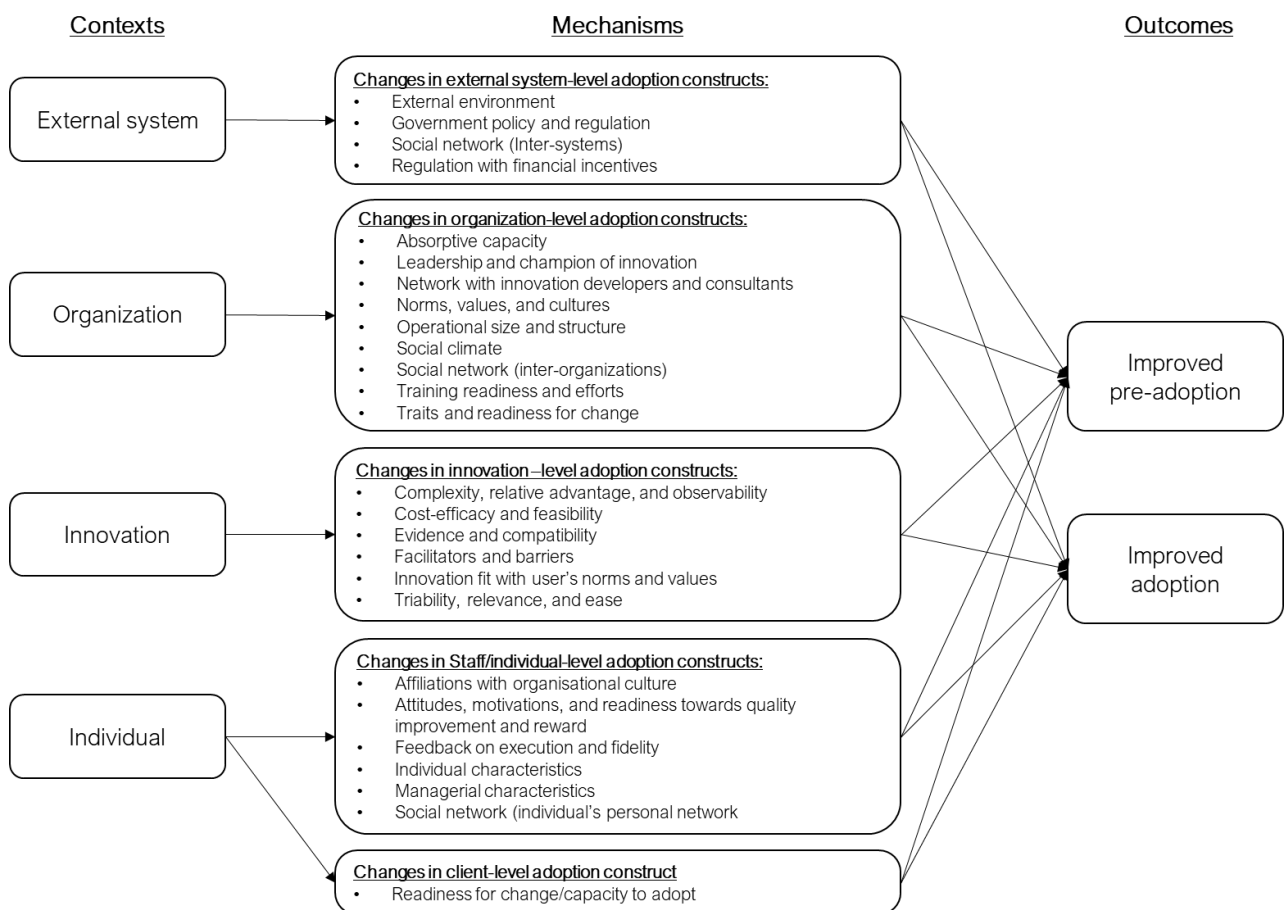
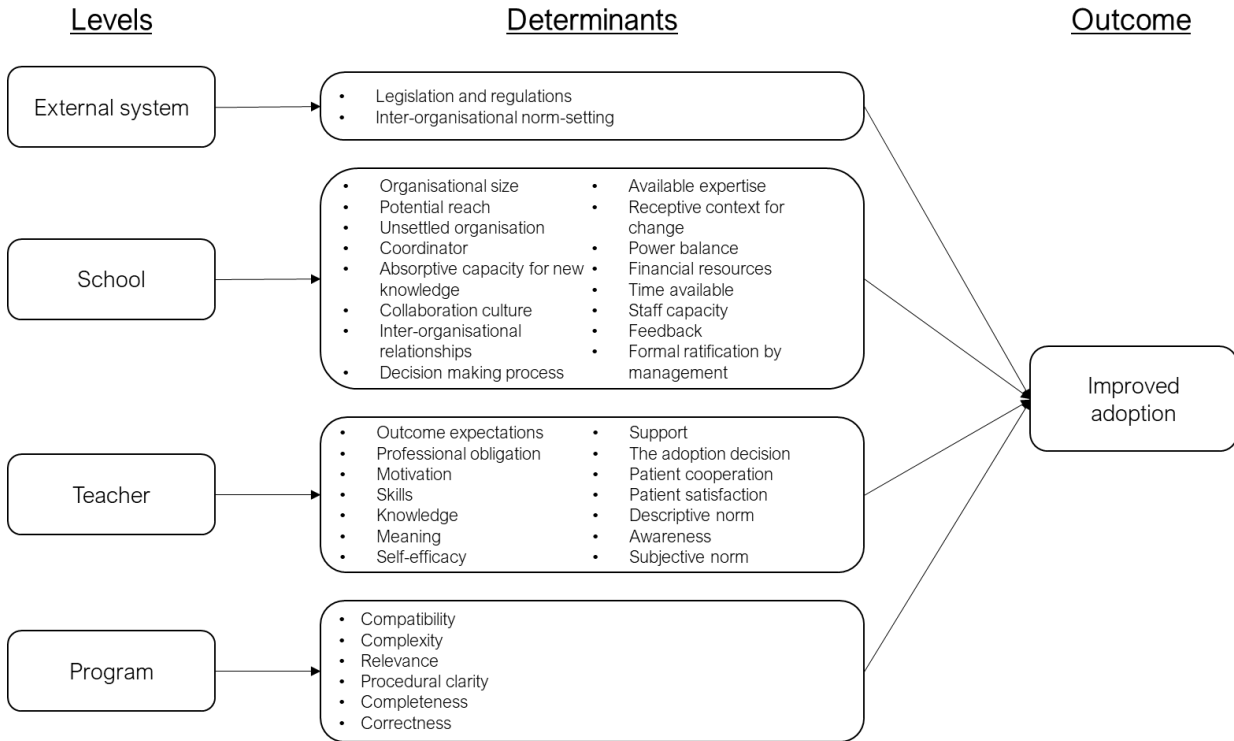


FIGURE 4 FRAMEWORK OF WISDOM ET AL. (2014)

**Step 3 and 4 – Connecting and robustness**

Combining drivers and barriers from the frameworks of Fleuren et al. (2014), Greenhalgh et al. (2004) and Wisdom et al. (2014), the theoretical framework for this research was designed (figure 5). The four levels (e.g. external system, organization, individual and innovation) from the framework of Wisdom et al. (2014) are used because this framework was designed explicitly for the adoption phase of the diffusion of innovations, which is the scope of this research.



**FIGURE 5 - THEORETICAL FRAMEWORK**

Determinants have been included when they were relevant for the adoption process. In table 2, an overview of the determinants is provided and whether they are part of the frameworks. In appendix II, an elaborate overview of the determinant's definitions is given as well as the strength of evidence. Connections between the different barriers and drivers in the frameworks have been made. The connecting resulted in 40 determinants, one additional determinant, professional support, has been added by the researchers because in this evaluation study, professionals play a part as well.

TABLE 2 - OVERVIEW OF DETERMINANTS INCLUDED IN THE NEW THEORETICAL FRAMEWORK

Level	Concept	Fleuren	Greenhalgh	Wisdom
External	Legislation and regulations	x	x	x
	Inter-organizational norm-setting	-	x	x
Organization	Organisational size	x	x	x
	Potential reach	x	-	-
	Unsettled organisation	x	-	-
	Coordinator	x	x	-
	Absorptive capacity for new knowledge	-	x	x
	Collaboration culture	x	x	-
	Inter-organisational relationships	x	x	-
	Decision-making process	x	x	-
	Available expertise	x	x	-
	The receptive context for change	-	x	-
	Power balance	-	x	-
	Financial resources	x	x	x
	Time available	x	x	-
	Staff capacity	x	-	-
	Feedback	x	x	x
	Information accessibility	x	-	-
	Formal ratification by management	x	-	-
Individual	Outcome expectations	x	-	-
	Professional obligation	x	-	-
	Motivation	-	x	x
	Skills	x	-	x
	Knowledge	x	x	x
	Meaning	-	x	-
	Self-efficacy	x	-	-
	Social support	x	x	x
	Professional support	-	-	-
	Organizational support	x	x	-
	The adoption decision	-	x	-
	Patient cooperation	x	-	x
	Patient satisfaction	x	-	-
	Descriptive norm	x	-	-
	Awareness	x	-	x
Subjective norm	x	-	-	
Innovation	Compatibility	x	x	x
	Complexity	x	x	x
	Relevance	x	x	-
	Procedural clarity	x	x	-
	Completeness	x	-	-
	Correctness	x	-	-

## Drivers and barriers four levels

### *The external level*

Although schools often act as an individual organisation, they are part of a broader context of, for example, other schools, governmental organizations, and parents. Two adoption determinants have been identified that affect a school from the outside.

Legislation and regulations Agencies that provide legislation and regulations, as well as accreditation standards, are associated with enhanced adoption (Wisdom et al., 2014). The fit of the innovation within the existing legislation and regulations affects the adoption (Fleuren, Wiefferink, & Paulussen, 2010). Strong direct evidence exists that a policy “push” affects the early implementation phase, primarily by making funding available (Greenhalgh et al., 2004). Political directives increase the motivation to adopt but do not affect the capacity. The pressure that results from the political instructions could cause organisations to focus on what will be expected from them next, instead of concentrating on new ideas and their priorities (Greenhalgh et al., 2004). Concluding, when an innovation fits within the current legislation and regulations, and a small policy “push” is provided, adoption of the innovation will increase. However, caution must be taken not to pressure organisations too much.

Inter-organisational Inter-organisational networks affect the decision of a company to adopt an innovation. When a certain amount of comparable organisations adopt the innovation or plan to do, so companies are more likely to adopt themselves (Greenhalgh et al., 2004), this effect is more substantial for organizations that operate within a secure network (Greenhalgh et al., 2004). Only after the innovation becomes the norm within a network, it will have a beneficial effect on the adoption. Beforehand a network could impede the adoption when it has no perceived advantages (Greenhalgh et al., 2004). The framework of Wisdom et al. (2014) offers a very different insight. They found a positive association between development and urbanization around the organisation and the adoption decision. On the other hand, theoretical support that a competitive environment affects adoption is mixed (Wisdom et al., 2014).

### *The organizational level*

As an adopter often acts within an organization, there are several barriers and drivers related to the organization that affect the adoption of innovations (Chor et al., 2015). In this case, the organizational level is the school itself and the adopter the teacher. Fifteen determinants have been selected for this level.

Organisational size The size of an organization plays a considerable role in the adoption process; it is seen as an early marker of the feasibility of the innovation (Wisdom et al., 2014). There is some discussion to whether a larger organization is facilitating or impeding for adoption process (Fleuren et al., 2010). Most research suggests a larger and more mature organization is beneficial for the adoption. Size can be seen as a proxy for determinants, like functional differentiation and resources (Greenhalgh et al., 2004).

Potential reach Although little literature is available implementation experts agreed based on the theory that the number of potential users of the innovation is relevant in the diffusion process (Fleuren et al., 2004).

Unsettled organisation According to the practical experience of implementation, experts' multiple barriers hamper the implementation process of innovations. These barriers are related to changes within the organisation, for example, other innovations that are implemented, changes in employees, re-organisations, and cuts (Fleuren et al., 2010).

Coordinator & Receptive context for change An organization can choose to have one or more persons responsible for the implementation of innovations. They could be called them coordinators for the implementation. Having one or more coordinators is beneficial for the process, and lack of responsible persons impedes the adoption of the innovation (Fleuren et al., 2014). The coordinators must have a clear strategic vision and strong leadership (Greenhalgh et al., 2004). A strong leader could promote the innovation to employees and get them out of their comfort-zone (Greenhalgh et al., 2004). Strong leadership with clear priorities and goals is an essential part of the receptive context for change (Greenhalgh et al., 2004).

Absorptive capacity for new knowledge & Available expertise When there is a pre-existing knowledge and skills base related to the innovation available within an organization, it will have a beneficial effect on the adoption process. Additionally, the ability to collect and integrate new information is useful for adoption (Greenhalgh et al., 2004; Wisdom et al., 2014). Having experts or experienced people within an organization related to the innovation has a facilitating effect (Fleuren et al., 2014; Greenhalgh et al., 2004).

Collaboration culture & Inter-organisational relationships The way people and different departments within an organization work together affects the adoption process. When people or departments are outreaching compared to the introvert, the innovation will be adopted more readily (Fleuren et al., 2010), especially when sharing of knowledge takes place (Greenhalgh et al., 2004). The same effects exist on the adoption, for collaboration and knowledge sharing with external organizations (Fleuren et al., 2010; Greenhalgh et al., 2004).

Power balance Most innovations have supporters for adoption as well as opponents. Adoption needs to have more supporters compared to opponents (Greenhalgh et al., 2004). Key individuals could take a champion role to support the innovation, evidence suggests they have a positive effect, however, the literature on how to use them effectively is limited (Greenhalgh et al., 2004; Wisdom et al., 2014).

Financial resources, Time available & Staff capacity Resources are needed to implement an innovation within an organization. These include finances, time and staff capacity (Fleuren et al., 2014; Greenhalgh et al., 2004; Wisdom et al., 2014). When there are enough of these resources available, adoption is more likely.

Feedback Feedback is essential in the adoption process. It is essential to give individuals feedback on the fidelity, execution and progress of the adoption of the innovation (Fleuren et al., 2014; Greenhalgh et al., 2004; Wisdom et al., 2014).

Formal ratification by management An organization can make policies or other formal arrangements to use an innovation. Using formal ratification will result in the embedding of the innovation within the organisation and the possibility to create prerequisites (Fleuren et al., 2014).

### *The individual level*

The drivers and barriers on the individual level are both personal characteristics of the adopting individual as well as external influences on the individual (Chor et al., 2015). Twelve determinants have been selected for this level.

Outcome expectations Expectations the adopter has about the innovation is the sum of the importance of the effects and the perceived probability that the effects will be achieved. The individual has to decide whether or not the intended outcome(s) is essential to their client. On the other hand, the individual will form expectations on the probability the innovation will achieve the intended outcome(s) (Fleuren et al., 2014).

Professional obligation The innovation is adopted more readily when an individual thinks that the innovation fits in with the other responsibilities related to their job. Additionally, adoption improves when the individual feels responsible for using the innovation (Fleuren et al., 2014).

Motivation Motivational readiness of the adopter(s) affects the adoption decision on the individual level as well as the group level. When the perceived needs for the innovation are higher, individuals are more likely to adopt the innovation (Greenhalgh et al., 2004; Wisdom et al., 2014).

Individual characteristics The adopter needs skills to be able to implement an innovation (Fleuren et al., 2014; Wisdom et al., 2014). Skills are part of context-specific psychological antecedents, the necessary abilities of an individual to adopt the innovation (Greenhalgh et al., 2004). Besides skills, the individual also needs knowledge related to the innovation (Fleuren et al., 2014; Greenhalgh et al., 2004; Wisdom et al., 2014). If the required knowledge to use the innovation can be used in other contexts, it will be adopted better (Greenhalgh et al., 2004). The individual should be confident in their abilities to use the innovation; higher confidence results in increased adoption (Fleuren et al., 2014).

Meaning Meaning has a strong effect on the adoption decision. An individual attaches a meaning to the innovation, which is not fixed, but it could be changed under the influence of the individual's network. Moreover, when the meaning attached to the innovation by others is similar to that of the individual, it has an assimilated effect on the adoption decision (Greenhalgh et al., 2004).

Support – Social, professional, organisational An individual can be supported by multiple sources – social, professional and organizational. This support could either be emotional or instrumental (Fleuren et al., 2014; Greenhalgh et al., 2004; Wisdom et al., 2014). The quality and structure of the social network of an individual affect the adoption decision. There are different structures of social networks, and they differ in function. A horizontal, more informal, network influence the decision through information spreading by peers and reframing of meaning towards the innovation. A vertical, more formal, network is useful for transfer of codified information and authoritative decisions (Greenhalgh et al., 2004). A shortage of external and professional support is negatively associated with adoption. Facilities available to support the adoption, like training and communication, has a positive effect on adoption (Wisdom et al., 2014). The last source for support is from the organization of the individual. They should be supported and encouraged to investigate innovations and get out of their comfort zone (Fleuren et al., 2014; Greenhalgh et al., 2004).



Decision-making process The decision of an individual to adopt an innovation is often related to other decisions. There are three different types of decision making, according to (Rogers, 2002). The decision can be dependent on the fact that someone else in the organisation made a decision, which is called a contingent decision. When the individual can vote for the decision, it is a collective decision. The last decision is authoritative, which means someone else tells the individual to adopt or not (Greenhalgh et al., 2004). A negative association exists between adoption and a formalized and centralized decision-making culture (Wisdom et al., 2014).

Patient cooperation & satisfaction As the individual has to decide to adopt an innovation or not, they have to take their client or receiver of the innovation in mind. Their expectancies for the cooperation and satisfaction of the receiver affect the decision (Greenhalgh et al., 2004). Additionally, the capacity and readiness of the receiver are important (Wisdom et al., 2014).

Descriptive & subjective norm The prevailing norm regarding the innovation affects the individual's decision. The descriptive norm plays a part, which is the opinion of the individual on how many colleagues use the innovation. The subjective norm, the influence of others on the decision, can be divided into two measures. First, there are normative beliefs, which are the perceived expectations of others for the individual to use the innovation. Second, the motivation of the individual to comply with the perceived expectations is important (Fleuren et al., 2014).

Awareness The individual has to be aware of innovations relevant to them. Additionally, when an innovation is implemented, being aware of the content as well as the intended effects will ease the adoption (Fleuren et al., 2014; Greenhalgh et al., 2004; Wisdom et al., 2014)

### ***The innovation level***

The last level of drivers and barriers is the innovation level. Determinants in this level are both characteristics of the innovation and characteristics of the interaction between the individual and the innovation (Chor et al., 2015). Six determinants have been selected for this level.

Compatibility Compatibility of an innovation has two aspects related to it. First, the technical compatibility of the innovation with individual and organization affects the decision-making process. This includes the goodness-of-fit with the way of working, knowledge, experiences and needs of both the individual and the organisation (Chor et al., 2015). Second, the compatibility of the innovation with the individual's values and norms, as well as the organization's (Fleuren et al., 2004; Greenhalgh et al., 2004; Wisdom et al., 2014).

Complexity & Procedural clarity When an innovation is perceived as easy to use by the individual, it will be adopted more readily (Greenhalgh et al., 2004; Wisdom et al., 2014). Additionally, the complexity of the implementation process could be a barrier to the adoption process (Fleuren et al., 2014). Innovations that demand less expertise have proven to be adopted more easily (Wisdom et al., 2014).

Relevance The relevance of an innovation is assessed by the individual in two different aspects. First, the individual must believe the innovation is relevant for the receiver (Fleuren et al., 2014). Second, the relevance for the performance of the individual's work-related tasks and if the innovation improves, it affects the adoption decision (Greenhalgh et al., 2004).

Completeness & Correctness The innovation must be based on factual, correct knowledge (Fleuren et al., 2014). Additionally, the level completeness of the described activities of the innovation affects the adoption decision (Fleuren et al., 2014).

## Chapter summary

Build on the literature review, a theoretical framework (*figure 5*) was created, containing 41 determinants that could be adoption drivers or barriers in the adoption process of NEP at primary schools (*table 2*). Based on this theoretical framework, three questionnaires will be developed. They will be used to evaluate the adoption of Taste Lessons and EU-Schoolfruit. Additionally, one group of teachers evaluated the importance of the determinants to them for the adoption of NEPs in general. These results will provide insight into the current adoption of the programmes as well as the relevance of the determinants in the adoption process of NEPs at primary schools.

# Chapter 3 Define part 1

The aim of this chapter was to answer research question 1 and 2.

**RQ1.** Which determinants are important in the adoption process of nutrition education programmes at primary schools?

**RQ2.** To what extent are adoption determinants associated with the implementation dose of Taste Lessons, and implementation dose in turn with the effectiveness of Taste Lessons?

*SQ2.1. What are potential barriers for primary school teachers in the adoption process of Taste Lessons and EU-Schoolfruit?*

*SQ2.2. What is the association between the adoption and the implementation dose of the Taste Lessons?*

*SQ2.3. What is the association between the implementation dose of Taste Lessons and the intended programme outcomes nutritional knowledge and fruits and vegetable consumption?*

To answer the first research question teachers that did not use a NEP were asked to complete a questionnaire on the importance of the determinants for adoption of a NEP. This questionnaire was based on the theoretical framework. Based on the results of this questionnaire, a model for the adoption of NEP was created.

To answer the second research question, two questionnaires were designed to evaluate the adoption of Taste Lessons and EU-Schoolfruit. The results of these questionnaires were analysed. Further analyses were performed to see if an association between the score on adoption determinants and implementation dose of Taste Lessons exists. Moreover, the association between implementation dose and the effects of the Taste Lessons on children's nutrition knowledge and fruit and vegetable consumption was assessed.

Below the methodology of this chapter is described, followed by the results of the data analyses, and the chapter summary.

# Methods

## Study design and procedures

This thesis is part of a more extensive Dutch study which investigates (long-term) effects of EUS and TL on fruit and vegetable consumption and nutrition knowledge of children aged 7-12. This study is designed as a quasi-experimental pre-test/post-test design with three parallel arms (*figure 6*). There are two intervention groups (group 1: EUTL and group 2: EUS) and one control group (group 3). Group 1 and group 2 both received EUS. Group 1 additionally received TL.

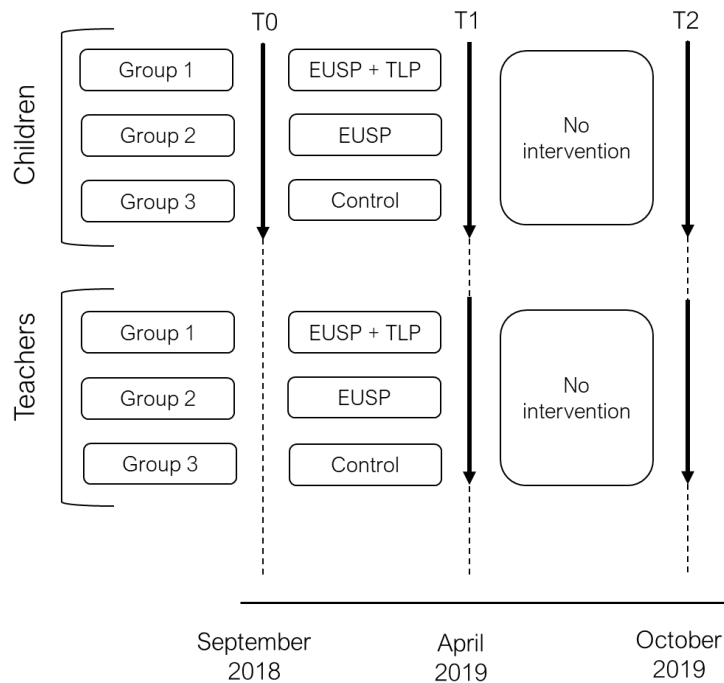


FIGURE 6 - EVALUATION STUDY DESIGN

The questionnaire for the children was pilot tested with children from grade 6 and 7 at two primary schools. After testing small adaptations were made to increase understandability and attractiveness for children. The children of all three groups received the same hard-copy questionnaire at T0, T1, and T2 (*appendix V*). Measurements were taken on weekdays, excluding Mondays. Either one or two researchers were present at the measurement moments to hand out the questionnaires and answer questions.

At T1, the teachers of all the groups had to fill out questionnaires about school policy, implementation and adoption of the programmes. At T2, an addition of this research was the new questionnaire for teachers on the adoption process of TL, EUS or NEP in general, tailored to their intervention group (*Appendix III and Appendix IV*).

## Ethical considerations

The parents of the children from the included schools received with a letter about the background, aim, and content of the study. Additionally, they had the possibility the refuse participation of their child. Fourteen children did not participate in the study. The Social Science Ethics Committee of the Wageningen University approved this study.

### Study population

A total of 1460 children aged 7 to 12 participated in this study (figure 7). At T0, the children were in grade 6 and 7. This age category was chosen because children between the age of seven and twelve should be able to read, write and complete a questionnaire (Guinard, 2000). Children from grade 8 were not included at the start of the study because they would leave school before T2. Children will be excluded from the analysis when less than 75% of the questionnaire is filled out, or when the total reported daily consumption of FV exceeded 1500 grams. The analytical sample consisted of 1392 children.

The teachers included in this study were the teachers from the three groups in the evaluation study. They received a hard-copy questionnaire at T1 on the schools' nutrition policy and the implementation of EUS and/or TL, fitting their treatment group. Twenty-two teachers from group 1 answered the questionnaire, twenty-three teachers from group 2, and sixteen of group 3. At T2, 22 teachers from group 1, 21 teachers from group 2, and 17 teachers in the control group filled out the questionnaire. Because the teachers in group 1 implemented both EUS and TL, they filled out the questionnaires on both programmes, having a total of 43 teachers answering the questionnaire on EUS.

The schools from 10 of the 12 Dutch provinces were included in the study. Schools were invited with a newsletter from EU-Schoolfruit or directly approached after consultation with the (Dutch) Municipal Health Service. These schools were invited to participate in group 1 or group 2. Schools had used Taste Lessons in the two years before the study or had the intention to do so, were placed in group 1. Schools that did not have any experience with Taste Lessons or had the intention to do so were places in group 2. The control schools were randomly selected and approached from a list of all primary school in the Netherlands (Dienst Uitvoering Onderwijs, 2019) or recommended by the Dutch Municipal Health Service. Only schools that had no intention to adopt a nutrition-related programme and did not use one in the prior two years were eligible to participate as a control school. A total of 37 schools were included, of which 15 participated in group 1, 12 in group 2 and 10 in group 3 (figure 7).

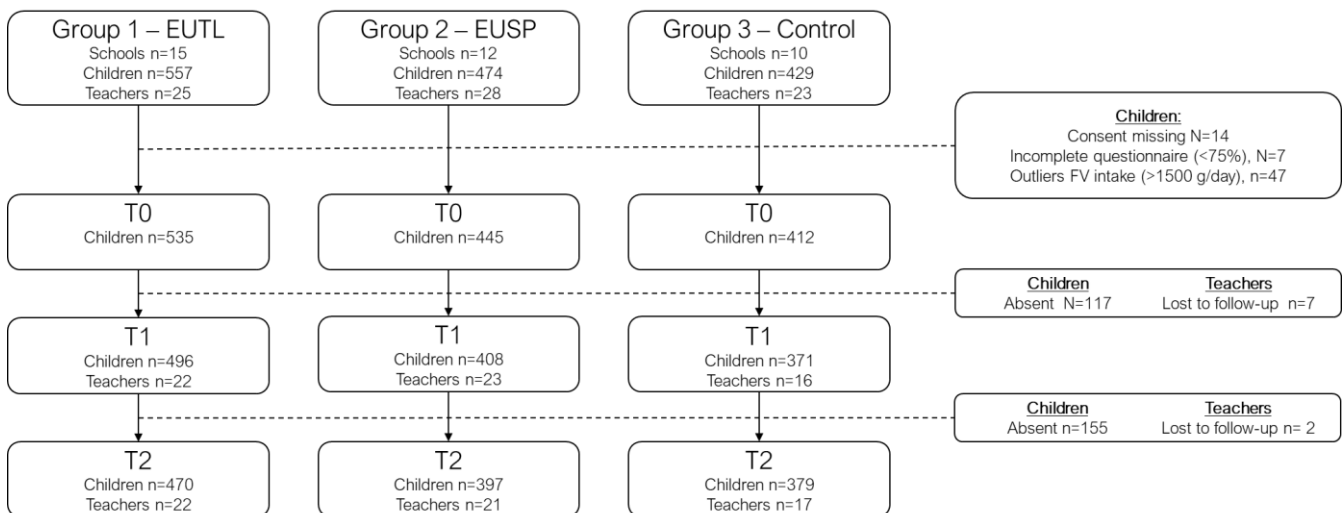


FIGURE 7 - SCHEMATIC OVERVIEW OF THE STUDY POPULATION

## Outcome measurements

### Socio-demographic characteristics

Questions on gender, age, and grade were included to describe the socio-demographic characteristics of the *children* (appendix V). The questionnaires for the *teachers* included questions on age, gender, years of experience in general, years of experience at the current school and the grade they teach (appendix III).

### Nutrition knowledge

The knowledge of *children* about nutrition was measured by 24 multiple choice questions based on Battjes-Fries, (2016) and Vereecken, De Pauw, Van Cauwenbergh, & Maes (2012). The questions covered the subject's healthy food choices, recommended portions, nutrient contents, the wheel of five, organic food, and senses.

### Fruit and vegetable consumption

The questionnaire for the *children* included a 24-hour recall based on the validated questionnaire of Haraldsdóttir et al. (2005). Children had to indicate the type and quantity of fruits and/or vegetables they ate the previous day (e.g. during the morning, afternoon, evening) in a pre-coded table (appendix V). Some common portion sizes were given indicate amounts (e.g. pieces, hands, or serving spoons). The reported portion sizes were converted to grams using the standard portion sizes by Donders-Engelen, van der Heijden & Hulshof (2003), which resulted in a continuous variable of fruit and vegetable consumption.

### Implementation dose

The actual implementation of TL was measured at T1 by a questionnaire for the *teachers* (Kramer, 2019). The teachers in group 1 were asked to perform five lessons, in the questionnaire, they were asked how many and which lessons and activities they did perform.

### Adoption determinants

In the questionnaires at (T2), 41 adoption determinants of TL, EUS and NEP, in general, were measured (table 4, appendix I). The theoretical framework was used to create the questionnaires. Adoption determinants of TL and EUS were assessed on four levels; the external context of the school, the school, the adopting teacher, and the programme. The control group received a questionnaire on the importance of the adoption determinants to be able to assess how both programmes scored on the most important determinants. A pre-test of the questionnaire was performed with two teachers and a fellow student after which some small adaptations were made for the final questionnaire.

*External level* Adoption determinants at the external level were measured by two questions on a 1 (totally disagree) – 5 (totally agree) Likert scale, based on M. A. H. Fleuren et al. (2014) and Trisha Greenhalgh et al. (2004).

*School level* At the school level, organizational size and reach were both measured with two open-ended questions based on Segaar, Willemsen, Bolman, & De Vries (2007). Change at the school that affects the use of the programme was measured by one question based on Fleuren et al. (2014). Having a coordinator to manage the execution of the programme was measured by one question based on Fleuren et al. (2014). Facilitation of discovery of new knowledge, interaction and sharing between colleagues, and inter-organizational collaboration were measured by one or two questions on a 1 (totally disagree) – 5 (totally agree) Likert scale based on Gold, Malhotra, & Segars (2001). The decision making process was assessed by three questions on a 1 (totally disagree) – 5 (totally agree) Likert

scale based on Segaar et al. (2007). Available expertise at the school to perform the programme, the availability of information about the programme, staff capacity, and the feedback culture regarding the execution of the programme were each measured by one question on a 1 (totally disagree) – 5 (totally agree) Likert scale based on Fleuren et al. (2014). Resources necessary for the programme were measured by three questions on a 1 (totally disagree) – 5 (totally agree) Likert scale based on Fleuren et al. (2014). The fit of the programme with the school's goals and priorities, and the balance between supporters and opponents of using the programme were both measured by one question on a 1 (totally disagree) – 5 (totally agree) Likert scale based on Greenhalgh et al., (2004). Having formal arrangements at the school for the use of the programme was measured by one question on a 1 (totally disagree) – 5 (totally agree) Likert scale based on Kramer (2019). Questions for the control group included the same determinants, described above, except for change at the school affecting implementation and having a coordinator. Teachers in the control group had to indicate the importance of the determinants on a 1 (totally disagree) – 5 (totally agree) Likert scale.

*Teacher level* At the teacher level outcome expectations and the importance of those outcomes was measured by four questions on a 1 (totally disagree) – 5 (totally agree) Likert scale based on Fleuren et al. (2014). The professional obligation of the teacher to perform the programme, support of colleagues, and the expectation of patient cooperation and satisfaction with the programme were measured with one question for each determinant on a 1 (totally disagree) – 5 (totally agree) Likert scale based on Fleuren et al. (2014). Motivation, skills, knowledge, meaning, self-efficacy, professional and organizational support, and the autonomy of the teacher to make the adoption decision were all measured by one question on a 1 (totally disagree) – 5 (totally agree) Likert scale based on the questionnaire used by Kramer (2019). The descriptive norm at the school was measured by one question based on Fleuren et al. (2014). The subjective norm of using the programme was measured by eight questions on a 1 (certainly not) – 5 (most certainly) Likert scale based on Fleuren et al. (2014). The degree of awareness on the contents of the programme was measured by one question with options ranging from 1 (I do not know the programme) – 4 (I know the programme, and I am fully aware of the contents) based on the questionnaire of Kramer (2019). Importance of the determinants mentioned above was measured in the questionnaire for the control group except for the adoption decision and expectations of an increase in knowledge and consumption.

*Programme level* At the programme level compatibility of the programme with the way the teachers work, the complexity of using the programme, relevance for the children, completeness, and correctness were all measured by one question on a 1 (totally disagree) – 5 (totally agree) Likert scale. Procedural clarity of the programme was measured by two questions on a 1 (totally disagree) – 5 (totally agree) Likert scale. All programme level questions were based on the suggestions for the instrumentality of Fleuren et al. (2014). Importance of the determinants mentioned above was measured in the questionnaire for the control group.

### Data analysis

After data collection, participating children were coded using the number of their school (1-50), grade (6 or 7), and name (1-100). The decryption of the codes is listed in a password protected Access document. All the quantitative and qualitative data was documented in Excel documents and stored at a secured drive.

The statistical analyses on both the children's and teachers' data were performed using the programme R version 3.6.1. First, socio-descriptive characteristics at baseline (T0) of the children and teachers were analysed using means and standard deviations of the continuous variables (e.g. age, years of experience) and frequencies of the categorical variables (e.g. gender, grade).

Means (SD) were calculated for the questions on adoption determinants. To provide a detailed insight into the distribution of the answers frequencies were analysed by combining both disagreeing options in one category and both agreeing options in the other category. Adoption determinants of EUS and TL were seen as a potential barrier when at least 10% of the respondents disagreed, and less than 60% agreed with the question. Adoption determinants scored higher than 60% by the teachers in the control group were marked as important for the adoption of NEPs.

To investigate the association between the adoption determinants and the actual implemented lessons, linear regression was performed, with the score on adoption determinants as the independent variable and the implementation dose as the dependent variable. No stratification or possible confounders were used because of the small sample size.

To analyse the association between the actual amount of lessons implemented and the change in nutritional knowledge, and fruit and vegetable consumption, a multi-level analysis was performed. The implementation dose was split into two categories (<3, ≥3). The implementation dose were included as the independent variable and change in knowledge and consumption as dependent variables. The multi-level analysis was performed to take school and grade effect into account. Model assumptions (e.g. linearity, normality, and homogeneity of the residuals) were checked. A p-value of 0.05 was considered as statistically significant, and a p-value of 0.1 was considered borderline significant.



## Results

### Socio-demographic characteristics

The demographic characteristics of the children and teachers are presented in table 3. Gender and age were equally distributed in the population of children. The EUTL group has the highest percentage of male teachers included, whereas the control group had the lowest. Teachers in EUS group had more experience in total and at their current school compared to the other groups. Experience at the current school was lowest in the control group.

TABLE 3 – SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE TEACHERS AND CHILDREN

	EUS	EUTL	Control
<b>Children</b>		<b>N=535</b>	
Age, years, mean $\pm$ SD	-	9.6 $\pm$ 0.7	-
Gender n (%)			
Male	-	273 (51.0)	-
Female	-	262 (49.0)	-
Grade, n (%)			
Grade 6	-	266 (49.7)	-
Grade 7	-	269 (50.3)	-
Total FV consumption, grams, mean $\pm$ SD	-	326 $\pm$ 255	-
Total knowledge, score, mean $\pm$ SD	-	2.92 $\pm$ 0.81	-
<b>Teachers</b>	<b>n=21</b>	<b>n=22</b>	<b>n=17</b>
Age, years, mean $\pm$ SD	42.0 $\pm$ 13.2	39.4 $\pm$ 12.4	36.76 $\pm$ 9.33
Gender n (%)			
Male	3 (14.3)	5 (22.7)	1 (5.9)
Female	18 (85.7)	17 (77.3)	16 (94.1)
Grade, n (%)			
Grade 7	12 (63.2)	15 (68.2)	10 (58.8)
Grade 8	7 (36.8)	7 (31.8)	7 (41.2)
Experience, years, mean $\pm$ SD	19.0 $\pm$ 3.0	14.4 $\pm$ 9.99	14.56 $\pm$ 9.60
Experience at current school, years, mean $\pm$ SD	14.2 $\pm$ 12.0	9.43 $\pm$ 8.86	7.16 $\pm$ 4.81

### ***Adoption determinants***

This analysis consists of three teachers groups; the first group includes teachers that have performed EU-Schoolfruit; they received a questionnaire on the adoption of this programme. The second group consists of teachers that have performed Taste Lessons; they received a questionnaire on the adoption of this programme. The third group includes teachers that did not use any school-based nutrition education programme or had the intention to do so. They received a questionnaire on the importance of the determinants for the adoption of a nutrition education programme in general.

Sixty of the 76 invited teachers filled out a questionnaire. The questionnaire about the adoption of EUS was completed by 43 teachers, and 22 teachers completed the questionnaire about the adoption of TL. Seventeen teachers completed the questionnaire in the control group (*table 4*). Analyses of the four levels have been performed. Mean scores and the percentage of teachers disagreeing or agreeing with the statements were calculated.

### ***External level***

The teachers indicated a norm to use EUS exists amongst schools. As for Taste Lessons, 54% of the teachers agreed that a norm exists to use it. However, only 29% of the teachers in the control group thought the norm to use a NEP in general amongst schools exist. All three study groups agreed that NEPs fit with the current national legislation and regulations.

### ***School-level***

Control schools were larger than intervention schools concerning numbers of children and staff. Almost all children (88%) at the schools were reached by EUS. Less than half of the children in the TL group were reached by the programme (40%). Most schools had a coordinator to execute EUS (85%), and fewer schools a coordinator for TL (71%).

In about half of the intervention schools, changes took place that positively affected the adoption of the programmes. In the other half, no changes took place that could have affected the adoption. All three groups agreed that their school facilitates the discovery of new knowledge.

Teachers that used EUS agreed that individual- and team-involvement in the decision-making process on using the programme was the case. The teachers in the TL group scored individual and team involvement as well as being asked for their opinion in the decision-making process lower compared to the EUS group (50.0%, 47.4% and 55.6% agreeing, respectively). These three determinants of the decision-making process were scored by the control group as important. Schools using a programme had enough available expertise to perform the program, which was also indicated as an important factor for adoption by the control group. The programmes fit with the schools' goals and priorities, on which the control group agreed it is an important factor for adoption. Both intervention groups agreed that their school had more proponents to opponents of using a NEP. The power balance was a less important factor, according to the control group (43% agreeing).

Enough staff was available to perform the programme according to both intervention groups. Teachers in the EUS group indicated they had sufficient time to perform the programme. In contrast, less than 60% of the teachers in the TL group agreed to this statement. Enough financial resources to perform the programme were not available for all teachers in intervention groups (52,6% and 38,9% agreeing). Both staff capacity and time availability are

important factors for adoption according to the control group. However, not all teachers in the control group agreed that financial resources are important for adoption (33% agreeing).

Both feedback giving and receiving regarding the use of the programmes did not take place at most schools in both groups. The possibility for feedback on the use of NEP was not as important to the control group (57% agreeing). Although an important factor for adoption, only half of the teachers in the TL group agreed that information about the programme was accessible at their school. Slightly more teachers in the EUS group agreed to this statement (62,5% agreeing). Teachers in the EUS group agreed their school has formal arrangements for using the programme. Less than a third of the teachers in the TL group agreed with this statement. Half of the teachers in the control group indicated that these formal arrangements are important.

In the schools of both intervention groups, an internal collaboration culture exist, on which 75% of the teachers in the control group agreed it is important for the use of a NEP. Collaboration with other schools regarding the execution of the programmes does not take place. None of the teachers in the control group thought this should take place. In the EUS group, 65% of the teachers indicated they collaborate with other organisations, compared to 55% of the teachers in the TL group. This type of collaboration was more important to the control group (59% agreeing).

### *Teacher level*

The professional obligation of teachers to use a nutrition education programme was not experienced by all teachers. Just 38% of the teachers in the TL group felt obligated, compared to 54% in the EUS group and 59% in the control group. Teachers in both intervention groups were motivated to perform the programme, which was an important determinant according to the control group. The teachers indicated they had the skills and knowledge necessary to perform the programmes, which resulted in the teachers feeling confident about using the programmes. Skills and knowledge are essential for the adoption of a NEP according to the control group (88% and 94% agreeing).

Overall, it is important to the teachers to improve fruit and vegetable consumption and nutrition knowledge in children, which is emphasised by the teachers attaching meaning to performing a NEP. Teachers in both intervention groups expect the programmes to increase children's nutrition knowledge as well as fruit and vegetable consumption.

Most teachers in both intervention groups indicated they do know the contents of the programme and studied it a bit (EUS; 55%, TL;38%). 82% of the control group is aware of the contents of NEPs, and 18% does not know a NEP at all. The teachers felt supported by colleagues and the principal with the use of the programmes, in contrast to being supported by professionals (EUS;33%, TL;35% agreeing). Being supported by fellow teachers and the principal with the execution of a programme was important to the control group. Only a third of the teachers in both intervention groups indicated they felt free deciding to use the programme. The cooperation and satisfaction of the children with the programme are important to the teachers in the control group. Teachers expect that children will cooperate and be satisfied with both EUS and TL.

The descriptive norm to use a NEP is the highest in the EUS group with 38% of the teachers indicating all teachers at their school use the programme, in contrast to 14% in the TL group.

Overall, teachers do not think parents and children expect them to use a NEP. In both intervention groups, the teachers thought that colleagues and the principal expect them to use the programme. Whereas 24% of the teachers in the control group thought the principal and colleagues expect them to use a NEP. Generally, the teachers indicated they take the opinion of colleagues on using a NEP into account. The opinion of the principal was taken into account by teachers in both intervention groups, contrary to the control group. Parents' opinion about using a NEP was taken into account by 55% of the EUS group, 32% of the TL group, and 47% of the control group. The majority of the EUS and control group indicated they take the opinion of the children into account (63% and 88% agreeing), as opposed to 48% of the TL group.

### *Innovation level*

Teachers in both intervention groups indicated the programmes are compatible with their way of teaching and relevant to the children. Both programmes were as easy to use according to 87% of the teachers. The complexity of using a NEP was scored by 100% of the control group as an important determinant for adoption. The description of the activities and clarity of the order of execution was clear for both programmes. Procedural clarity was a less important determinant for adoption to the control group compared to other programme related determinants (59% agreeing). It was important to the control group that a NEP is based on correct factual knowledge, as well as being complete. The majority of the teachers in the intervention groups agreed the programmes are complete and based on factual, correct knowledge.

TABLE 4 – MEAN SCORES ON ADOPTION DETERMINANTS AND % OF DISAGREEING AND AGREEING TEACHERS

Level (determinants)	EUS (n=43)			TL (n=22)			Control = 17		
	Mean±SD/ n (%)	Disagree <sup>1</sup> (%)	Agree <sup>2</sup> (%)	Mean±SD/ n (%)	Disagree <sup>1</sup> (%)	Agree <sup>2</sup> (%)	Mean±SD/ n (%)	Disagree <sup>1</sup> (%)	Agree <sup>2</sup> (%)
<b>External</b>									
<i>Inter-organizational norm-setting</i>	3,73±0,78	7,5%	67,5%	3.55±0.67	4,5%	54,5%	3,18±0,62	12%	29%
<i>Legislation and regulations</i>	3,89±0,66	2,7%	78,4%	3.85±0.49	0,0%	80,0%	3,71±0,67	0%	59%
<b>School</b>									
<i>Organisational size</i>									
Number of teachers	14,06±6,70			12.64±6.63			18,88± 5,05		
Number of support staff	5,21±3,31			4.97±3.11			5,471± 1,72		
<i>Reach</i>									
Total children at the school	194±91,37			190±87.8			245 ± 59,5		
Children reached by the programme	171±93,55			76±54.39					
<i>Coordination of the programme</i>									
Yes	34 (85,0)			10 (71.4)					
No	6 (15,0)			4 (28.6)					
<i>Unsettled organisation</i>									
Yes, positive	17 (43,6)			6 (42.9)					
Yes, negative	1 (2,6)			1 (7.1)					
No	21 (53,9)			7 (50.0)					
<i>Facilitation of discovery new knowledge</i>	3,63±1,03	12,5%	70,0%	3.95±0.60	0,0%	80,0%	4,00±0,79	6%	81%
<i>Decision-making process</i>									
Individual involvement	3,51±1,27	25,6%	66,7%	3.39±1.20	16,7%	50,0%	3,94±0,87	6%	71%
Team involvement	3,95±0,94	5,1%	79,5%	3.37±0.76	5,3%	47,4%	4,12±1,13	18%	76%
Asked for opinion	3,63±1,20	23,7%	68,4%	3.44±1.04	16,7%	55,6%	4,00±0,91	6%	71%
<i>Available expertise</i>	4,00±0,71	4,9%	85,4%	4.11±0.46	0,0%	94,7%	4,06±0,94	6%	71%
<i>Fit with goals and priorities</i>	4,15±0,70	2,5%	87,5%	4.05±0.52	0,0%	89,5%	4,24±0,81	0%	76%
<i>Power balance</i>	4,03±0,93	7,7%	82,1%	3.84±0.69	0,0%	68,4%	3,64±0,97	7%	43%
<i>Resources</i>									
Financial resources	3,47±0,86	10,5%	52,6%	3.39±0.85	11,1%	38,9%	3,08±0,86	17%	33%
Time available	3,68±0,72	7,3%	68,3%	3.63±0.76	5,3%	57,9%	3,93±0,96	7%	64%

Staff capacity	3,85±0,76	7,3%	78,0%	3.63±0.68	5,3%	63,2%	4,00±0,53	0%	86%
<i>Feedback</i>							3,71±0,88	7%	57%
Feedback Receiving	2,98±0,80	25,0%	15,0%	2.89±0.57	21,1%	10,5%			
Feedback Giving	3,37±0,83	12,2%	39,0%	3.26±0.73	10,5%	31,6%			
<i>Information accessibility</i>	3,68±0,86	10,0%	62,5%	3.67±1.03	11,1%	50,0%	4,06±0,75	0%	75%
<i>Formal arrangements about use of NEP</i>	3,58±0,90	12,5%	62,5%	3.29±0.85	11,8%	29,4%	3,47±1,02	21%	50%
<i>Collaboration culture</i>	3,85±1,09	12,2%	73,2%	3.95±1.02	9,5%	81,0%	3,94±0,64	6%	88%
<i>Inter-organisational relationships</i>									
Collaboration Schools	2,35±0,95	55,0%	7,5%	2.20±0.95	55,0%	5,0%	1,56±0,86	75%	0%
Collaboration Organisations	3,50±1,09	15,0%	65,0%	3.35±1.04	15,0%	55,0%	3,53±1,09	18%	59%
<b>Teacher</b>									
<i>Professional obligation</i>	3,61±1,16	12,2%	53,7%	3.29±1.19	19,0%	38,1%	3,35±0,97	29%	59%
<i>Motivation</i>	4,05±0,75	2,5%	87,5%	3.63±0.90	15,8%	68,4%	4,18±0,62	0%	88%
<i>Skills</i>	4,15±0,74	2,5%	92,5%	4.11±0.47	0,0%	94,4%	4,18±0,78	6%	88%
<i>Knowledge</i>	4,13±0,76	2,5%	90,0%	3.94±0.64	5,6%	88,9%	4,29±0,57	0%	94%
<i>Meaning</i>	4,08±0,76	2,5%	87,5%	3.67±0.84	11,1%	66,7%	4,29±0,67	0%	88%
<i>Self-efficacy</i>	4,10±0,78	2,5%	87,5%	3.94±0.80	5,6%	77,8%	3,35±0,97	29%	59%
<i>Awareness</i>									
Does not know the program	2 (4,8)			3 (14,0)			3 (17,6)		
Does know but did not study the content	8 (19,0)			5 (24,0)			5 (29,4)		
Does know and studied the content a bit	23 (54,8)			8 (38,0)			9 (52,9)		
Does know and studied the content	9 (21,4)			5(24,0)			0 (0,0)		
<i>Support</i>									
Social support	3,98±0,86	5,0%	87,5%	3.83±0.71	0,0%	66,7%	4,18±0,71	0%	82%
Professional support	3,18±0,88	15,4%	33,3%	3.35±0.70	5,9%	35,3%	3,65±0,76	0%	47%
Organisational support	3,95±0,78	2,5%	80,0%	3.95±0.62	0,0%	78,9%	4,06±0,73	0%	76%
<i>The adoption decision</i>	3,03±1,30	36,8%	34,2%	3.06±1.12	31,3%	31,3%			
<i>The child</i>									
Patient cooperation	4,18±0,78	2,5%	90,0%	4.00±0.82	5,3%	78,9%	4,35±0,48	0%	100%
Patient satisfaction	4,00±0,68	2,5%	82,5%	3.89±0.76	5,6%	77,8%	4,12±0,47	0%	94%
<i>Outcome expectations</i>									

Increasing knowledge	3,98±0,52	0,0%	85,4%	4.00±0.65	5,0%	90,0%			
Increasing consumption	3,95±0,59	0,0%	80,5%	3.74±0.73	5,3%	68,4%			
Importance knowledge	4,27±0,87	4,9%	90,2%	4.14±0.73	4,8%	90,5%	4,41±0,49	0%	100%
Importance consumption	4,24±0,86	4,9%	90,2%	4.10±0.77	4,8%	85,7%	4,41±0,60	0%	94%
<i>Descriptive norm – how many teachers use a NEP</i>									
No teacher	0 (0,0)			1 (5.3)			1 (6,3)		
Almost no teacher	2 (5,0)			3 (15.8)			6 (37,5)		
A minority	0 (0,0)			6 (31.6)			3 (18,8)		
Half	2 (5,0)			0 (0.0)			0 (0,0)		
A majority	7 (17,5)			5 (26.3)			0 (0,0)		
Almost all teachers	14 (35,0)			4 (21.1)			1 (6,3)		
All teachers	15 (37,5)			3 (13.6)			5 (31,3)		
<i>Subjective norm</i>									
Expectation parents	3,43±0,68	2,5%	37,5%	3.05±0.62	15,8%	21,1%	3,47±0,61	0%	41%
Expectation principal	4,17±0,70	0,0%	82,9%	3.84±0.60	0,0%	73,7%	3,06±0,64	18%	24%
Expectation children	3,48±0,88	10,0%	42,5%	3.16±0.83	21,1%	31,6%	2,76±0,42	24%	0%
Expectation colleagues	4,10±0,71	0,0%	80,0%	3.68±0.67	0,0%	57,9%	3,12±0,76	18%	24%
Account parents	3,58±0,81	5,0%	55,0%	3.21±0.85	10,5%	31,6%	3,47±0,70	6%	47%
Account principal	4,10±0,55	0,0%	90,0%	4.00±0.47	0,0%	89,5%	3,47±1,04	12%	47%
Account children	3,63±1,08	15,0%	62,5%	3.47±1.12	15,8%	47,4%	3,94±0,64	6%	88%
Account colleagues	3,98±0,62	0,0%	80,0%	3.95±0.62	0,0%	78,9%	3,71±0,75	6%	65%
<b>Program</b>									
<i>Compatibility with way of teaching</i>	4,00±0,58	0,0%	83,8%	3.93±0.70	0,0%	73,3%	4,24±0,73	6%	94%
<i>Complexity of using the NEP</i>	3,95±0,57	2,7%	86,5%	3.93±0.46	0,0%	86,7%	4,59±0,49	0%	100%
<i>Relevance to the children</i>	4,08±0,49	0,0%	91,9%	3.87±0.64	0,0%	73,3%	4,29±0,57	0%	94%
<i>Procedural clarity</i>									
Description of the activities	3,83±0,70	2,8%	80,6%	3.93±0.59	0,0%	80,0%	3,76±0,94	12%	65%
Order of implementation	3,78±0,76	2,8%	72,2%	3.93±0.59	0,0%	80,0%	3,53±1,09	18%	59%
<i>Completeness of the NEP</i>	3,81±0,75	2,8%	75,0%	3.73±0.59	0,0%	66,7%	4,00±1,03	12%	71%
<i>Correctness of the NEP</i>	3,78±0,75	2,7%	73,0%	3.87±0.64	0,0%	73,3%	4,35±0,68	0%	88%

1. Likert scale 1 (totally disagree) and 2 (disagree) combined

2. Likert scale 4 (agree) and 5 (agree) combined

## Associations

### *The association of adoption determinants with implementation dose*

The association of the adoption determinants and the actual number of implemented Taste Lessons (e.g. implementation dose) was assessed (Table 5). Of the adoption determinant, significantly positive association were found between implementation dose and the awareness of the teachers about the contents of the programme ( $p < 0.001$ ), and expectation of the children ( $p < 0.05$ ). The support of professionals was significantly negatively associated with implementation dose ( $p < 0.05$ ). Borderline significant positive associations ( $p < 0.1$ ) were found between implementation dose and the number of support staff at the school, all other teachers using the programme, taking the opinion of the children about using the programme into account, and the teachers agreeing that TL is based on factual, correct knowledge.

TABLE 5 - ASSOCIATIONS BETWEEN ADOPTION DETERMINANTS AND IMPLEMENTATION DOSE

Determinant	$\beta^a$ 95% CI
<b>External</b>	
<i>Inter-organizational norm-setting</i>	0.67 [-0.57;1.90]
<i>Legislation and regulations</i>	0.19 [-1.84;2.22]
<b>School</b>	
<i>Organisational size</i>	
Teachers	-0.02 [-0.12;0.08]
Support staff	0.22* [-0.03;0.47]
<i>Reach</i>	
Potential	-0.004 [-0.01;0.01]
Reached	0.004 [-0.01;0.02]
<i>Coordination</i>	-0.17 [-1.43;1.09]
<i>Unsettled organisation</i>	0.12 [-1.10;1.34]
<i>Absorptive capacity for new knowledge</i>	-0.69 [-2.63;1.26]
<i>Decision-making process</i>	
Individual involvement	0.37 [-0.77;1.50]
Team involvement	-0.21 [-1.57;1.14]
Asked for opinion	-0.43 [-1.57;1.14]
<i>Available expertise</i>	0.06 [-3.55;3.66]
<i>Receptive context for change</i>	0.62 [-1.98;3.22]
<i>Power balance</i>	-0.65 [-2.35;1.04]
<i>Resources</i>	
Financial resources	-0.69 [-1.96;0.57]
Time available	0.96 [-0.30;2.22]
Staff capacity	-0.84 [-2.13;0.45]
<i>Feedback</i>	
Feedback Receiving	0.88 [-0.50;2.27]
Feedback Giving	-0.17 [-1.48;1.14]
<i>Information accessibility</i>	0.71 [-0.44;1.85]



<i>Formal ratification by management</i>	0.07 [-1.34;1.48]
<i>Collaboration culture</i>	0.36 [-0.83;1.55]
<i>Inter-organisational relationships</i>	
Collaboration Schools	0.93 [-0.33;2.18]
Collaboration Organisations	-0.70 [-1.72;0.31]
<hr/>	
<b>Teacher</b>	
<hr/>	
<i>Professional obligation</i>	0.71 [-0.26;1.69]
<i>Motivation</i>	0.46 [-0.54;1.45]
<i>Skills</i>	2.47 [-0.63;5.57]
<i>Knowledge</i>	0.22 [-1.31;1.76]
<i>Meaning</i>	0.63 [-0.51;1.77]
<i>Self-efficacy</i>	0.12 [-1.26;1.50]
<i>Awareness</i>	
Does know but did not study the content	-0.33 [-2.18;1.52]
Does know and studied the content a bit	0.29 [-1.42;2.01]
Does know and studied the content	2.67*** [0.82;4.52]
<i>Support</i>	
Social support	-1.00 [-2.55;0.55]
Professional support	-1.53** [-2.69;-0.37]
Organisational support	-1.32 [-3.08;0.45]
<i>The adoption decision</i>	-0.10 [-3.08;0.45]
<i>The child</i>	
Patient cooperation	0.36[-1.04;1.76]
Patient satisfaction	0.33 [-1.12;1.77]
<i>Outcome expectations</i>	
Increasing knowledge	0.85 [-0.76;2.45]
Increasing consumption	0.71 [-0.54;1.95]
Importance Knowledge	-0.44 [-2.04;1.17]
Importance Consumption	3.105e-15 [-1.51;1.51]
<i>Descriptive norm</i>	
Almost no teacher	2.27e+00 [1.15;6.48]
A minority	1.20e+00 [-2.32;4.82]
Half	2.20e+00 [-1.42;5.82]
A majority	1.50e+00 [-2.20;5.10]
Almost all teachers	4.00e+00* [-0.05;8.05]
All teachers	
<i>Subjective norm</i>	
Expectation Parents	-0.15 [-1.48;1.18]
Expectation principal	-1.01 [-2.77;0.74]
Expectation children	1.01** [0.02;2.00]

Expectation colleagues	-0.56 [-2.16;1.05]
Account parents	-0.31 [-1.61;0.99]
Account Principal	-1.62 [-4.10;0.87]
Account children	0.96* [-0.03;1.95]
Account colleagues	-1.20 [-3.08;0.68]
<b>Innovation</b>	
<i>Compatibility</i>	0.39 [-1.51;2.28]
<i>Complexity</i>	0.62 [-1.84;3.07]
<i>Relevance</i>	1.06 [-0.73;2.87]
<i>Procedural clarity</i>	
Activities	1.08 [-0.92;3.09]
Order	0.25 [-1.85;2.35]
<i>Completeness</i>	0.80 [-0.92;2.52]
<i>Correctness</i>	1.41* [-0.30;3.12]

a.  $\beta$  indicates the association between the implementation dose (0-5) and the score on adoption determinants  
\* $p < 0.10$ , \*\* $P < 0.05$ , \*\*\* $P < 0.001$

### **Association implementation dose with programme outcomes**

The mean nutritional knowledge and fruit and vegetable consumption of the children in the EUTL group are presented for the two lessons categories over time in table 6. At baseline, mean knowledge and consumption was similar in both categories. Implementation dose was positively associated with a change in nutritional knowledge. Children who received three or more lessons had a stronger increase in nutritional knowledge compared to children who receive less than three lessons at T1 ( $\beta = 0.14$ ,  $p < 0.10$ ), and at T2 ( $\beta = 0.15$ ,  $p < 0.05$ ). No significant associations were observed between implementation dose and the change in fruit and vegetable consumption.

**TABLE 6 - RESULTS FROM MULTI-LEVEL REGRESSION ANALYSES FOR SHORT- AND LONG-TERM IMPLEMENTATION DOSE EFFECT ON TOTAL NUTRITIONAL KNOWLEDGE (N=535) AND FRUIT AND VEGETABLE CONSUMPTION (N=493)**

	N	Total			Change	T0-T1	T0-T2	
		Mean [95% CI]				$\beta$ [95%CI] <sup>b</sup>	Change	$\beta$ [95%CI] <sup>b</sup>
Nutritional knowledge								
		T0	T1	T2			T0	T1
<3 lessons	325	2.95 [2.76;3.13]	3.15 [2.96;3.33]	3.27 [3.07;3.46]	0.20	ref	0.32	ref
$\geq 3$ lessons	210	2.89 [2.68;3.09]	3.23 [3.02;3.43]	3.36 [3.15;3.57]	0.34	0.14 [-0.01; 0.28]*	0.47	0.15 [0.01;0.30]**
Fruit and vegetable consumption								
		T0	T1	T2			T0	T1
<3 lessons	309	323.1 [287; 359]	348.3 [312;384]	288.5 [252;325]	25.2	ref	-34.6	ref
$\geq 3$ lessons	184	333.0 [289;378]	400.7 [354;448]	322.5 [274;371]	67.7	42.5 [-21;106]	-10.5	24.1 [-40 ; 89]

a. analyses are adjusted for children's age and gender at baseline

b.  $\beta$  indicates the difference in nutritional knowledge over time in the  $\geq 3$  group compared to the difference over time in the <3 lessons group

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.001$

## The adoption model for NEPs at primary schools

The theoretical framework created in Chapter 2 was adapted based on the results of the questionnaire on the importance of the adoption determinants. Adoption determinants of which 60% or more teachers in the NEP group scored it as important, were added to the model. Further insights, from the data, resulted in additional determinants to add to the model (e.g. the determinants that were not scored on a Likert scale) (figure 8).

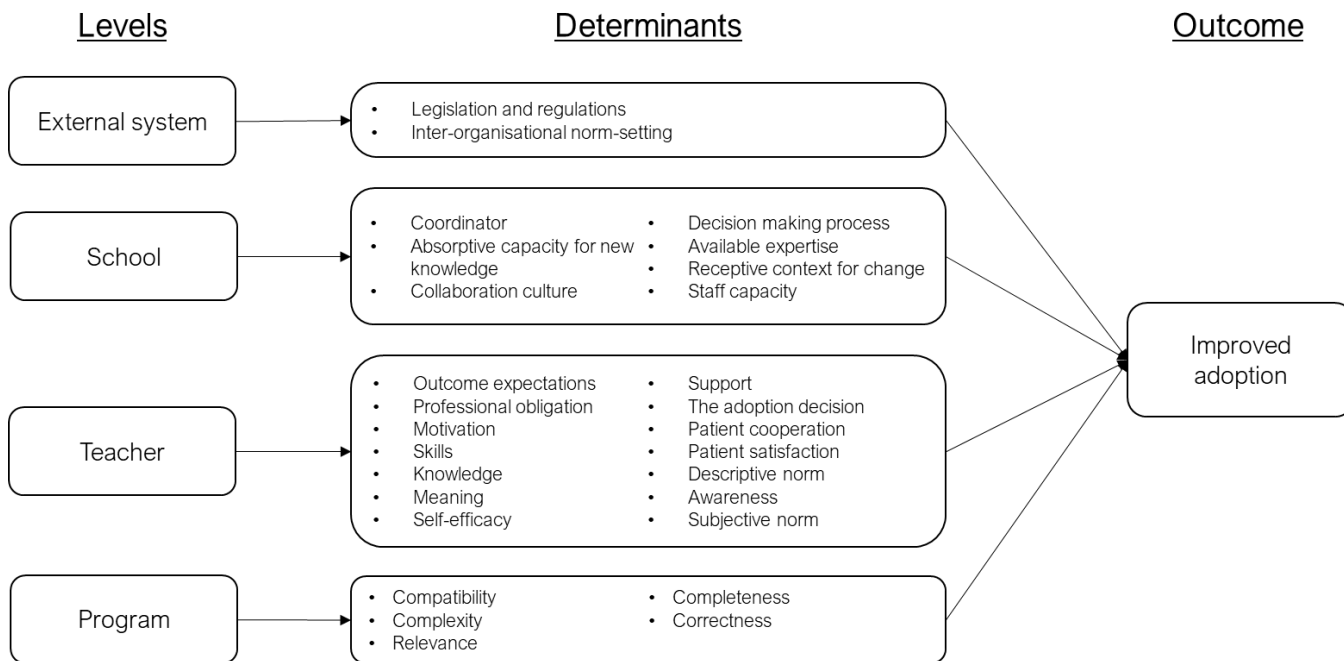


FIGURE 8 - MODEL FOR THE ADOPTION OF NEPs AT PRIMARY SCHOOLS

## Chapter summary

The evaluation of TL and EUS showed that several adoption determinants are potential barriers in the adoption of the programmes. Some associations between the adoption determinants with the implementation dose of the TL, were found. These associations suggest the adoption determinants are important for the implementation of the program, positive as well as negative. A significant result has been found for the effect of implementation dose on nutritional knowledge. This implies that performing more lessons has a positive effect on the increase in nutrition knowledge in children. The analyses on the association between implementation dose and increase in FV consumption did not result in a significant difference between the two implementation dose categories. FV consumption increased in both groups between T0 and T1, with the highest increase in the  $\geq 3$  category, and had an overall decrease (between T0 and T2) at follow-up, with the smallest decrease in the  $\geq 3$  category. These results suggest that implementing TL could affect FV consumption. Teachers in the control group scored the importance of the determinants for adoption of NEPs in general. This resulted in an adoption model specific for the adoption of NEPs at primary schools.

To support the adoption of TL, more in depth insight into the adoption of TL is needed, in addition to the insights from these quantitative analyses. This will help to turn the adoption barriers from theory into practice. In the next chapter, qualitative research will be performed to gain insight into the needs and priorities of Taste Lessons' key stakeholders regarding the adoption phase.

# Chapter 4 Define part 2

In the first part of the defining phase, quantitative research has been conducted to collect information regarding the adoption and implementation of TL, EUS, and NEP in general. To gain more in-depth insight into the adoption of TL and how to support it, additional research was needed. In this second part of the defining phase, qualitative research will be performed.

Key-stakeholders were included in the research to collect information from practice, and possibilities for functionalities of the tool. Various methods exist to make decisions based on expert opinions, including brainstorming, nominal group technique, multi-voting, and the Delphi method. In this research, the Delphi method is chosen as most suitable for several reasons, first of all, because of the efficiency of the method to collect information and set priorities (Turoff, 1970). Additionally, in this research, a diversity of stakeholders is involved, and this method prevents inequalities by anonymizing the responses. Moreover, due to practical limitations caused by the corona crises and time available, this was the most obvious method. By gaining these insights, the design brief for the design phase of this thesis can be formulated. In this phase, a tool will be designed that specifically aims to support the adoption of TL.

Below the methods and results from the Delphi study are described.

## Methods

The Delphi study in this research consisted of six different steps, of which four steps were carried out by the researcher and two rounds with the participants. Due to time limitations, more rounds were not possible. Several methods were used to conduct the Delphi study (*figure 9*).

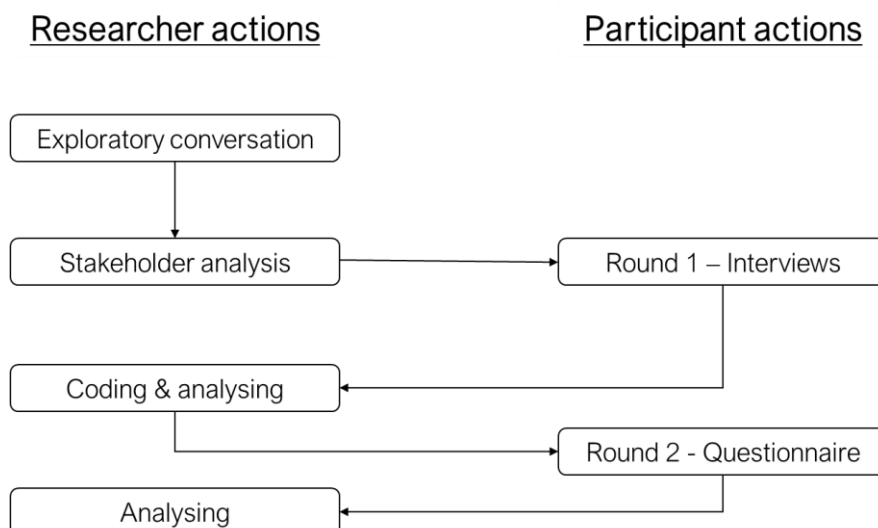


FIGURE 9 - DESIGN OF THE DELPHI STUDY

### Stakeholder analysis

The stakeholder analysis was performed to create the panel for the Delphi study. First, to identify all stakeholder groups, an exploratory conversation with TL coordinator was held. An exploratory conversation is contrary to a semi-structured or structured interview, unstructured and often not recorded. Afterwards, the groups were categorized according to their influence and level of involvement with the programmes. Stakeholder groups were included in the panel as key-stakeholders depending on their level of influence and involvement on the adoption and implementation of TL.

Based on the stakeholder analysis, the participants for the panel had to be invited. The intermediaries included in the panel, had to have experience with the implementation programme. On the other hand, this was not an inclusion criterion for the teachers or principal because collecting the needs of non-users was deemed relevant as well. Teachers that used the programme were included for their experience with the programme and their insights in the difficulties.

A snowballing sampling technique was used to reach potential panel members. Using this method, participants of a study are found by reaching out to potential relevant participants for the study, and asking them for a referral to other relevant participants. The exploratory research, resulted in several names of potentially relevant stakeholders. They have been contacted, which results in referrals to the most relevant people for participation in the panel. Additionally, teachers that participated in the first part of this research, who had indicated they did want to participate in follow-up research, were contacted,

### Round 1 – The Interviews

The key-stakeholders were invited through email to participate in the expert panel. Semi-structured interviews were conducted to gather opinions of the expert panel on the current adoption and implementation of TL and ways they think it could be supported (Bryman, 2012). This method was chosen to collect in-depth, qualitative information about the topic that is relatively similar between interviewees. An unstructured interview would result in a large variety of answers and discussed topic between the different panel member, on the other hand, a more structured interview does not give the interviewee the freedom to explore the topic and provide in-depth information (Bryman, 2012).

### Coding

To analyse the interviews and create a survey, they were first transcribed and then coded using ATLAS.ti. Both open- and axial-coding were used for the analysis (Bryman, 2012). The theoretical framework (*Chapter 2*) served as a guide for coding of the interviews. The open coding consisted of two steps. The first step was to get an initial insight into the data. Words and parts of sentences were marked as codes when they were related to either the functionalities of the tool (e.g. target group, goal, contents, form, implementation) or the adoption of the programme. During this step, as many as possible codes were generated (*appendix IIX*). In the following, step overlapping codes were grouped into one code (*appendix IX*). Generally, infrequently mentioned codes are dropped during this stage, however, in this case, all codes were kept for the questionnaire which is a recommendation for a Delphi study (Hasson, Keeney, & McKenna, 2000). Following the open coding, axial coding was performed. Clusters of the codes were created to reduce the number of separate codes. Subsequently, categorisation of the clusters took place (*appendix X*). The coding and analysis were validated in a conversation with a science communication expert (*Appendix XI*).

### Round 2 – Survey

Based on the design brief a survey was designed (*appendix VII*). The goal of this round was to gain insight into the priorities of the key stakeholders regarding the adoption and implementation process. The panel received the survey by phone. The survey covered five different aspects that related to the tool, the target group, goal, supply, form, and content, with each aspect including several items. The panel had to score each item on a 5-point scale indicating the importance of the item to them (e.g. 1 – not important at all, 5 – very important). Mean scores and standard deviation were calculated for each item. Based on these results, the highest-scoring item of the first four aspects of the tool were taken up in the design brief. The four highest-scoring items in the last aspect of the tool, contents, were taken up in the design brief.

# Results

## Stakeholder analysis

A stakeholder analysis was performed to create the panel for the Delphi study. During the exploratory conversation with TL coordinator, all the different stakeholders of TL were discussed. In figure 10 the overview of the analysis is provided. The internal and external stakeholders with a direct influence on the adoption and implementation of the programmes are listed as the key stakeholders. Below a short description is provided of each of the key stakeholders as well as the selection procedure of the panel members.








Stakeholders	Primary (direct influence in the project adoption and implementation)	Secondary (indirect influence on project adoption and implementation)
<b>Internal</b> (involved with the project from the organisation)	 Teachers  Principals	 Children & Parents
<b>External</b> (involved with the project from an external party)		
<b>Interface</b> (not involved with the project, but has a legit interest)		

FIGURE 10 - STAKEHOLDERANALYSIS

### Description of the key-stakeholders

*Teachers*, The teachers are the most important stakeholders in the adoption and implementation process of TL. They can decide to use the programme in their classroom, and when they do, they have to implement it. Although the teachers can ask chefs, volunteers or colleagues to help to implement the program, the adoption decision is theirs.

*Principals* As EUS is a programme for the whole school, the principal has to decide to adopt and implement the programme. Additionally, regarding TL, the principal also plays a role in the adoption process as resources are needed for implementation.

*Nature and environment education (Natuur en Milieu Educatie, NME)* The NME is carried out by several local and some regional or national organisations. These organisations design education programmes regarding nature and the environment in the nearby surroundings of children. Additionally, they support teachers in executing these programmes, as well as schools in becoming more sustainable. There are several topics of interest which are; energy, nature and biodiversity, raw materials and circular economy, nutrition, water and climate adaptation, and the social development goals. NME is one of the providers of Taste Lessons Kit and also works on the implementation of the programme in schools.

*Jongeren op gezond gewicht (JOGG)* JOGG is a national foundation that aims to create a society for children and adolescents to learn, live, work, and enjoy themselves in an environment which has embraced a healthy lifestyle. They collaborate with municipalities, nationwide partners and professionals. TL is one of the health programmes for children JOGG promotes. The JOGG advisor plays a role in the adoption process of the programmes, but also in helping the school to embed the programmes in their policy.

*School for Health* The school for health is a government subsidised programme for schools to help them with a healthy lifestyle. They advise schools on several health-related topics, including nutrition. The four pillars of their approach are; education, recognizing, school environment, and policy. They state that when working on a specific theme, all these pillars should be addressed for the best possible results. Both TL and EUS are acknowledged by the School for Health as effective programmes for primary schools.

*TL programme coordinator* The Wageningen University and Research has a support point for both Taste Lessons programme and the EU-Schoolfruit programme. The support point works together with several other organizations, like the 'Voedseleeducatie Platform' and the government programme 'Jong Leren Eten', on nutrition education. They are the main responsible for the management of the programmes. They perform research and develop material for both programmes.

*GGD* The GGD is a municipal health service which is a public health organization. Some tasks they have to perform by law, like youth health care (Child health clinic and school doctor), environmental medicine, infectious disease control, population screening and health education. Additionally, some GGD's perform tasks specific for their municipality. These tasks include forensic medicine, police healthcare in reception centres for asylum seekers, and social-medical advising.

### **Selection of the panel**

Four teachers that participated in the evaluation study were invited of which three accepted. Of this teachers two had some experience with TL of which one is a school coordinator as well. One additional teacher without experience with TL was invited by referral. Three principals have been invited of which one principal, without experience with TL, accepted. A programme manager from JOGG, an employee of a GGD and an employee of a NME, all with experience, also participated. They were all found due to referrals. The programme manager of TL accepted the invitation to participate. In total the panel consisted of nine members. An anonymized overview of the participants can be found in *appendix VI*.

### **Coding**

The nine conducted interviews were transcribed and then coded to gain insight into the information provided by the interviewees. After the first open-coding round 307 codes, related to the tool and adoption determinants, were created (*appendix IIX*). In second round of open-coding the codes were grouped which resulted in 22 code groups (*appendix IX*), an example of two code groups can be found in figure 11. After the axial coding, 7 clusters of codes were left (*appendix X*), an example of a cluster can be found in figure 12. During the validation of the coding some adaptations were made. The categories were reduced to 5 different categories (*appendix XI*). Additionally, some changes were made to the connections to the codes.



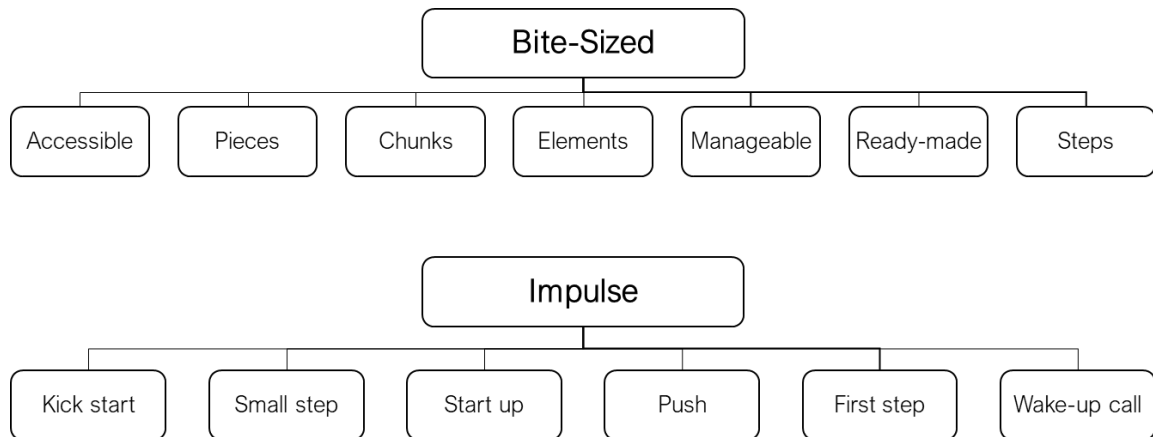


FIGURE 11 - EXAMPLE CODE GROUPS

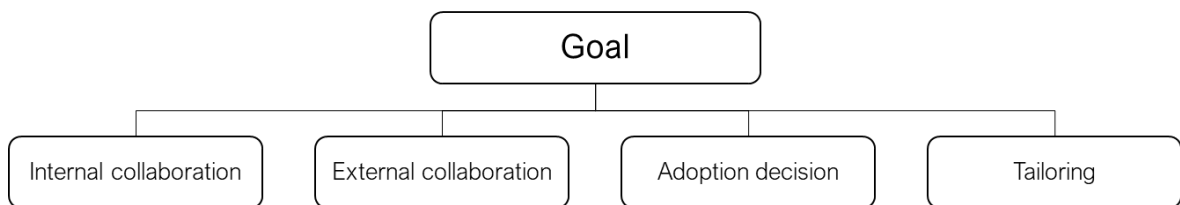


FIGURE 12 - EXAMPLE CODE CATEGORY

### ***Round 1 – The Interviews***

The results of the interviews provided in-depth insights into the adoption and implementation of TL specifically and of school programmes in general. Because of the semi-structured method used for the interviews, some aspects that were discussed were not relevant for the aim of this research. These parts were left out of the study. An overview of the relevant topics discussed in the interviews are described below structured according to the clusters created during the coding. The insights of the interviews regarding the tool, were used to create a survey to set priorities for the design of the tool.

## The target group

From the interviews a list of potential target groups was created which included parents, intermediaries, principals, and teachers. The teacher target group was divided into two groups; early adopters and followers. Some interviewees emphasized on the difference between the two groups. Especially for the teacher groups many needs and ways to approach them were mentioned. For the other groups this input was minimal. With no needs or approaches mentioned for the parents so this group will not be discussed below.

Easy adopters are the teachers that adopt the programme readily. However, they do have needs. According to the panel members this group has a personal interest in a healthy lifestyle, so using a NEP fits with what they perceive as being important. This group is very intrinsically motivated. A reason to focus on this target group was the fact that it could have a knock-on effect to other teachers and schools. Opposite, a reason not to focus on this group is the fact that they already adopt the programme readily so they do not need more attention.

Followers are teachers who need more time to decide to adopt a new programme and implement it. According to P1 they might also be the ones that sustain using the programme. Multiple interviewees mentioned this group as the most important because of its size. They referred to the bell-shaped model of Rogers, (2002) and compared the followers to the early and late majority in the model.

Contrary to the early adopters, this group of teachers need more effort to get them to adopt the programme. The needs of this group mentioned during the interviews can be divided into three factors; ownership, fit and collaboration.

This group of teachers want ownership on how they perform the programme according to the panel members. A potential way of approaching them is by giving them say and freedom in the performance of the programme. Creating the feeling that they work together with the intermediary providing the programme results in increased involvement.

*P8; "The teachers want to be involved, and be taken seriously. If they can think along, things work"*

All panel members mentioned the importance of fit of the program, which has three levels. The first level is the fit with the school. The programme must match with the mission, vision, ambition and needs of a school. The location of the school can affect the needs, for example schools in neighbourhoods with a low social economic status (SES) have others needs compared to schools in a high SES neighbourhood.

*P3; " Especially for low SES neighbourhoods it's important to offer things at a basis level."*

The second level is the fit within the school's curriculum. With the curriculum being full already a proper way to implement the programme needs to be found. The panel members made the distinction between performing TL as a project, for example one week, or including it in the existing lessons (e.g. making a cross-over between for example, biology and a TL) or the in the time schools can fill in themselves. The last level is the level of the children. Some participants emphasized that differentiation should be made within the programme to meet the child's needs and level.

Besides fit within the program, collaboration was an often mentioned topic. Collaboration with peers was most emphasized as being important. When teachers collaborate they can provide feedback to each other, support each other, and share knowledge. Collaboration can also take place outside of the school's environment, for example with school gardens or community centres. External guest lecturers could also come in to perform the lessons. They positively perceived by teachers, however, intermediaries are a bit reluctant towards them.

*P3: "when a student comes, they (e.g. teachers) do not connect intrinsically, or emotionally, with the subject matter."*

Methods mentioned by the panel members to approach the followers include experiencing, taking them along, and giving an impulse. Experiencing the programme could be done by the teacher watching another teacher perform a lesson, so he or she can see how it works. Other followers want to be taken along with the majority of the school or even country performing the programme. An example mentioned by P6 would be a national week for nutrition education so teachers do not have to think about it too much themselves. Giving an impulse was mentioned by many panel members. They also called it a kick-start or wake-up call. Accessibility of this step is very important, and it should be an easy step to take.

Frames that can be used to get the followers to adopt the programme mentioned during the interviews are; convincing, enthuse, seducing, and making them aware of the need for nutrition education. Also the emphasis can be on the norm among primary school is to use nutrition education, and more specifically TL being used the most.

Intermediaries are people that go to schools and try to make them adopt and implement programmes. These people work at municipalities or other, mostly, governmental organisations such as JOGG, School for Health, and NME's. Needs of this group mentioned by the participants included both tools to help them with convincing the schools to perform TL and communication materials they could give to schools or other places that could perform TL.

Principals are often involved in the decision-making process of TL. Because there already is much pressure on schools and they are very busy, P12 mentioned that a new way of approaching them should be designed. All the regular communication channels are congested, and it is hard to reach the principals. The principals need a quick overview of what the programme is, especially its effectiveness is important.

## **Goals**

The goals for the tool mentioned by the panel members could be divided into five different goals. The first goal is internal collaboration between teachers. The second goal is external collaboration with either other schools or other organisations like school gardens or community centres. Several levels of collaboration between schools were mentioned; neighbourhood, municipality, and national. Especially the national level will allow schools to collaborate with similar schools. The third goal is the tailoring of the programme. Many panel members mentioned that the current programme often does not fit with a school's needs. The fourth goal is the adoption decision of the teachers. The fifth goal is to help the teachers to perform the programme.

## The tool

The panel members mentioned several aspects regarding the tool; how the user should be approached, the place where the tool could be supplied, the form of the tool, and the contents of the tool.

*The approaching* of the potential users of the tool can be done via various channels. The panellists mentioned calling, using e-mail, or using an ambassador of the programme to pay visits.

*The supplying* of the tool can be done at various activities. Four different activities were mentioned where the tool could be used; events like info markets and fairs, during an external or internal training, or during a national campaign.

*The form* of the tool could either be digital, like a website or online forum or analogues with printed materials.

*The contents* of the tool consist of many different topics. Panel members mentioned that although teaching skills are most important to perform TL's, it would be nice to get some basic knowledge regarding the topics of TL. The scientific basis of the programme was also mentioned several times as being very important for teachers. It would give them a reason to adopt the programme. This information could be provided in the form of a factsheet. Examples of best-practices, for inspiration or tips to use the programme would be appreciated by the teachers as well as potentially supporting the adoption and implementation of the programme. The panellists additionally thought that a user manual of the program, checklist for supplies, tools to perform the program, and e-learning would help with the implementation of the programme. Receiving reminders to perform the programme and the possibility to ask questions to peers or professionals were also mentioned concerning implementing. Communication materials could help intermediaries to get schools to adopt the program, or schools to explain to the parents they are participating in the programme.

## Incentives and disincentives

The panel members also mentioned various reasons to adopt or not to adopt the programme. Some positive aspects of TL mentioned, include the fact that it is well scientifically substantiated, effective, has an educational curriculum and teachers learn from it themselves. Other incentives that would help teachers adopt and implement the programme are; the programme should be clear, easy to perform, have added value, positively received by the children, flexible and practical.

*P7; "It is important that the children like it, that does work positively."*

It would help the teachers if there were agreements for the whole school. Disincentives mentioned specifically about TL included the complexity, lengthiness, and the thoroughness of the programme. Additionally, the fact that it does not always fit with the school's needs and values was seen as a big issue. More general topics mentioned were the expected resistance of the parents and the pressure that is already on the teachers due to shortage of teachers and the full curriculum.

## Round 2 – The survey

Seven of the nine panel members participated in the survey (*appendix VII*). The panellists had to score each item on a 5-point scale indicating the importance of the item for the development of the tool (1= not important at all, 5= very important) (*table 7*). Mean scores and standard deviations were calculated for each item. The most important goal, therefore the priority for the tool, according to the panel members is tailoring of the programme with a mean score of 4.14. Followed by internal collaboration between teachers (3.71) and the adoption decision (3.71). External collaboration with other organisations such as school gardens or community centres (3.57), using the programme (3.29), and external collaboration with other schools (2.57), were the least important goals. Many panel members mentioned that tailoring the programme was important because the mission, vision and needs per school are different. Additionally, the fact that teachers want to have control over what they teach their children.

According to the panel members, the teachers who are followers are the most important target group (4.29). The principal (3.86), teachers who adopt programmes easily (3.43), intermediaries who offer the programme to schools (3.29), and parents (2.57) were seen as less important target groups. The reasoning behind the importance to address the teachers that follow as the main target group, is that this group is the largest, they are to reach and get them to adopt the decision, and one panel member also expects them to be more persistent in implementing the programme once they made the decision.

The most important location where the tool should be supplied is internal training at school (4.43). A national campaign promoting the programme (3.29), an external training (2.86), and events like fairs or information markets (2.71) were scored less important. Reasons mentioned for internal training being most important were the accessibility for the largest part of the group as well as the expected effectivity according to the panel members.

The panel members had two options for the form of the tool; digital or analogue. The digital was scored highest with 4.43 against a mean score of 3.57 for analogue. Reasons for the importance of having the tool digital that were given is the fact that teachers are used to have a digital environment to work in, additionally, the digital form was seen as easier compared to analogue.

The most important item for the contents of the tool are examples of how to perform the programme (4.29). A fact sheet about the programme (4.14) and an user manual for the programme (4.00) also scored high. Guest lecturers were also seen as important (3.86), followed by a few items with a mean score of 3.71; basic information on nutrition and health, scientific basis of the programme like effectivity, tools to implement the program, a helpdesk where teachers can ask questions, and e-learning. Reminders to perform the programme and a checklist with the supplies needed for the programme both scored 3.43 on average. Communication materials like flyers, newsletters for the parents and posters scored lowest (3.29). The panel members mentioned that examples about how to perform the lessons and to see reactions of children could be beneficial for the adoption of the programme as well as the implementation.

TABLE 7 – RESULTS OF THE ANALYSIS OF THE SURVEY

	Mean score (SD)
<b>Goal</b>	
Internal collaboration	3.71 (1.16)
External collaboration	
<i>Schools</i>	2.57 (0.73)
<i>Organisations</i>	3.57 (1.29)
Tailoring	4.14 (0.99)
Adoption decision	3.71 (1.39)
Using the program	3.29 (1.03)
<b>Target group</b>	
Easy adopters	3.43 (0.73)
Followers	4.29 (0.70)
Parents	2.57 (1.40)
Intermediaries	3.29 (1.03)
Principal	3.86 (1.36)
<b>Supply location</b>	
Events	2.71 (1.28)
External training	2.86 (0.99)
Internal training	4.43 (0.49)
National campaign	3.29 (0.88)
<b>Form</b>	
Digital	4.43 (0.73)
Analogue	3.57 (0.90)
<b>Contents</b>	
User manual	4.00 (0.53)
Basis knowledge	3.71 (1.48)
Examples	4.29 (0.45)
Checklist supplies	3.43 (1.59)
Communication materials	3.29 (1.16)
Scientific basis	3.71 (1.48)
Guest lectures	3.86 (0.83)
Tools	3.71 (1.16)
Reminders	3.43 (1.59)
Helpdesk	3.71 (1.39)
Fact sheet	4.14 (1.36)
E-learning	3.71 (0.70)

## Chapter summary

This chapter aimed to gain insight into the priorities of key stakeholders regarding the adoption of Taste Lessons. A Delphi study was conducted to reach this aim. From the results of this survey can be concluded that the goal of the tool should be tailoring of the programme (mean score of 4.14). The target group should be the teachers that can be seen as followers (mean score of 4.29). The tool should be supplied during an internal training at a school (mean score 4.43). A digital version of the tool scored highest on importance (mean score 4.43). The contents of the tool covered twelve different aspects. The four highest-scoring items were selected as input for the design brief; Examples (4.29), Fact sheet (4.14), User manual (4.00), and Guest lecturers (3.86).

These results are the basis of the design brief, which is the start for the second diamond of the double diamond approach of this research.

# Chapter 5 Design brief

In this chapter, the results from the previous chapters are translated into a design brief. To conclude the first diamond of the double diamond, a problem identification and design brief are defined to set the basis for the next diamond. Using the results of the previous chapters will ensure that the perspectives and opinions of the panel members, as well as theory and data analyses, are included in the design of the tool. Previous research of (Battjes-Fries, 2016; Kramer, 2019) showed that the implementation of TL is incomplete. During the latest evaluation study only 2.9 lessons were implemented on average (Kramer, 2019). There was still much uncertainty to what the problem with the implementation was. Potential drivers and barriers in the process of adopting a nutrition education programme at a primary school have been identified by the prior analyses. The adoption determinants have been assessed in the part one of the defining phases. Three different cases were included; (1) adoption of TL; (2) adoption of EUS; and (3) importance of determinants for adoption of NEPs. The association between the adoption determinants and the implementation dose of TL has been analysed as well as the association between implementation dose and the intended programme outcomes. This provided insight in the potential relevant adoption determinants for implementation and the importance of implementation for programme effectiveness. In the second part of the defining phase a Delphi study was conducted to gain insight into the opinions of key-stakeholders on how to support the adoption process of TL. In developing a dissemination plan is important to include stakeholder to support dissemination (Harris et al., 2012; Minkler, Salvatore, & Chang, 2017; Wandersman et al., 2008). Additionally, dissemination should be tailored to the needs of the target audience of the innovation (Lomas, 1993).

## *Problem identification*

To formulate the problem statement for this thesis the results from the previous analyses have to be combined. The model for adoption of NEPs at primary schools was used to analyse the interviews and create the survey for the second round of the Delphi study. The second round provided insight into the priorities of the key stakeholders for the development of the tool. The results from the quantitative analysis on the adoption of Taste Lessons and EU-Schoolfruit were compared to the new adoption model and qualitative results from the Delphi study to discover patterns. These patterns were translated to potential problems with the adoption of the Taste Lessons. This resulted in the five problems;

The first problem with the adoption process that was identified is related to the norm among schools to perform nutrition education programmes. The results from the questionnaires on TL and NEP in general showed that teachers do not think an inter-organisational norm exists between schools to perform nutrition education programmes. In the interviews some panel members mentioned that creating this norm among schools would be very beneficial for the adoption and implementation.

The second problem was identified on the level of the teacher. Teachers did not always agree with them being responsible to use nutrition education programmes and neither did they always feel motivated to do so. The panel members also addressed this as an issue, and they thought these teachers should be convinced to perform the programme. Intermediaries, who reach out to schools to convince them to perform NEPs, that took part in the Delphi study indicated it is difficult to reach and convince these teachers.



The third problem has to do with awareness of the teachers about the contents of the programme. A positive association between knowing and studying the content of the programme and the implementation dose was found. However, in both programmes less than 25% of the teachers indicated they know the programme and studied the contents. In the interviews it was suggested that informing the teachers properly would support both the adoption and implementation of TL. Additionally, the teacher control group indicated that the accessibility of information at a school about the programme is very important.

The fourth problem relates to the autonomy of the teacher. According to the results of the data analysis, only 50% of the teachers agreed on them being involved taking the decision to use the program, however, the NEP group indicated that being involved in the decision making process as well as being asked for their opinion is very important.

The fifth problem is related to the fit of the programme with the schools needs and priorities. The NEP teachers indicated that this fit is very important to them. Additionally, the results of the Delphi study indicate that teachers want to have the possibility to adapt a NEP to the needs of the school and the children, as most ready-made programmes do not fit according to them. During the interviews, panel members, frequently emphasized the importance of autonomy for the teachers. Providing a ready-made program, takes away this autonomy.

Due to time limitations and the skills of the researcher not all problems can be addressed in this thesis. During the survey with the panel members, the goal for the tool to adapt the programme to the school's or class's needs was set as a priority. Therefore, the fifth problem is chosen as the main problem. Additionally, the third problem was taken up in the design brief, because the panel indicated they would like a fact sheet about the programme as part of the tool, which relates to the third problem.

The first problem is not addressed as it is not in the researchers power to create this norm. Additionally, it would take years to create this norm. However, by having an increased adoption of NEPs an inter-organization norm could be created because an increasing number of schools will use them. The second problem is not addressed as it does not fit with the priorities set by the panel members. However, the model and tool might support the intermediaries in motivating the teachers and making them aware of the importance. The fourth problem is not addresses as the decision-making process at each primary school is different and therefore, a generic tool would not be sufficient.

### Design goal

Based on this problem identification, one design goal was formulated. The design goal will serve as guidance for the second diamond in this thesis.

*"To develop a tool that will support the adoption of Taste Lessons, based on literature and insights from practice."*

The process of reaching the design goal starts in Chapter 4 and is finalized in Chapter 5.

### Requirements

Based on the Delphi study requirements of the tool have been formulated;

- (1) The aim of the tool should be to give teachers who follow, the opportunity to tailor the programme to the needs of their class or school
- (2) The tool should be provided in a digital form
- (3) The tool should include a fact sheet, user manual, examples and guest lecturers

Additionally, the needs of the teachers, mentioned during the interviews, were translated to requirements for the tool that should be kept in mind during the development phase (Roozenburg & Eekels, 1998). The tool should:

- allow collaboration with peers, for example, by allowing feedback, support or knowledge exchange
- support the teacher in finding the right place for implementation
- allow the teacher to tailor the programme to their needs

# Chapter 6 Develop

In the chapters before, quantitative research and qualitative research has been conducted to collect information regarding the adoption and implementation of TL, EUS, and NEP in general. More in-depth insight into the adoption and implementation of TL and how to support it, was collected. This part of the thesis is focussed on translating all these insights into a tool aimed to support the adoption process of TL. Below a description of the methods used and results of these steps is provided.

## Methods

### Literature review

Literature was reviewed to get an overview of adoption and implementation strategies of innovations. Using a literature review in the developing of the tool, will give it a better scientific basis. The results will be combined with the results from the Delphi study to create a tool. The strategies found in the literature are summarized and assessed on their relevance for primary schools.

### Prototype development

The literature review was input for the ideation session aimed to generate ideas for the tool. During the ideation session, with one expert on customized support in innovation, a morphological chart was created to brainstorm ideas for the list of functions of the tool from the interviews (Roozenburg & Eekels, 1998). For each function several ideas were generated. At the end of the ideation session the most feasible and relevant combination of ideas were selected. Subsequently, an expert in education innovations was consulted for feedback on feasibility and relevance of the initial concept. The description of the experts can be found in *appendix XII*. During a personal ideation session these ideas were elaborated and the prototype was designed.

# Results

## Literature review

Literature was collected to explore the strategies used in the adoption and implementation of innovations. The literature research resulted in a list of strategies used in the field of education innovation and health promotion.

Formal dissemination program When the dissemination of a programme is planned it will affect both the adoption and implementation phase (Long et al., 2016), however evidence is limited (Greenhalgh et al., 2004). This plan could be led by an external change agent. Five factors affect the effectivity of the dissemination plan; (1) taking the needs and perspectives of the adopters into account; (2) making sure the plan is suitable to the adopter in terms of demographics and features of the adopter; (3) using a clear and appealing message; (4) identifying and using the appropriate communication channels; and (5) keeping track and evaluating the predefined goals (Greenhalgh et al., 2004). On the other hand, programmes could spread by diffusion which is informal and unstructured, little research is performed regarding this topic (Greenhalgh et al., 2004). Such a systematically designed dissemination strategy can include theory-based materials like recruitment brochure and promotional materials (Bessems, Van Assema, Martens, et al., 2011a).

Structure and quality of social network individual The network structure of the adopting individual affects the decision both the horizontally and vertically. On the informal, horizontal level peers have influence by supporting and reframing meaning of the programme. On the vertical level authoritative decisions and the distribution of codified information affect adoption (Greenhalgh et al., 2004).

Authoritative decision Making the adoption of a new programme compulsory has a positive effect on adoption but a negative effect on implementation (Fleuren, de Wilde, Mikolajczak, Stals, & Paulussen, 2009). So the authoritative decision to use the programme in an organisation can be made with chance that implementation is not successful (Greenhalgh et al., 2004).

Opinion leader An opinion leader could be a change agent or a champion of the programme. Using an opinion leader is based on social learning, innovation, and social influence and power theories (Chaillet et al., 2006). An expert opinion leader affects the opinions and actions of people with their authority and status. On the other hand, peer opinion leaders influence peers with their representativeness and credibility (Greenhalgh et al., 2004). Unfortunately, research showed that identifying true opinion leaders is difficult, which makes this strategy questionable (Greenhalgh et al., 2004). Although positive effects of an opinion leader have been found in both adoption and implementation, also evidence was found it could have an inhibiting effect (Fleuren et al., 2009; Greenhalgh et al., 2004; Prior, Guerin, & Grimmer-Somers, 2008).

Vicarious learning Vicarious learning includes modelling and peer education. This has influence on both the adoption and the implementation phase (Fleuren et al., 2009; Long et al., 2016). Modelling can be used to enhance self-efficacy, this can be done with role playing or video's showing the desired behaviour (Fleuren et al., 2004). Additionally, by seeing peers using the programme influences the individuals decision-making (Fleuren et al., 2004). Including testimonies from users of the programme works persuasive of potential adopters (Bessems, Van Assema, Martens, et al., 2011b). Peer-mentoring, teachers having active connections and communication could enhance the programme's effectivity (Van Nassau et al., 2016)

Peer-led education Peer-led education includes academic detailing, educational outreach, and educational meetings. Multiple programmes assessed this strategy and it has been found effective for both adoption and implementation (Fleuren et al., 2009). Educational outreach could take place in the form of school visits by a trained individual, who will provide information with the aim to change the schools practice (Grimshaw et al., 2006; Prior et al., 2008). Academic detailing is based on health promotion, innovation and marketing theories. It means that an informed individual visits schools to explore the problem and the local solutions. Thereafter he will provide an overview of the key facts. The assumption about this strategy is that behaviour can be changes by using clear and appealing messages tailored to the receiver (Chaillet et al., 2006). Educational meetings are often interactive and can take place in an external setting like conferences, workshops and lectures but also internal in a school (Grimshaw et al., 2006; Prior et al., 2008).

Training Training on task issues like fitting the programme into the curriculum has a positive effect on both the adoption as well as the implementation of programmes (Fleuren et al., 2009; Greenhalgh et al., 2004). The materials used for the training should be of high quality, successful implementation is more likely. Additionally, team-based training might have more effect when implementing complex programmes (Greenhalgh et al., 2004). Teachers who received a training feel more confident, but the training should not be too long or it can have adverse effects (Bessems, Van Assema, Martens, et al., 2011a).

Educational material Educational materials for the adopter both affect both adoption and implementation (Fleuren et al., 2009). Different forms of educational materials exists, not all are as effective. Passive dissemination of for example mailing guidelines to professionals was found to be ineffective whereas educational outreach was found to be effective (Grimshaw et al., 2006). Educational materials could also be printed recommendations, audio-visual materials, and electronic publications (Grimshaw et al., 2006).

Audit and feedback Both audit and feedback have been found to affect adoption and implementation by multiple studies positively, however results are mixed (Fleuren et al., 2009). Providing feedback on the results of adopting the programme and information of the impact of the implementation process are both important (Greenhalgh et al., 2004; Van Nassau et al., 2015). Audit and feedback can be provided as a summary of the performance over time (Grimshaw et al., 2006). The quality of the feedback that is provided is important for its effectivity, using an opinion leader will improve the feedback (Chaillet et al., 2006).

Adaptation The possibility of making adaptations to the innovation by the adopter affects both its adoption and implementation, support during this adaptation process is very important (Greenhalgh et al., 2004; Menichetti, Pitacco, & Graffigna, 2019). When the programme is tailored to the context it has to be implemented in, implementation will be more successful (Gustafson et al., 2003; Øvretveit et al., 2002).

Involvement during innovation development When the intended users are involved with development of an innovation both adoption and implementation are improved (Fleuren et al., 2009). When the intended users are not involved it could have an impeding effect on the implementation (Greenhalgh et al., 2004). Involvement can take place in the form of testing the programme with the intended users before launching it on a large scale (Francke, Smit, De Veer, & Mistiaen, 2008).

Reminders Reminders affect both the adoption decision and implementation process (Fleuren et al., 2009). Reminders can be provided verbally, by calling the implementer, or online (e.g. e-mailing) (Grimshaw et al., 2006). Especially online reminders help the implementers not forgetting the innovation (Chaillet et al., 2006). This will increase the compliance of the implementor with the innovation (Prior et al., 2008).

Technological support Technological support like a training, helpdesk or a decision support system can improve both adoption and implementation (Fleuren et al., 2009; Van Nassau et al., 2015). With a decision support system the intended user is guided towards the desired behaviour within the programme (Prior et al., 2008). Additionally, training to use the programme enhances the implementation (Greenhalgh et al., 2004).

Financial incentives Financial incentives have a mixed effect on the implementation process (Fleuren et al., 2009). This could be in the form of materials or financial (Prior et al., 2008). An example, is a payment for the implementers when they perform a specific behaviour (Dulko, 2007). Material incentives can be leaflets to propose the intervention, an educational sheet with information, or a document with advice on how to manage less motivated participants of the programme (Menichetti et al., 2019).

Little literature could be found on testing systematically designed strategies for the adoption of health promoting programmes at schools (Wiefferink et al., 2005). Current, research suggests the need for theory-based and systematically designed means to support adoption of education innovations (Bessems, Van Assema, Paulussen, & De Vries, 2011a).

### ***Literature and practice combined***

In the literature review 14 different strategies have been found that could support the adoption and implementation of TL. Some of these strategies overlap with the contents of the tool mentioned by the panel members.

The structural network of the teachers was mentioned several times. The informal horizontal level, which in this case are fellow teachers, was mentioned as being useful for the decision making because teachers accept information easier from peers. Vicarious learning, such as modelling or peer education, was suggested, especially for the teachers that follow. When they see others examples performing the programme or read testimonies from other teachers, adoption and implementation will be improved. This strategy was used in the development of the tool.

Additionally, the principal was mentioned as being important, which is the vertical and authoritative level of a social network. According to the panel members this would provide clarity and structure to the adoption and implementation process. However, the strategy to make the adoption decision compulsory could negatively affect the implementation quality. Especially the teachers in the panel emphasized they want to keep their autonomy. Because of the risk of decreasing adoption by using this strategy, it was not used in the development of the tool.

Peer-led education, like academic detailing, education outreach and educational meetings were also suggested as possibilities according to the stakeholders. They suggested that the approaching of a school should be tailored to its needs. Educational meetings can take place internal in a school or externally. The panel members indicated that a training for the use of TL would be useful, moreover, an internal training was seen as most effective and desirable.

The possibility to adapt the programme was scored by the panel members as the most important goal for the tool. The needs of the schools and their vision can differ a lot. Literature also suggests that adoption and implementation are improved when a teacher has the possibility to adapt the programme.

Literature also suggests the effectivity of reminders. The panel members had different opinion on this. Precaution must be taken to prevent teachers from being overburdened. On the other hand, some teachers mentioned they would like reminders once in a while.

Lastly, the technological support for the teachers was mentioned as useful. An online forum where teachers can ask questions and receive answers was suggested. Additionally, e-learning to use the programme could support the implementation of the programme.

**Prototype development**

The prototype of a tool to support the adoption of TL was designed by going through multiple steps. Below the results of each step are described.

***Ideation session***

During the ideation session with an expert, a morphological chart was created to generate ideas for the tool (figure 13). The goal of the tool (e.g. tailoring), the target group of the tool (e.g. teachers that follow), and the form of the tool (e.g. digital) were kept in mind during this process. The most relevant ideas for the scope of this tool were selected for further ideation. The most feasible idea for the fact sheet was the flyer. Based on the skills of the research examples about the programme should be given as testimonials of users. For the tailoring of the programme a decision tree was deemed the best idea. The user manual for the programme was left out for further ideation because it is not relevant for the adoption of the programme but to the implementation. Additionally, guest lecturers are left out for the same reason as well as the fact that it is already part of the online portal of the programme.

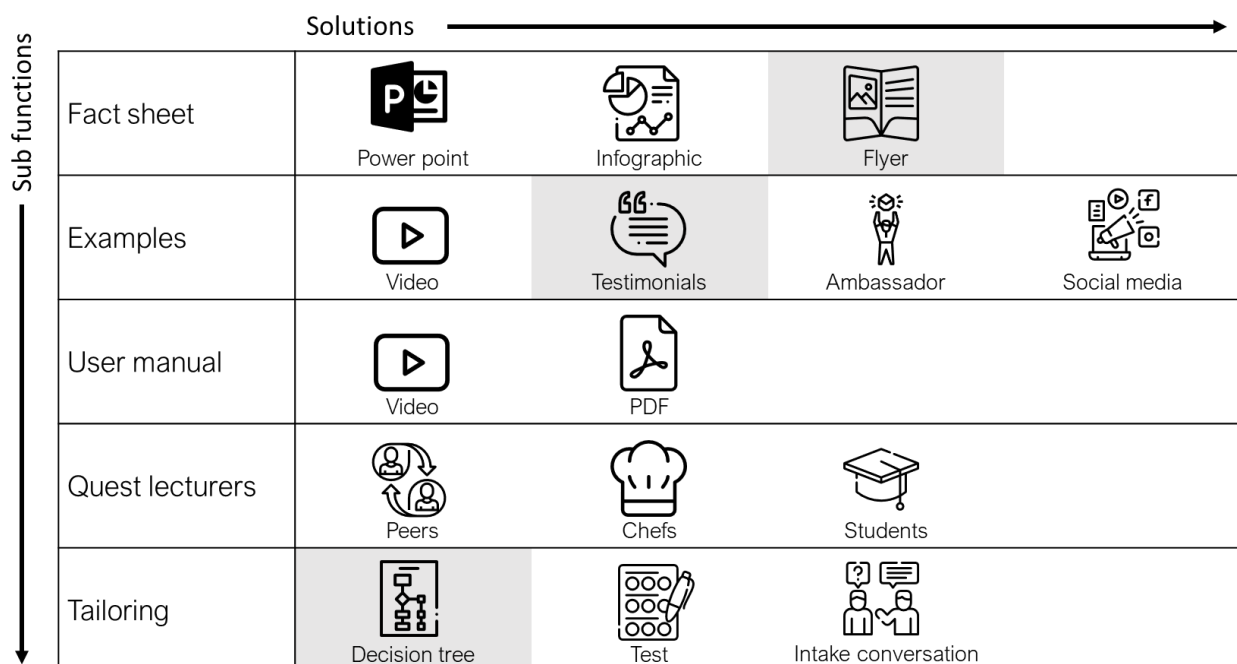


FIGURE 13 - MORPHOLOGICAL CHART

### ***Expert consultation***

An expert in education innovation was consulted to review these initial ideas. She recognized the preference of the teachers for the possibility to adapt a programme to their needs. However, she indicated that this does not relate to the contents of the programme but to the aim of programme. Which makes sense in this context since TL scored very high on all adoption determinants related to the programme (Chapter 3). The expert suggested to make aim of the tool not tailoring of the program, but stimulating the teacher to set a personal goal for the program, why they would want to start with the programme and what do they hope to get out of it. This creates ownership of the teacher regarding the programme. Furthermore, a checklist should be included to see whether a school meets the requirements for efficient implementation. As the panel members indicated they want a fact sheet about the program, a short overview of the contents and the effectiveness, this should also be included. Examples on how to use the program, linking it to the curriculum or other projects, or testimonials about the effects of the programme can be used. This would be a communication tool that could be used by programme providers, which she stated would be most effective. She stressed the importance of the communication tool being honest, by which she meant that the teachers should perceive the feeling they are not obligated to use the programme but make the decision themselves. By combining information with an interactive part (e.g. the goal setting and the checklist), teachers are more likely to pay attention to the tool, compared to solely providing information.

### ***Personal ideation***

After the ideation session and the consultation with the education innovation expert were conducted personal ideation was executed. The outcome of the previous steps was that the tool should be focussed on tailoring the intended goal of using the programme to the specific school. Additionally, this tool should be focussed the teachers that follow. The preference of the panel members was to have a digital tool, however, the researcher has no skills to design computerised tools. Therefore, it was chosen to create a flyer as tool, which could also be send by email as a PDF. The front of the flyer should be a fact sheet about the program, containing a short description of the contents, the results as well as testimonials of users. Text should be limited and the focus should be on visualisation. The back of the flyer, should consist of several components including: goalsetting, a checklist with requirements for proper implementation, and suggestions on how to start the programme and facing other difficulties related to the adoption and implementation process.

### ***The prototype***

The results of the ideation session, expert consultation and personal ideation are combined in a prototype of the tool. On the front of the flyer (*figure 14*) an overview of the programme is provided. Information on the contents of the program, effects of the study, the aim of the program, incentives to use the program, and testimonials of current users are included. At the back of the flyer (*figure 15*), the teacher is asked to create an action plan for programme implementation. First, they see a checklist with factors that will help implementation, they have to check the boxes, next they have to set goals they want to reach using the program, choose how they want to implement the programme (e.g. online environment Chef!, a binder with all the lessons, or a box with materials and the binder). Finally, they choose the way they want to implement the programme (e.g. as a project, throughout the year, or combining it with the regular curriculum). At the bottom of this side, contact information to the support team of Taste Lessons is provided.





Het eerste effectieve  
lesprogramma over  
gezond eten voor  
basisscholen!

### Wat is Smaaklessen?

Smaaklessen is hét effectieve lesprogramma over eten en smaak voor leerlingen op de basisschool. Door te proeven, ruiken, horen, voelen en kijken verkennen leerlingen hun eten.

### OPBOUW

#### Smaak

Durf je nieuwe soorten eten te proeven?



#### Gezond eten

Waarom heb je eten en drinken nodig?

#### Koken

Hoe maak je een gezonde en lekkere lunch?



#### Voedselproductie

Waar komt ons eten vandaan?

#### Consumenten vaardigheden

Wat staat er op een etiket?



### VOORDELEN



Doorlopende leerlijn



Match met kerndoelen onderwijs



Positieve en speelse benadering



Flexibel en op maat te maken



Beleven van voedsel staat centraal



Makkelijk in gebruik

### RESULTATEN



Kinderen proberen meer verschillende producten



Kennis over gezonde voeding is toegenomen



Beoordeeld met een 7,9 door leerkrachten en kinderen

### ERVARINGEN



“Zelf aan de slag gaan met proefjes doen en experimenteren, dat vinden de leerlingen echt leuk en leerzaam”  
Hilco van Stuijvenberg, pabo docent, Christelijke Hogeschool Ede



QUOTE



FIGURE 14 - FRONT OF THE PROTOTYPE TOOL

## JOUW EIGEN SMAAKLESSEN ACTIEPLAN

Nu je meer informatie gekregen hebt over de Smaaklessen is het tijd om actie te ondernemen! Door de onderstaande stappen te doorlopen zorg je dat de Smaaklessen bij jouw manier van lesgeven en de behoefte van de kinderen passen.

### CHECK OF SMAAKLESSEN BIJ JE PASSEN

Om de Smaaklessen te gaan gebruiken zijn er een paar dingen die je kunnen helpen

- Is er iemand op school die het uitvoeren kan **coördineren**?
- Zijn er **hulpouders** die zouden kunnen helpen met de lessen geven?
- Is er een **beleid** over voedingsonderwijs?
- Is er genoeg **tijd** om de lessen uit te voeren?
- Heb je voldoende **kennis** om de lessen uit te voeren?
- Heb je voldoende **vaardigheden** om de lessen uit te voeren?



### STEL JE DOELEN OP

Wat zou jij als leraar willen bereiken met het gebruik van de Smaaklessen? Bijvoorbeeld het verhogen van de kennis over gezonde voeding bij de kinderen.

- 
- 
- 



### KIES HOE JE MEE WIL DOEN

Er zijn drie verschillende manieren om de Smaaklessen te gebruiken.

- Chef!** Dit is een **GRATIS** online lesportaal met alle lessen en activiteiten van Smaaklessen en EU-Schoolfruit. Ga naar [www.voedseleducatie.nl](http://www.voedseleducatie.nl)
- Koop de lesmap.** Deze bevat vijf lessen per groep die maximaal een uur duren. Ga naar [www.smaaklessen.nl](http://www.smaaklessen.nl)
- Koop of leen de leskist.** Deze leskist bevat de lesmap en allerlei benodigdheden voor het uitvoeren. Er zijn zo'n 100 uitleenpunten. Ga naar [www.smaaklessen.nl](http://www.smaaklessen.nl)



### KIES HOE JE HET GAAT INZETTEN

Er zijn verschillende manieren om de Smaaklessen in te zetten.

- Project.** Verdeel de lessen over de dagen van een project week
- Verspreid over het schooljaar.** Maak van tevoren een planning, zodat alle lessen aan bod komen
- Koppelen.** Koppel de Smaaklessen aan reguliere lesmethoden in het onderwijs (alleen mogelijk via Chef!)



#### Colofon

Smaaklessen is een programma van Wageningen University and Research. TV-kok Pierre Wind is ambassadeur en inspirator.

Het Voedingscentrum ondersteunt de Smaaklessen.

Blijf op de hoogte:

- 0317 48 59 66
- [smaaklessen@wur.nl](mailto:smaaklessen@wur.nl)
- @Smaaklessen
- [www.smaaklessen.nl](http://www.smaaklessen.nl)
- Smaaklessen



FIGURE 15 - BACK OF THE PROTOTYPE TOOL

## Chapter summary

The aim of this chapter was to develop a tool that could support the adoption of Taste Lessons. In chapter 5, a design goal was drawn to set a clear scope for the development process. The design goal was;

*"To develop a tool that will support the adoption of Taste Lessons, based on literature and insights from practice".*

Based on the results from the previous chapters, priorities for the tool set by key stakeholders, and additional literature on adoption strategies and education innovations a tool has been developed. A interactive flyer chosen as the most feasible, desirable and viable form for the tool. Insights from experts and personal ideation were used to develop the first prototype of the flyer. The final prototype consist of a front page with an overview of key elements of TL. On the back teachers, are invited to create their own action plan for implementation. This action plan could be a starting point for implementation as well as a tool for intermediaries to provide tailored support to the teacher according to their needs.

In the next and final phase of the double diamond the final tool will be delivered. To ensure desirability, feasibility and viability of the tool, iteration and validation needs to take place. The intended users of the tool, teachers, as well as the programme developers were included in these steps.

# Chapter 7 Deliver

Deliver is the final phase of this thesis, where the final tool was designed based on the obtained insights of the previous chapters as well as the iterative steps that were made in this chapter. The focus of this phase was to get a final answer on the third research question;

**RQ3.** How can the adoption process of Taste Lesson be supported?

The steps taken in this phase include feedback sessions, adaptations, and validation. After the final iteration of the prototype, a final tool was designed and validated.

## **Methods**

During this phase of the thesis, feedback on the prototype was given in three subsequent sessions. The first sessions took place with two Science Communication graduates, the second sessions with the expert in education innovation, and the last session with the support team of TL. Between the sessions, adaptations to improve the tool were made based on the insights from these tests. During the testing phase the desirability, viability and feasibility of the prototype were assessed based on the Three Lenses of Human-Centred Design model (IDEO, n.d.). The desirability of the tool is related to the needs of the intended user and whether they are met or not. Viability of the tool is its financial sustainability. Even though TL is created by a non-profit organisation, having a viable tool will ensure continuation of usefulness without the need for funding. Feasibility of the tool was tested to check whether the tool is appropriate for the teachers. The final tool was validated by consulting two teachers, the intended users of the tool, to go through the tool. Additionally, the programme manager was consulted to answer the questions about the viability of the tool. The outcome of this step is the final tool which will be validated. The final tool was validated by asking two teachers to use it. With this validation the feasibility of the final product was assessed.

# Results

## Iteration

The first round of feedback giving on the tool took place with the two science communication graduates. The aim of this initial round was to collect their expert view on designing a tool to support adoption. They provided insights for the design;

1. Additional pages were advised with information on the contents of the programme as well as examples of how the programme looks.
2. The incentives at the front page should be ordered, with the most important incentive to the teacher at the top.
3. Regarding the action plan on the back of the flyer they had several remarks
  - a. The check list should be ordered from teacher related factors to external factors. Additionally, motivational factors should be included, preferably with a factor every teacher will cross off to have a positive start.
  - b. The order of the action plan should be changed with choosing to the manner of implementation first, and consecutively choosing the method.
  - c. An extra, last, step should be included to get the teacher to start using the action plan.
  - d. The steps should be numbered to make it clear that are ordered steps
4. A few remarks were given on the lay-out of the flyer (e.g. margins)

Between the first and the second feedback session the insights from the first session were used to adapt the tool. This version was used in the second feedback session with the education innovation expert. She provided several remarks for possible improvements of the tool;

1. She advised to include the core goals of primary education, set by the national institute for curriculum development in the Netherlands (SLO), that are covered by TL.
2. As the possibility to be able to tailor the programme was important to the teachers, the feedback was to emphasize more on this topic by showing how the teachers could do it.
3. She advised to look at the model for managing complex changes of Lippitt (1987) and Knoster (1991). This model is used frequently in education innovation.
4. Including a short story to give the teacher an impression of what they could expect from using the tool, could be beneficial in the adoption process.

After the second feedback session the tool was further adapted. Additional literature on the Knoster model for managing complex change was searched to provide a tool grounded in theory.

## The model for managing complex change

The model for managing complex change was developed by Lippitt (1987) and Knoster (1991). According to this model, there are five elements essential for effective change. This includes vision, incentives, resource, skills and an action plan. When one of these elements is missing issues arise. Many adaptation and applications of the model have been used throughout the years. Education innovation is one field where this model is used frequently to improve the change process.

To support the quality of adoption of TL with the tool, the action plan was adapted to this model (figure 16). With each element included in the action plan the adoption of TL will be a success. Additionally, including the elements in the other parts of the tool will have a beneficial effect. An overview of the vision of TL, incentives to use it, and resources necessary to perform the programme are provided. Additionally, an action plan (e.g. the last element in the model) is part of the tool. The

element skills is left out of the tool, for the skills essential to perform the programme didactic skills, of which could be assumed the teachers have. However, to prevent the teachers doubting their ability to perform the program, emphasis on the easiness of the programme should be made.

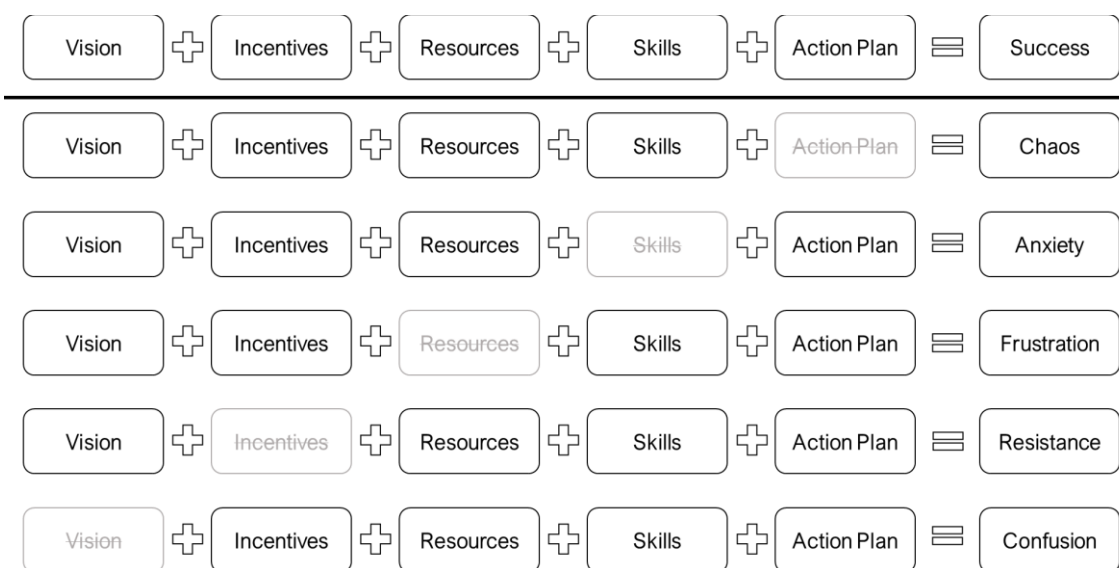


FIGURE 16 - MODEL FOR COMPLEX CHANGE ADAPTED FROM KNOSTER (1991)

The adapted and improved tool was presented to the support team of TL. They were asked to provide feedback from their experience with the programme. Several remarks were given;

1. One member asked how this tool would improve the implementation dose of the program, as currently on average 2.8 of the 5 lessons are implemented. A suggestion was made to emphasize more on the fact the programme consists of 5 lessons, each taking about 60 minutes. Additionally, the teachers should be made aware some preparation time is needed as well.
2. The advantages of using the online platform could be emphasized a bit more.
3. The example of a lessons should be changed to a more informative example.
4. An extra incentive is the fact that TL is connected to EUS. Which means, that if a school already is using EUS it is easier to implement TL.
5. A tip to share experiences with colleagues could be included, because word of mouth is something teachers like.

The suggestions made in this session were used to create the final tool which can be found in figure 17-20.

## The final design

After several iteration rounds the final tool was designed. The final tool is a four page, interactive flyer meant to support the adoption of TL by teachers. It provides teachers with information about the programme and additionally, stimulate them to create an action plan for adoption. The flyer can be send by email, as well as being printed and send by post.

**The first page** The first page of the flyer contains several aspects about TL (*figure 17*). A short description of the programme is given. The cornerstones of the programme are described which include; taste, cooking, healthy diet, food production and consumer skills. Incentives to choose the programme are next to them, they are included to persuade the teachers, and additional address potential prejudices. As TL is unique in it's measured effectiveness, the measured effects are shown at the bottom. Two quotes of teachers are included about their experience with the programme.

**The second page** The second page of the tool contains more in-depth information about TL (*figure 18*). At the top the core goals of the Dutch primary education that match with the programme are written. The curriculum in Dutch primary schools are based on core goals set by the SLO. As some parts of TL address some core goals, this is a major strength with should be emphasized. The part of TL on healthy diet is based on the 'Schijf van 5', which are the Dutch national guideline for a healthy diet. A short description of these guideline is given. During the Delphi study, the panel members emphasized on the fact that teachers would like to match TL to the current curriculum they use. Especially, because they have limited time available. Some parts of TL can be a deepening, broadening, or even a replacement for part of the regular curriculum. The developers of the programme compared the lessons to methodologies often used by primary schools. An overview of this overlap is provided when teacher use the link on the flyer. Topics that overlap with TL are geography, nature and technique, world orientation, history, and nursery education. At the bottom of the second page ways to use the programme are shown. These include the website Chef!, were TL is free to use for everybody. Additional education material is available as well. Teachers can buy a binder with all the five Taste Lessons for each grade (1-8), only grade 1-2 have 9 lessons. The teachers can also chose to borrow or buy a box with the binder and supplies necessary in the lessons.

**The third page** On the third page (*figure 19*) , four points regarding the implementation are provided at the top of the page. It is important to make sure teachers know what it means to use the programme. The average duration of the lessons is included as well as the fact that preparation time is needed. Additionally, for some lessons require extra supplies of which some cost money. At the bottom of the page an example of a Taste Lesson in Chef! is given to show the teachers what they could expect when they are going to use it.

**The fourth page** On the fourth and last page (*figure 20*) , teachers are encouraged to create an action plan for adoption of the programme. The first step is a checklist for factors that support the adoption. The second step is setting personal goals the teachers want to reach using the programme. In the third step the teachers have to choose the manner they want to use the programme, of which the possibilities are; using it as a project, including it in the current curriculum, or giving lessons throughout the year. The fourth step is focussed on the ways to use the programme, which are described above (e.g. online, binder and box). The final step urges the teachers to contact Taste Lessons support point to get started. At the bottom of this page a colophon is added with contact information of the support point.



**Het eerste effectieve lesprogramma over gezond eten voor basisscholen!**

## Wat is Smaaklessen?

Smaaklessen is hét lespakket over eten voor de basisschool. Smaaklessen is gebaseerd op ervaringsleren. De leerkracht legt dingen uit, maar stelt vooral vragen. Daarnaast doen de kinderen regelmatig een proefje of smaakexperiment. Ook maken zij zelf gezamenlijk iets om te eten of te drinken. Kok Pierre Wind is geestelijk vader van Smaaklessen

### PIJLERS

#### Smaak

Kinderen leren over de zintuigen, hoofdsmaken, nieuwe dingen proeven en smaakontwikkeling



#### Gezond eten

Kinderen leren over waarom je lichaam voeding nodig heeft en leren aan de hand van de Schijf van Vijf wat en hoeveel je lichaam nodig heeft. Ook leren ze dat eten en bewegen bij elkaar horen.



#### Koken

kinderen leren samen koken, een recept lezen en ontdekken de sociale kant die bij samen eten hoort. Daarnaast leren ze ook over culturele verschillen in eten.



#### Voedselproductie

kinderen leren over de voedselketen, duurzaamheid, voedselkeuzes en het effect op mens, dier en de wereld.



#### Consumenten vaardigheden

kinderen leren over hun invloed als consument, etiketten lezen, voedsel bewaren en voedselverspilling.



### VOORDELEN



**Flexibel en op maat te maken**



**Aansluiting reguliere lesmethodes**



**Makkelijk in gebruik**



**Doorlopende leerlijn**



**Match met kerndoelen onderwijs**



**Beleven van voedsel staat centraal**



**Positieve en speelse benadering**



**Sluit aan op het EU-Schoolfruit programma**

### RESULTATEN



**Kinderen proberen meer verschillende producten**



**De kennis van kinderen over gezonde voeding is toegenomen**



**Beoordeeld met een 7,9 door leerkrachten en kinderen**

### ERVARINGEN



**“Zelf aan de slag gaan met proefjes doen en experimenteren, dat vinden de leerlingen echt leuk en leerzaam”**

Hilco van Stuijvenberg, pabo docent, Christelijke Hogeschool Ede



**“ Het programma is niet alleen leuk en leerzaam voor de kinderen, maar ik leer er zelf ook nog van”**

Lisa van Uffelen, basisschool leerkracht, Aloysius Maasland



FIGURE 17 – FIRST PAGE OF THE TOOL



## KERNDOELEN STICHTING LEERPLAN ONTWIKKELING

### MENS EN SAMENLEVING

- 34: Leerlingen leren om zorg te dragen voor de lichamelijke en psychische gezondheid voor henzelf en anderen
- 35: Leerlingen leren zich redzaam te gedragen in sociaal opzicht, als verkeersdeelnemer en als consument
- 37: Leerlingen leren zich te gedragen vanuit respect voor Algemeen aanvaarde waarden en normen
- 39: Leerlingen leren met zorg om te gaan met het milieu

### NATUUR EN TECHNIEK

- 40: Leerlingen leren om veel voorkomende planten en dieren te onderscheiden
- 41: Leerlingen leren over de bouw van planten, dieren, mensen en over de vorm en functie van hun onderdelen

## ONDERBOUWING

### De schijf van 5

Wanneer het thema gezondheid behandeld wordt in Smaaklessen, is de Schijf van Vijf het uitgangspunt. De Schijf van Vijf bestaat uit producten die volgens de laatste wetenschappelijke inzichten goed zijn voor je lichaam. Als je volgens de Schijf van Vijf eet, eet je genoeg van alle producten die gezondheidswinst opleveren en die zorgen voor genoeg energie en alle nodige voedingsstoffen.



## AANSLUITING

Smaaklessen kunnen lessen uit de reguliere methode verdiepen, verbreden of vervangen.



**Geschiedenis**



**Aardrijkskunde**



**Natuur en techniek**



**Wereldoriëntatie**



**Kleuteronderwijs**

Kijk op [www.voedseleducatie.nl/aansluiting-onderwijs](http://www.voedseleducatie.nl/aansluiting-onderwijs) voor meer informatie

## MEEDOEN MET SMAAKLESSEN

### GRATIS DIGITALE SMAAKLESSEN OP CHEF!

Al het lesmateriaal van Smaaklessen, waaronder de handleiding, kopieerbladen en de digibord-modules vind je op het gratis lesportaal Chef!

[Maak gratis een account aan](#)



### KOOP EEN SMAAKLESKIST

In de Smaakleskist (€300,-) zit de les-map met het lesmateriaal en alle keukenmaterialen die je kunt gebruiken tijdens het geven van Smaaklessen.

[Koop een Smaakleskist](#)



### KOOP EEN LESMAP

Wil je graag de lesmap met de handleiding hardcopy ontvangen? Je kunt voor €75,- de lesmap in de webshop van het Voedingscentrum aanschaffen.

[Koop de lesmap](#)



### LEEN EEN SMAAKLESKIST

Je kunt op verschillende locaties door Nederland een Smaakleskist lenen. In deze leskist vind je alle benodigde materialen om aan de slag te gaan.

[Leen een Smaakleskist](#)



FIGURE 18 - SECOND PAGE OF THE TOOL

## UITVOERING SMAAKLESSEN



**Vijf lessen per leerjaar**



**± 60 minuten per les**



**Vorbereidingstijd**



**Sommige lessen vereisen extra benodigheden**



## KIJKJE IN CHEF!

**Inhoud**    LES 1. Speurruizen    LES 2. Waar komt ons ete...    LES 3. Lekker uit de Schijf ...    LES 4. Eet jij een blij ei?    LES 5. Restaurant in de kl...

Groep 6

**Eet jij een blij ei?**

Biologisch, dierenwelzijn en allerlei keurmerken, het is best ingewikkeld! In deze les nemen we ze stap voor stap met je door.

**Leerdoelen**  
De leerlingen:

- leren dat dierenwelzijn gaat over of er goed voor dieren gezorgd wordt
- herkennen de verschillende keurmerken voor dierenwelzijn en milieu

**15 min.**  
voorbereidingstijd

**55 min.**  
totale lesduur

**Behandelde pijlers voedseleducatie**

Consumentenvaardigheden    Voedselproductie    Smaak

Vorbereiding    Lesinhoud    Aansluiting onderwijs    Downloads

**Les voorbereiding**

- Kook de eieren totdat deze hardgekookt zijn. Snijd de eieren in kwarten en leg ze op een bordje.
- Bewaar de kassabon van de eieren.
- Print het kopieerblad voor deze les.

**Benodigheden**

- scharreleieren, voor iedere leerling een kwart
- biologische eieren, voor iedere leerling een kwart
- twee bordjes
- kassabon van de eieren
- kopieerblad B, voor iedere leerling één
- digibord

FIGURE 19- THIRD PAGE OF THE TOOL

# JOUW EIGEN SMAAKLESSEN ACTIEPLAN

Nu je meer informatie gekregen hebt over de Smaaklessen is het tijd om actie te ondernemen! Door de onderstaande stappen te doorlopen zorg je dat de Smaaklessen bij jouw manier van lesgeven en de behoefte van de kinderen passen.

## STAP 1 | CHECK OF SMAAKLESSEN BIJ JE PASSEN

Om de Smaaklessen te gaan gebruiken zijn er een paar dingen die je kunnen helpen, dit zijn geen harde criteria

- Wil je kinderen **helpen** een gezonde leefstijl te creëren?
- Is er iemand op school die het uitvoeren kan **coördineren**?
- Zijn er **hulpouders** die zouden kunnen helpen met de lessen geven?
- Is er een **beleid** over voedingsonderwijs?



## STAP 2 | STEL JE DOELEN OP

Wat zou jij als leraar willen bereiken met het gebruik van de Smaaklessen? Bijvoorbeeld het verhogen van de kennis over gezonde voeding bij de kinderen.

- 
- 



## STAP 3 | KIES HOE JE HET GAAT INZETTEN

Er zijn verschillende manieren om de Smaaklessen in te zetten.

- Project.** Verdeel de lessen over de dagen van een project week
- Verspreid over het schooljaar.** Maak van tevoren een planning, zodat alle lessen aan bod komen
- Koppelen.** Koppel de Smaaklessen aan reguliere lesmethoden in het onderwijs (alleen mogelijk via Chef!)



## STAP 4 | KIES HOE JE MEE WIL DOEN

Er zijn drie verschillende manieren om de Smaaklessen te gebruiken.

- Chef!**
- Koop de lesmap.**
- Koop of leen de leskist.**



## STAP 5 | AAN DE SLAG!

Klaar om aan de slag te gaan? Ga naar [www.smaaklessen.nl](http://www.smaaklessen.nl) of bel naar het steunpunt



### Colofon

Smaaklessen is een programma van Wageningen University and Research. TV-kok Pierre Wind is ambassadeur en inspirator.

Het Voedingscentrum ondersteund de Smaaklessen.

Blijf op de hoogte:



0317 48 59 66



smaaklessen@wur.nl



@Smaaklessen



[www.smaaklessen.nl](http://www.smaaklessen.nl)



Smaaklessen



FIGURE 20 - LAST PAGE OF THE TOOL

## Validation

To make sure the design of the tool is feasible and desirable by teachers, two primary school teachers were consulted. In this paragraph the main insights of the validation sessions are discussed. The insights from the two validation sessions were translated in the recommendations for further development of the tool by Taste Lessons support team.

The lay-out of the tool was experienced positively by both teachers. They liked the use of pictograms and the concise information about several aspects of Taste Lessons. The amount of information was perceived as just right. One teacher emphasized that she liked the headers of the different aspects because she could find the most important information to her at a glance.

Although both teachers liked the description of the core goals of primary education, they would like some additional information on how and which parts of these goals are reached. The possibility to use Taste Lessons within the current curriculum was clear to the teachers, except for the mentioning of nursery education. One teacher explained that mentioning nursery education separately was unnecessary as it is covered by the other topics in the list. Regarding the different options for using Taste Lessons, both online as well as hard copy, one teacher indicated more emphasize could be made on the benefits of the online portal. These benefits would be convincing her even more. Both teachers had some questions about the preparation time for the lessons. They indicated this is often a barrier for them and other teachers for using a programme. The average preparation time per lesson should therefore be included. Additionally, they would both like more information on the supplies and costs associated with the lessons. The action plan was perceived as a great addition to the flyer. Other than the direction it gives the teachers, they also liked the freedom of choosing their manner of using the programme.

The teachers indicated that they would read the flyer would it be send to them. The accompanying email should contain a convincing story to prime the receiver to open the flyer. The suggestion to translate the information on the flyer in a video was dismissed by the teachers. Having a flyer allows them to read it whenever they want, they would not be able to watch a video when they a in their classroom.

## Chapter summary

In the last phase of this thesis, deliver, the final tool was developed and validated. During several feedback sessions experts from various background provided insight for possible adaptations. Remarks from the science communication experts mainly focussed on the lay-out and completeness of the information. The education innovation expert made suggestions for adding information that would convince the teachers even more and using the principles of the model for complex change. The Taste Lessons support team was pleased with the research performed to substantiate the tool. However, they questioned whether the tool would result in higher implementation. These insights were used to create the final tool. The validation sessions showed that the tool was both desirable and feasible to the teachers. Some suggestions were given to further improve the tool. These suggestions can be used for further development of the tool by the Taste Lessons support team.

# Chapter 8 Discussion

The relevance of promoting a healthy lifestyle among children is now more evident than ever since the COVID-19 pandemic has shown us the importance of having a healthy lifestyle. Preliminary research on COVID-19 suggests that obesity is associated with a higher risk of developing severe symptoms and complications of the virus (Stefan, Birkenfeld, Schulze, & Ludwig, 2020). Many school-based programmes aimed at improving the health of children have been designed. However, similar to other education innovations, these programmes encounter difficulties with implementation at the schools. As a result, incomplete implementation is frequently the case. According to the diffusion of innovation model, implementation is preceded by adoption. Therefore, a cause for the difficulties with could be related to the adoption phase. Limited literature on determinants for adoption of nutrition education programmes is available. Moreover, research on strategies to support the adoption of these programmes is limited.

The first objective for this thesis was to evaluate barriers and drivers in the adoption of nutrition education programmes and assess the association with implementation dose. This objective was reached by performing a narrative literature review, an evaluation of the importance of determinants for the adoption of NEPs, and the analysis of the adoption and implementation of Taste Lessons and EU-Schoolfruit. The second objective of this thesis was to develop a tool to support the adoption of Taste Lessons. This objective was reached by combining the results from the first objective with qualitative research. A Delphi study was performed with key-stakeholders of Taste Lessons, which did set the priorities for the development of the tool. Multiple ideation and feedback sessions took place to finalize the tool. This tool was validated by two teachers.

In this chapter, the most important findings of this thesis will be discussed and compared to previous research. Strengths and limitations of the methods used in this research will be addressed. Implications for practice and recommendation for future research will be given for both the field of Science Communication and Nutritional Epidemiology and Public Health.

# Discussion of the findings

## Adoption drivers and barriers of school-based nutrition education programmes

The results of the narrative literature review and analysis of the questionnaire on school-based nutrition education programmes provided insight into the importance of adoption determinants according to the teachers. A new model was created that included only the adoption determinants scored as being important by more than 60% of the teachers. The model contains 28 drivers for the adoption process of school-based nutrition programmes (*figure 8, chapter 3*).

The results of the control group indicate that no inter-organisational norm exists between schools to use nutrition education programmes. This could be explained by the fact that nutrition education is voluntary for Dutch primary schools (Boer, 2018). The results found in this study suggest that professional support was not important; however, previous research found that support can act as a facilitator in the adoption decision for school-based interventions (Long et al., 2016). Kumaravadivelu (2001), emphasizes the fact that teachers are autonomous individuals that have their own context-sensitive pedagogic knowledge. The indication that professional support is not important could be the result of teachers experiencing a threat to their autonomy when other people interfere (Reinders & Lazaro, 2011). Moreover, this could explain why the teachers indicated they do not think collaboration with other schools or organisations is important.

Teachers indicating they do not feel the professional obligation to use a NEP can be explained by the resistance of teachers to the trend that makes schools responsible for solving society's problems (Bessems, Van Assema, Crutzen, Paulussen, & De Vries, 2013).

Contrary to the claims of Henderson, MacKay, & Peterson-Badali (2006) that innovation characteristics are particularly important for adoption compared to adopter characteristics, this study found that several teacher level determinants are important in the adoption process. In the evaluation of the Krachtvoer programme teachers indicated teacher-related factors as drivers for adoption (Bessems, Van Assema, Paulussen, & De Vries, 2011b).

## Adoption of Taste Lessons and EU-Schoolfruit

Analysis of the questionnaires on Taste Lessons and EU-Schoolfruit revealed potential barriers for adoption of the programmes. The potential barriers are; the decision-making process, financial resources, feedback receiving and giving, collaboration with other schools, professional obligation, the adoption decision, and the subjective norm of children and parents.

Because research on determinants for the adoption of school-based nutrition education programmes is new, the results of this thesis are compared with studies in other settings. The majority of teachers in the intervention groups indicated that they were not involved in the decision to use the programmes. Previous research in the context of service organisations has shown that compulsory adoption of innovations does increase initial adoption by an individual but negatively affects implementation (Greenhalgh et al., 2004). The teachers not being involved in the decision process probably did affect the score on the adoption decision. Which indicated that the majority of the teacher did not agree they had the autonomy to make the adoption decision.

Previous research showed that adopters of innovations find it important to receive feedback on their performance. Moreover, they would like to give feedback on the innovation on possible improvements (Broerse et al., 2009; Crone et al., 2006; Verlaan & Dommelen, 2006).

The fact that potential barriers for adoption were found at the school and teacher level is most likely the result of the focus of the programme developers on the extensive evaluation and improvement of the programmes over the years (Battjes-Fries et al., 2016).

### **The association between adoption and implementation of Taste Lessons**

Several adoption determinants are positively associated with the implementation dose of Taste Lessons (*chapter 3*). Positive significant associations were found for the adoption determinants; the number of support staff working at the school, level of awareness about the content of the program, the descriptive norm to use the programme, subjective norm of children, and the correctness of the programme. Teachers feeling supported by professionals was negatively associated with implementation dose.

Similar to the results of this thesis, previous research showed significant associations between adoption determinants and completeness of implementation. The meta-analysis of Fleuren, Paulussen, Dommelen, & Buuren (2014) on determinants of innovations showed associations between several determinants and completeness of implementation. Both subjective norm and correctness of the programme were associated with completeness of implementation. This meta-analysis states that support of professionals should be combined with the support of colleagues as it belongs to a single underlying construct, social support, moreover not evidence was found for an association with implementation. The negative association of professional support found in this thesis could be explained by the fact that this determinant might not be the right indicator for implementation dose.

### **Relationship between implementation dose and programme outcomes of Taste Lessons**

Taste Lessons aims to increase the nutrition knowledge and fruit and vegetable consumption of children. Previous research showed that Taste Lessons in combination with EU-Schoolfruit increased children's nutrition knowledge (Battjes-Fries, Haveman-Nies, Renes, Meester, & Van'T Veer, 2015). The results of this thesis showed an association between implementation dose and the increase in children's nutrition knowledge. A significant higher increase of nutrition knowledge was found in the high implementation category at the first measurement. This effect persisted at 6-months follow-up. Previous research also found varying effects of implementation dose and change in intended programme outcomes. The evaluation of the school-based nutrition programme 'Choice, Control and Change' showed significant improvement of behavioural and psychosocial outcomes only in the highest implementation category (Gray, Contento, & Koch, 2015)

No significant association was found for implementation dose and increase of fruit and vegetable consumption. Different to the findings of this thesis, the evaluation of the Pro-Children study showed that implementation quantity and quality of the curriculum were important determinants for change in fruit and vegetable consumption (Wind et al., 2008). Similar to the results of this thesis, the evaluation of the Fruits and Vegetables Make the Marks (FVMM) programme did not find a relationship between the number of implemented lessons and change in fruit and vegetable consumption (Bere, Veierød, Bjelland, & Klepp, 2006). The reason no association was found in this study might be the fact that Taste Lessons did not succeed in increasing fruit and vegetable consumption (Battjes-Fries et al., 2015).

## Supporting the adoption of Taste Lessons

The second part of this study showed how the adoption of Taste Lessons could be supported by developing a tool. Insights from the first part were used as a basis for the developing and delivering phase of the tool. From the results of the Delphi can be concluded that the goal of the tool should be tailoring of the programme. The target group should be the teachers that can be seen as followers, as this is the largest group of teachers, and they are more difficult to reach compared to the teachers who are easy adopters. Preferably, the tool should be supplied during an internal training at a school. A digital version of the tool scored highest on importance because it is easier to spread. The contents of the tool covered twelve different aspects. The four highest-scoring items were selected as input for the design; examples, fact sheet, user manual, and guest lecturers. Examples the panel mentioned included examples about the contents of the program, other teachers using the program, and tips and tricks for the use of the programme. The fact sheet was desired to provide the teachers with essential information on the program; this is similar to previous studies on adoption strategies (Bessemers, Van Assema, Paulussen, et al., 2011b; Wiefferink et al., 2005). The user manual on how to use the programme and guest lectures who could give the lessons were essential to the panel.

The importance of the possibility to tailor the programme to the school's priorities and needs is in accordance with the other results of this thesis and previously conducted research. Adoption of a programme is much more likely when it fits the school and there are possibilities to modify the programme to the local needs (Bergström et al., 2015). Taste Lessons already does offer possibilities for tailoring, which is reflected in the results of the data analysis in chapter 3. Teachers indicated the programme does fit with the goals and priorities of their school. Therefore it was chosen to emphasize on the possibilities for tailoring in the tool.

According to a few of the included experts in this research choosing a flyer as a tool could be questionable as teachers indicate they do not like to read too much information, and they already receive much information. However, by basing the tool on insights of the intended users and literature, the tool will be desirable by the teachers (Chaillet et al., 2006). Moreover, during the validation both teachers indicated they did prefer the flyer.

Guest lecturers are an existing part of Taste Lessons. They are very desirable by teachers. Especially when lessons take a lot of preparation time and organisation (Friend, Flattum, Simpson, Nederhoff, & Neumark-Sztainer, 2014). However, according to some panel members precaution must be taken regarding the use of guest lecturers. The teacher does not have to engage in the topic of nutrition when a guest lecturer comes.



## Implications for practice

The results of this thesis can be translated into two overall implications for stakeholders of school-based nutrition education programmes; intermediaries, intervention developers and teachers. The first implication is focussed on creating a foundation for implementation by addressing adoption determinants. The second implication concerns tailoring of the programme to the priorities and needs of the school.

New adopters of innovations should receive some form of support to overcome barriers for adoption which will set the foundation for implementation (Henderson et al., 2011). It is recommended to programme developers to design a strategy to address potential barriers for adoption. Having a thorough dissemination plan will improve the quality of the adoption, rather than increasing the number of adopters. An adopter who makes an informed choice is more likely to keep using the programme (Stanford et al., 2015). In this thesis several barriers for adoption of NEPs at schools have been identified, they should be addressed. Teachers in this study mentioned that they did not feel involved in the decision to use the programme, despite the importance of this determinant. Schools should be advised to include the teachers in the decision-making process. Additionally, schools should be convinced to have information about the use of the programme available as well as formal arrangements about the use of the programme. As teachers have to deal with a busy curriculum, creating time for the programme will increase the adoption (Sluis, 2011; Thijssen et al., 2011). In case nutrition education is optional at a school, the teachers need to be motivated about the importance of them contributing to improving children's health (Friend et al., 2014).

Teachers prefer educational programmes that fit the priorities and needs of the school and children (Bergström et al., 2015). Having the option to tailor the programme is a great incentive for the teachers in this thesis to adopt a NEP. Taste Lessons already can be tailored, however the results of this thesis showed this was unknown by the teachers. Teacher's autonomy to adapt the programme to their needs should be ensured, however it should be guided to keep the quality of implementation (Schaap, Bessems, Otten, Kremers, & van Nassau, 2018).

## Strengths and limitations

One of the main strengths of this thesis is the use of a mixed-method approach. This resulted in a broad understanding and corroboration of the problem both. It was further important for developing a context-specific tool. The results of the Delphi study confirmed several of findings from the literature review and data analyses. An example is the importance of the children being satisfied with the programme. Literature stated this subjective norm as an important driver for adoption (Fleuren et al., 2014). This was confirmed by the data analysis showing teachers attached importance to the opinion and satisfaction of the children. Moreover, taking the opinion of the children into account was associated with the implementation dose of Taste Lessons. During the interviews the majority of the panel members made statements about the importance to the teacher of the children being satisfied with the programme.

The inclusion of key-stakeholders and experts in the development of the tool is a considerable strength of this thesis. Several ideation and feedback sessions were organised to come to a desirable, feasible and viable tool. Validation of the tool additionally took place with the intended users, teachers.

The generalisability of findings in this research could be considered a strength. The theoretical framework in this thesis was based on literature about the adoption of innovations in public health, education, and health care. The adoption model (*figure 8*) created in this thesis can be used for other nutrition education programmes as it was based on NEP in general. However, the generalizability of the tool is low, since it was specially developed for TL.

A narrative literature review method was used to collect literature for the theoretical framework of this thesis. A limitation of this method is lacking transparency and reproducibility. A reviewer bias arises more frequently in this type of review compared to a systematic review (Collins & Fauser, 2005). Clear steps were formulated to increase transparency and reproducibility of the review.

Another limitation of this study is related to the included teachers in the evaluation of the EU-Schoolfruit and Taste Lessons. At the second measurement moment, 61 of the 76 teachers answered a questionnaire on implementation. Because not every teacher answered the questionnaire, implementation of TL could not be assessed for all children. At the follow-up measurement, 60 teachers filled-out the questionnaire on adoption. The third measurement took place in the school year, which could have resulted in different teachers answering the first and second questionnaire. Due to practical limitations it was not possible to reach the same group of teachers of the second measurement. This might have resulted in different results.

## Contributions to theory and practice

This study contributed to the literature on adoption of nutrition education programmes at primary schools. Combining a Science Communication perspective with a Public Health perspective has resulted in new theoretical and practical insights in the adoption of nutrition education programmes.

The main theoretical contribution of this thesis is the development of an adoption model specific for school-based nutrition education programmes. Although adoption has been described in literature before, research on adoption in the context of nutrition education programmes at primary schools is limited. The review of strategies to support adoption in combination with insights from practice are seen as useful input for dissemination planning in the field of education innovation.

The main contribution to practice is the tool developed to support the adoption of Taste Lessons. Needs related to the adoption of the programme have been identified by combining quantitative and qualitative methods. Moreover, the methodology used in this thesis to develop a context-specific tool to support the adoption of Taste Lessons could be a guide for future development of education innovations.

## Suggestions for further research

The results of this study have contributed to the knowledge and the potential to support the adoption of school-based nutrition education programmes in general, and Taste Lessons specifically. Future research is needed to confirm the findings, further exploring adoption determinants of NEPs and strategies to support the dissemination process.

The fact that this thesis found significant associations for just five out of 41 adoption determinants could be the result of complexity of implementing innovations. Factors outside the scope of this thesis might have affected the results. The Context and Implementation of Complex Interventions (CICI) framework, comprises an extensive overview of all domains related to complex interventions (Pfadenhauer et al., 2017). Although this framework is developed for public health interventions in general it provides insight into the extent of factors that affect interventions. Using this model might result in a deeper understanding of the complexity of the implementation of the Taste Lessons.

Future research in the field of Communication Design for Innovation could be focussed investigating the generalisability of the adoption model created in this thesis to other education innovations. The current model was based on the importance of the determinants for the adoption NEPs specifically. Although a NEP is regarded as an education innovation, determinants for different types of education innovations might differ. Similar research to this study could be performed to determine the generalisability.

# Chapter 9 Conclusion

This research aimed to identify determinants for the adoption of school-based nutrition education programmes and investigate the possibility of supporting the adoption phase. By analysing the adoption of Taste Lessons, this thesis has shown how adoption can affect implementation dose, and how the implementation dose affects the effectiveness of the programme.

Based on the results of the narrative literature review and the questionnaires executed among teachers, 28 determinants have been identified that are important for the adoption of school-based nutrition education programmes. The determinants are spread over four levels; the external context of the school, the school, the teacher and the programme. A model with the adoption determinants of nutritional education programmes at primary schools was created (*figure 8*).

From the analysis of the adoption of EU-Schoolfruit, it can be concluded that potential barriers for adoption at the school level are; financial resources, feedback giving and receiving, and collaboration with other schools. Potential barriers at the teacher level are the sense of professional obligation to perform the programme, feeling supported by professionals, having the autonomy to make the adoption decision, and the expectations of the children. Potential barriers for adoption of Taste Lessons at the school level are individual involvement and being asked for an opinion during the decision-making process, financial resources, feedback receiving and giving, the accessibility of information, formal arrangements, and inter-organisational relationships are potential barriers for adoption. Potential barriers at the teacher level are professional obligation, having the autonomy to make the adoption decision, expectations of parents and children, and taking the opinion of parents and children into account. At the external and programme levels, no potential barriers were found for both programmes.

From the analysis of association of the adoption and the implementation dose of Taste Lessons can be concluded that the number of support staff, awareness of content of the programme, the descriptive norm, expectations of the children, and programme correctness are associated with the implementation dose. Feeling supported by professionals was negatively associated with the implementation dose. Furthermore, it was found that implementation dose, in turn, was positively associated with the increase in children's nutrition knowledge.

The adoption process of Taste Lessons should be supported by a digital tool that shows teachers how they can tailor the programme to their needs, and informs them about the contents, effectiveness and substation of the programme. This conclusion is based on the more generic findings of the literature review and data analysis combined with qualitative insights specific for the context of Taste Lessons.

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## Appendix I – Operationalisation adoption determinants

Concept	Questions	Translation	Scale	Source
<b>External</b>				
<b>Legislation and regulations</b>	The activities listed in the SMAAKLESSEN PROGRAMME fit well with existing national regulations	De activiteiten van het SMAAKLESSEN PROGRAMMA passen goed bij de bestaande landelijke regelgeving	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Inter-organizational norm-setting</b>	It is the norm among schools to use nutrition education programmes	Het is norm onder scholen om gebruik te maken van educatie programma's over voeding	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Greenhalgh et al., 2004)
<b>School</b>				
<b>Organisational size</b>	How many teachers work at this school?	Hoeveel leraren werken er op deze school?	Open	(Segaar et al., 2007)
	How many support staff work at this school	Hoeveel ondersteunende medewerkers werken er op deze school? (schoolleiding, conciërge, klassenassistenten)	Open	(Segaar et al., 2007)
<b>Potential reach</b>	How many children at this school receive the SMAAKLESSEN PROGRAM?	Hoeveel kinderen ontvangen SMAAKLESSEN PROGRAMMA?	Open	(Segaar et al., 2007)
	How many children go to this school?	Hoeveel kinderen gaan er naar deze school?	Open	(Segaar et al., 2007)
<b>Unsettled organisation</b>	Are there, in addition to the using the SMAAKLESSEN PROGRAM, any other changes in the organisation affecting the implementation of the SMAAKLESSEN PROGRAMME now or in the foreseeable future?	Zijn er momenteel of in de nabije toekomst, buiten het gebruik van SMAAKLESSEN PROGRAMMA, andere veranderingen op de school die invloed hebben op het gebruik van SMAAKLESSEN PROGRAMMA?	Yes positive Yes negative No	(Fleuren et al., 2014)
<b>Coordinator</b>	In my organisation, one or more people have been designated to coordinate the process of implementing the SMAAKLESSEN PROGRAM	Op mijn school is / zijn één of meerdere personen aangewezen voor het coördineren van de invoering van het SMAAKLESSEN PROGRAMMA	(1) no (2) yes + explanation	(Fleuren et al., 2014)
<b>Absorptive capacity for</b>	This school facilitates the discovery of new knowledge	Deze school faciliteert het ontdekken van nieuwe kennis	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee	(Gold et al., 2001)

<b>new knowledge</b>			eens / (4) mee eens / (5) helemaal mee eens	
<b>Collaboration culture</b>	This school promotes interaction and sharing of knowledge between colleagues	Deze school promoot interactie en kennis uitwisseling van kennis tussen collega's	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Gold et al., 2001)
<b>Inter-organisational relationships</b>	This school collaborates with other schools regarding nutrition education	Deze school werkt samen met andere scholen wat betreft voedingseducatie	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Gold et al., 2001)
<b>Decision-making process</b>	I was involved in the decision to use the SMAAKLESSEN PROGRAM	Ik was betrokken bij de keuze om het SMAAKLESSEN PROGRAMMA te gebruiken	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Segaar et al., 2007)
	The majority of the school team was involved in the decision to use the SMAAKLESSEN PROGRAMME	De meerderheid van het school team was betrokken bij de keuze om het SMAAKLESSEN PROGRAMMA te gebruiken	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Segaar et al., 2007)
	During the decision-making process about the SMAAKLESSEN PROGRAMME I was asked for my opinion	Tijdens het besluitvormingsproces over SMAAKLESSEN PROGRAMMA werd ik gevraagd om mijn mening	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Segaar et al., 2007)
<b>Available expertise</b>	The teachers at this school have enough expertise to use the SMAAKLESSEN PROGRAM	De leraren van deze school hebben genoeg expertise om het SMAAKLESSEN PROGRAMMA te gebruiken	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Receptive context for change</b>	The SMAAKLESSEN PROGRAMMA fits in the goals and priorities of this school	Het SMAAKLESSEN PROGRAMMA past bij de doelen en prioriteiten van deze school	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Greenhalgh et al., 2004)
<b>Power balance</b>	There are more supporters than opponents of the SMAAKLESSEN PROGRAMME at this school	Er zijn meer voorstanders dan tegenstanders van het SMAAKLESSEN PROGRAMMA op deze school	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Greenhalgh et al., 2004)
<b>Financial resources</b>	There are enough financial resources to support the SMAAKLESSEN PROGRAMME as intended	Er is voldoende financiële ondersteuning in het uitvoeren van SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens	(Fleuren et al., 2014)

			eens / (4) mee eens / (5) helemaal mee eens	
<b>Time available</b>	This school provides me with enough time to include the SMAAKLESSEN as intended in my day-to-day work.	Deze school geeft me voldoende tijd om het SMAAKLESSEN PROGRAMMA uit te voeren zoals bedoeld is in mijn dagelijks werk	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Staff capacity</b>	There is enough staff to support implementation of the SMAAKLESSEN PROGRAM	Er zijn genoeg collega's om het gebruik van SMAAKLESSEN PROGRAMMA te ondersteunen	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Feedback</b>	At this school, feedback is regularly provided about progress with the implementation of the SMAAKLESSEN PROGRAMME	Op deze school vindt regelmatig terugkoppeling plaats over de voortgang van de invoering van het SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Information accessibility</b>	It is easy for me to find information in my organisation about using the SMAAKLESSEN PROGRAM	Het is makkelijk voor mij om informatie te vinden over het gebruik van het SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Formal ratification by management</b>	This school set up formal arrangements relating to the use of the SMAAKLESSEN PROGRAMME	Er zijn binnen deze school formeel afspraken vastgelegd over het gebruik van SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)

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**Teacher**

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<b>Outcome expectations</b>	It is important to achieve an increased knowledge about fruit and vegetables	Het is belangrijk om kennis over groenten en fruit te vergroten bij kinderen	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Outcome expectations</b>	It is important to achieve an increased consumption of fruit and vegetables	Het is belangrijk om inname van groenten en fruit bij kinderen te vergroten	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Professional obligation</b>	I feel it is my responsibility as a professional to use the SMAAKLESSEN PROGRAM	Het is mijn verantwoordelijkheid als leerkracht om een educatie programma over voeding te gebruiken	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)

<b>Motivation</b>	I feel motivated to perform the SMAAKLESSEN PROGRAM	Ik ben gemotiveerd om het SMAAKLESSEN PROGRAMMA uit te voeren	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)
<b>Skills</b>	I have enough skills to teach the children about healthy nutrition	Ik heb voldoende vaardigheden om het SMAAKLESSEN PROGRAMMA uit te voeren	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)
<b>Knowledge</b>	I have enough knowledge to perform the SMAAKLESSEN PROGRAM	Ik heb voldoende kennis om het SMAAKLESSEN PROGRAMMA uit te voeren	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)
<b>Meaning</b>	It has a lot of meaning to me to use the SMAAKLESSEN PROGRAM	Ik vind het belangrijk om het SMAAKLESSEN programma uit te voeren	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)
<b>Self-efficacy</b>	I feel confident I can carry out the SMAAKLESSEN PROGRAMME for the children	Ik voel me er zeker van dat ik het SMAAKLESSEN PROGRAMMA kan uitvoeren	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)
<b>Social support</b>	I can count on adequate assistance from my colleagues if I need it to use the SMAAKLESSEN PROGRAM	Ik word gesteund door mijn collega's bij het gebruiken van het SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Professional support</b>	I am being support by health professionals in implementing the SMAAKLESSEN PROGRAM	Ik word gesteund door gezondheidsdeskundigen bij het uitvoeren van het SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)
<b>Organizational support</b>	I am being supported by the principal with the implementing the SMAAKLESSEN PROGRAM	Ik kan (indien nodig) op voldoende hulp van de schooldirectie rekenen bij het inzetten van het SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)
<b>The adoption decision</b>	I can make my own choice to adopt the SMAAKLESSEN PROGRAM	Ik heb zelf besloten om het SMAAKLESSEN PROGRAMMA uit te voeren	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Kramer, 2019)

<b>Patient cooperation</b>	Clients will generally cooperate if I use the SMAAKLESSEN PROGRAM	Ik verwacht dat de kinderen mee zullen werken aan het SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Patient satisfaction</b>	Clients will generally be satisfied if I use the SMAAKLESSEN PROGRAMME	Ik verwacht dat de kinderen tevreden zullen zijn met het SMAAKLESSEN PROGRAMMA	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Descriptive norm</b>	In your opinion, what proportion of the colleagues in your organisation for whom the SMAAKLESSEN PROGRAMME is intended actually use the innovation?	Hoeveel collega's op deze school gebruiken het SMAAKLESSEN PROGRAMMA volgens u daadwerkelijk?	(1) geen enkele collega / (2) bijna geen enkele collega / (3) een minderheid / (4) de helft / (5) een meerderheid / (6) bijna alle collega's / (7) alle collega's.	(Fleuren et al., 2014)
<b>Awareness</b>	To what extent are you informed about the content of the SMAAKLESSEN PROGRAM?	In hoeverre bent u op de hoogte van de inhoud van het SMAAKLESSEN PROGRAMMA?	(1) ik ken de innovatie niet / (2) ik ken de innovatie wel, maar heb hem (nog) niet doorgelezen / (3) ik ken de innovatie en heb hem oppervlakkig doorgelezen / (4) ik ken de innovatie en heb hem volledig en grondig gelezen	(Fleuren et al., 2014).
<b>Outcome expectations</b>	The SMAAKLESSEN PROGRAMME will achieve increased knowledge on fruit and vegetables	Het SMAAKLESSEN PROGRAMMA zal kennis over groenten en fruit vergroten bij de kinderen	(1) zeer zeker niet / (2) zeker niet / (3) misschien niet, misschien wel / (4) zeker wel / (5) zeer zeker wel	(Fleuren et al., 2014)
	The SMAAKLESSEN PROGRAMME will achieve increased consumption of fruit and vegetables	Het SMAAKLESSEN PROGRAMMA zal de inname van groenten en fruit verhogen bij de kinderen	(1) zeer zeker niet / (2) zeker niet / (3) misschien niet, misschien wel / (4) zeker wel / (5) zeer zeker wel	(Fleuren et al., 2014)
<b>Subjective norm</b>	To what extent do the following people expect you to use the SMAAKLESSEN PROGRAM <ul style="list-style-type: none"> <li>- Parents</li> <li>- Principal</li> <li>- Children</li> <li>- Co-workers</li> </ul>	In welke mate verwachten de volgende mensen dat je het SMAAKLESSEN PROGRAMMA gebruikt? <ul style="list-style-type: none"> <li>- Ouders</li> <li>- Schoolleiding</li> <li>- Kinderen</li> <li>- Collega's</li> </ul>	(1) zeer zeker niet / (2) zeker niet / (3) misschien niet, misschien wel / (4) zeker wel / (5) zeer zeker wel	(Fleuren et al., 2014)
	When it comes to using the SMAAKLESSEN PROGRAM, to what extent do you comply with the opinions of the following people <ul style="list-style-type: none"> <li>- Parents</li> </ul>	Wat betreft het gebruik van het SMAAKLESSEN PROGRAMMA, in welke mate houdt u rekening met de mening van de volgende mensen? <ul style="list-style-type: none"> <li>- Ouders</li> </ul>	(1) zeer weinig / (2) weinig / (3) niet weinig, niet veel / (4) veel / (5) zeer veel	(Fleuren et al., 2014)



- Principal
- Children
- Co-workers

- Schoolleiding
- Kinderen
- Collega's

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**Program**

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<b>Compatibility</b>	... fits into the way I work at school	... past goed bij de manier waarop ik werk op school	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Complexity</b>	... is easy for me to use	... is makkelijk in het gebruik	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Relevance</b>	... is relevant for the children	... vind ik geschikt voor mijn klas	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Procedural clarity</b>	... clearly describes the activities I should perform and in which order	... beschrijft duidelijk welke activiteiten ik moet uitvoeren en in welke volgorde	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)(Kramer, 2019)
<b>Completeness</b>	... provides all the information and materials needed to work with it properly	... bevat alle informatie en materialen die ik nodig heb om goed te werken	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)
<b>Correctness</b>	... is based on factually correct knowledge	... is gebaseerd op feitelijk correcte kennis	(1) helemaal mee oneens / (2) mee oneens / (3) noch mee oneens, noch mee eens / (4) mee eens / (5) helemaal mee eens	(Fleuren et al., 2014)

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## Appendix II – Overview of definitions and strength of evidence of the adoption determinants

Concept	Definition Fleuren	Greenhalgh	Wisdom
<b>External</b>			
<b>Legislation and regulations</b>	Degree to which the innovation fits in with existing legislation and regulations established by the competent authorities <sup>g</sup>	A policy “push” occurring at the early stage of implementation of an innovation initiative can increase its chances of success, perhaps most crucially by making available a dedicated funding stream <sup>e</sup>	Government policy and regulation enacted that have direct implications on adoption
<b>Inter-organizational norm-setting</b>	-	An important influence on an organization’s decision to adopt is whether a threshold proportion of comparable (homophilous) organizations have done so or plan to do so. <sup>e</sup>	Extra-organizational environment’s influences on adoption
<b>Organizational</b>			
<b>Organisational size</b>	Organizational size (number of employees): large, medium size, small	An organization will adopt innovations more readily if it is large (size) <sup>a</sup>	Organizational operation resources, size, and structure
<b>Potential reach</b>	Number of potential users to be reached: many, few	-	-
<b>Unsettled organisation</b>	Degree to which there are other changes in progress (organisational or otherwise) that represent obstacles to the process of implementing the innovation, such as re-organisations, mergers, cuts, staffing changes or the simultaneous implementation of different innovations. <sup>h</sup>	-	-
<b>Coordinator</b>	The presence of one or more persons responsible for coordinating the implementation of the innovation in the organisation. <sup>f</sup>	<u>Receptive context for change:</u> A receptive context towards adopting innovation contains: Strong leadership and a clear strategic vision <sup>e</sup>	-
<b>Absorptive capacity for new knowledge</b>	-	<u>Absorptive capacity for new knowledge:</u> An organization will be better able to assimilate innovations when it has: <ul style="list-style-type: none"> <li>• Pre-existing knowledge/skills base: Capacity to link it with its own existing knowledge base</li> <li>• The ability to find, interpret, recodify and integrate new knowledge</li> </ul>	Organizational capacity to utilize innovative and existing knowledge

Enablement of knowledge sharing via internal and external networks<sup>e</sup>

<b>Collaboration culture</b>	Nature of the collaboration between departments involved in the innovation	<p><u>Absorptive capacity for new knowledge:</u> An organization will be better able to assimilate innovations when it has: Enablement of knowledge sharing via internal and external networks<sup>c</sup></p>	-
<b>Inter-organisational relationships</b>	Relationship with other departments or organizations: introvert or outreaching	<p><u>Absorptive capacity for new knowledge:</u> An organization will be better able to assimilate innovations when it has: Enablement of knowledge sharing via internal and external networks<sup>c</sup></p>	-
<b>Decision-making process</b>	Decision-making process and procedures in the organization: top-down or bottom-up/participatory	<p><i>The adoption decision:</i> An individual's decision to adopt an innovation is rarely independent of other decisions. It may be:</p> <ul style="list-style-type: none"> <li>• Contingent: Dependent on a decision made by someone else in the organization.</li> <li>• Collective: The individual has a 'vote' but ultimately must respect the group decision.</li> <li>• Authoritative: The individual is told whether or not to adopt it.<sup>b</sup></li> </ul>	-
<b>Available expertise</b>	Available expertise, in relation to the innovation in the organization or department	An organization will adopt innovations more readily if it: Is specialized, with foci or professional knowledge <sup>e</sup>	-
<b>Receptive context for change</b>	-	<p>A receptive context towards adopting innovation contains: Clear goals and priorities<sup>c,d</sup></p>	-
<b>Power balance</b>	-	<p>Innovation is more likely to be assimilated if the supporters outnumber and are more strategically placed than the opponents. <sup>c,d</sup></p>	-
<b>Financial resources</b>	Availability of financial resources needed to use the innovation. <sup>g</sup>	<p>When an organisation has a sufficient budget and adequate and continuing resources to allocate to an innovation, assimilation of that innovation is more likely.<sup>c,d</sup></p>	Financial costs and feasibility associated with an innovation

<b>Time available</b>	Amount of time available to use the innovation <sup>f</sup>	When an organisation has a sufficient budget and adequate and continuing resources to allocate to an innovation, assimilation of that innovation is more likely. <sup>c,d</sup>	-
<b>Staff capacity</b>	Adequate staffing in the department or in the organisation where the innovation is being used. <sup>g</sup>	-	-
<b>Feedback</b>	Feedback to the user about progress with the innovation process <sup>f</sup>	Feedback on progress: Accurate and timely info on the impact of the implementation process, increases the chance of successful routinization. <sup>c,d</sup>	Individualized feedback on the execution and fidelity of adopting an innovation
<b>Information accessibility</b>	Accessibility of information about the use of the innovation <sup>f</sup>	-	-
<b>Formal ratification by management</b>	Formal reinforcement by management to integrate innovation into organizational policies <sup>f</sup>	-	-
<b>Teacher</b>			
<b>Outcome expectations</b>	Perceived probability and importance of achieving the client objectives as intended by the innovation <sup>f</sup>	-	-
<b>Professional obligation</b>	Degree to which the innovation fits in with the tasks for which the user feels responsible when doing his/her work. <sup>g</sup>	-	-
<b>Motivation</b>	-	An intended adopter who is motivated and able (in terms of values, goals, skills) to use a particular innovation is more likely to adopt it. If the innovation meets an identified need by the intended adopter, adoption is more likely. <sup>e</sup>	Individual characteristics such as awareness of innovations, skills, knowledge, and experience with adoption
<b>Skills</b>	Extent to which the health professional has the skills needed to implement the innovation	-	Individual characteristics such as awareness of innovations, skills, knowledge, and experience with adoption
<b>Knowledge</b>	Degree to which the user has the knowledge needed to use the innovation <sup>g</sup>	If the knowledge required for the innovation's use can be codified and transferred from one context to another, it will be adopted more easily. <sup>c,d</sup>	Individual characteristics such as awareness of innovations, skills, knowledge, and experience with adoption
<b>Meaning</b>	-	The meaning of an innovation for the intended adopter has a strong influence on the adoption decision. If the meaning attached to the innovation by individual adopters matches the meaning attached by top management, service users, and	-

		other stakeholders, the innovation is more likely to be assimilated. <sup>c,d</sup>	
<b>Self-efficacy</b>	Degree to which the user believes he or she is able to implement the activities involved in the innovation. <sup>f</sup>	-	-
<b>Social support</b>	Support experienced or expected by the user from important social referents relating to the use of the innovation (for example from colleagues, other professionals they work with, heads of department or management).	Adopting innovations is influenced by structure/quality of social networks <sup>c,d</sup>	Social linkages fostered among individual staff
<b>Professional support</b>	-	-	-
<b>Organizational support</b>	Support from/of higher management in the organization with respect to the implementation of the innovation	Leadership may be especially helpful in encouraging organizational members to break out of the convergent thinking and routines that are the norm in large, well-established organizations <sup>e</sup>	-
<b>The adoption decision</b>	-	An individual's decision to adopt an innovation is rarely independent of other decisions. It may be: Contingent: Dependent on a decision made by someone else in the organization. Collective: The individual has a 'vote' but ultimately must respect the group decision. Authoritative: The individual is told whether or not to adopt it. <sup>b</sup>	-
<b>Patient cooperation</b>	Degree to which the user expects clients to cooperate with the innovation <sup>g</sup>	-	Readiness and capacity of a client/consumer — the recipient of an innovation — to adopt
<b>Patient satisfaction</b>	Degree to which the user expects clients to be satisfied with the innovation. <sup>f</sup>	-	-
<b>Descriptive norm</b>	Colleagues' observed behaviour; degree to which colleagues use the innovation. <sup>f</sup>	-	-
<b>Awareness</b>	Degree to which the user has learnt about the content of the innovation <sup>f</sup>	-	Individual characteristics such as awareness of innovations, skills, knowledge, and experience with adoption
<b>Subjective norm</b>	The influence of important others on the use of the innovation. <sup>f</sup>	-	-

**Program**

<b>Compatibility</b>	Degree to which the innovation is compatible with the values and working method in place. <sup>f</sup>	Innovations that are compatible with the intended adopters' values, norms, and perceived needs are more readily adopted <sup>e</sup>	Perceived goodness-of-fit between an innovation and one's norms and values
<b>Complexity</b>	Degree to which implementation of the innovation is complex <sup>f</sup>	Innovations that are perceived by key players as simple to use are more easily adopted <sup>e</sup>	Perceived complexity, relative advantage over other innovations or existing practice, and the visibility of an innovation
<b>Relevance</b>	Degree to which the user believes the innovation is relevant for his/her client. <sup>f</sup>	If the innovation is relevant to the performance of the intended user's work and if it improves task performance, it will be adopted more easily <sup>c</sup>	-
<b>Procedural clarity</b>	Extent to which the innovation is described in clear steps / procedures. <sup>f</sup>	If the innovation is feasible, workable, and easy to use, it will be adopted more easily <sup>e</sup>	-
<b>Completeness</b>	Degree to which the activities described in the innovation are complete <sup>f</sup>	-	-
<b>Correctness</b>	Degree to which the innovation is based on factually correct knowledge. <sup>f</sup>	-	-

- a. Implicit evidence
- b. Moderate indirect evidence
- c. Moderate direct evidence
- d. Strong indirect evidence
- e. Strong direct evidence
- f. Based on meta-analysis of empirical data
- g. Based on theoretical expectations of implementation experts
- h. Based on practical experience of implementation experts

## Appendix III – Questionnaire about NEPs in general

Beste Leerkracht,

Dit jaar doet u mee aan de effectmeting van het EU-Schoolfruit programma. Wij hebben nog wat vragen voor u. De vragen gaan over het schoolbeleid voor groente en fruit en over voedingseducatie programma's in het algemeen. Het invullen van de vragenlijst zal ongeveer 15 minuten duren. Wij willen u vragen zo eerlijk mogelijk antwoord te geven. De antwoorden worden anoniem verwerkt.

Alvast bedankt voor de medewerking!

#### ALGEMENE INFORMATIE

Wat is uw leeftijd? .....

Wat is uw geslacht?

- Man
- Vrouw
- Zeg ik liever niet

Hoeveel jaar heeft u ervaring als leerkracht? .....

Hoeveel jaar werkt u op deze school? .....

Wat is de naam van deze school? .....

Welke groep geeft u les?

- Groep 7
- Groep 8
- Anders, namelijk .....

Hoeveel leraren werken er op deze school? .....

Hoeveel ondersteunende medewerkers werken er op deze school? (Schoolleiding, conciërge, klassenassistenten ect.) .....

Hoeveel kinderen gaan er naar deze school? .....

Voert uw school een actief voedingsbeleid? (Meerdere opties zijn mogelijk)

- Ja, t.a.v. gezonde pauzehappen
- Ja, t.a.v. een gezonde lunch
- Ja, t.a.v. gezond drinken
- Ja, t.a.v. gezonde traktaties
- Ja, t.a.v. anders, namelijk .....
- Nee

Indien uw school geen actief voedingsbeleid voert, wat is de reden hiervoor?

.....

Op sommige scholen zijn specifieke regels voor het meenemen van groente of fruit naar school. Is dat op uw school ook het geval? En zo ja, voor hoeveel dagen per week?

- Ja, voor ..... dagen per week
- Nee

Geef voor de volgende producten aan hoeveel kinderen dit mee namen naar school op de verplichte groente en fruitdagen (indien van toepassing)

	Geen kinderen	Weinig kinderen	De helft van de kinderen	Veel kinderen	Alle kinderen
Groente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Koek	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Geef voor de volgende producten aan hoeveel kinderen dit mee namen naar school op de niet-verplichte groente en fruitdagen (indien van toepassing)

	Geen kinderen	Weinig kinderen	De helft van de kinderen	Veel kinderen	Alle kinderen
Groente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Koek	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wat gebeurt er als een regel of advies niet wordt nageleefd (door een leerling of een ouder)?

.....  
 .....

Doet u zelf mee aan de voedingsadviezen, bijvoorbeeld door ook fruit te eten tijdens de vaste groente en fruitdagen?

- Ja
- Nee

Waarom doet u wel/niet mee met deze voedingsadviezen?

.....  
 .....

Ouders en/of leerlingen worden op de hoogte gesteld van onze regels/adviezen m.b.f. gezonde voeding door:

- Niet, wij hebben geen regels/adviezen
- Schoolgids
- Nieuwsbrief (papier en/of digitaal)
- Bericht op de website
- Ouderavond(en)
- Het te noemen tijdens de les
- Het te noemen bij de aanmelding van een nieuwe leerling
- Anders, namelijk: .....



Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent

	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Deze school promoot interactie en kennisuitwisseling tussen collega's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deze school werkt samen met andere scholen wat betreft educatie over voeding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deze school werkt samen met andere organisaties wat betreft educatie over voeding (bijvoorbeeld universiteiten, het voedingscentrum, de GGD)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deze school faciliteert het ontdekken van nieuwe kennis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### VOEDINGSEDUCTIE PROGRAMMA'S

Hoeveel collega's op deze school gebruiken een voedingseducatie programma volgens u?

- Geen enkele collega
- Bijna geen enkele collega
- Een minderheid
- De helft
- Een meerderheid
- Bijna alle collega's
- Alle collega's

In hoeverre bent u op de hoogte van voedingseducatie programma's?

- Ik ken geen voedingseducatie programma's
- Ik ken wel voedingseducatie programma's, maar ik heb me er (nog) niet in verdiept
- Ik ken voedingseducatie programma's en ik heb me er oppervlakkig in verdiept
- Ik ken voedingseducatie programma's en ik heb me er volledig en grondig in verdiept

Geef aan in hoeverre de volgende statements belangrijk zijn voor een voedingseducatie programma

Het voedingseducatie programma....	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
... moet goed passen bij de manier waarop ik werk op school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... moet makkelijk zijn in het gebruik	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... moet geschikt zijn voor mijn klas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... moet duidelijk beschrijven welke activiteiten ik moet uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... moet duidelijk beschrijven in welke volgorde ik de activiteiten moet uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... moet alle informatie en materialen bevatten die ik nodig heb om goed te werken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... moet gebaseerd zijn op feitelijk correcte kennis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Geef voor de volgende uitspraken aan in welke mate u deze belangrijk vindt met betrekking tot voedingseducatie programma's

Ik vind het belangrijk dat.....	Ze er zeker niet	Zeker niet	Misschien niet/misschien wel	Zeker wel	Ze er zeker wel	n.v.t.
Ik word betrokken bij de keuze om een voedingseducatie programma te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De meerderheid van het schoolteam wordt betrokken bij de keuze om een voedingseducatie programma te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik word gevraagd om mijn mening tijdens het besluitvormingsproces over een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De leraren van deze school genoeg expertise hebben om een voedingseducatie programma te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Een voedingseducatie programma past bij de doelen en prioriteiten van deze school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zijn meer voorstanders dan tegenstanders van een voedingseducatie programma op deze school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er is voldoende financiële ondersteuning in het uitvoeren van een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deze school me voldoende tijd geeft om een voedingseducatie programma uit te voeren zoals bedoeld is in mijn dagelijks werk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er genoeg collega's zijn om het gebruik van een voedingseducatie programma te ondersteunen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er regelmatig terugkoppeling plaats vindt over de voortgang van de invoering van een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het makkelijk is voor mij om informatie te vinden over het gebruik van een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er binnen deze school afspraken zijn vastgelegd over het gebruik van een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent

	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Het is belangrijk om kennis over groente en fruit te vergroten bij kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het is belangrijk om inname van groente en fruit bij kinderen te vergroten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het is mijn verantwoordelijkheid als leerkracht kennis en inname van groente en fruit te vergroten bij kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Als u zou besluiten een voedingseducatie programma te gebruiken, in hoeverre vindt u de volgende dingen dan belangrijk

Ik vind het belangrijk...	Zeer zeker niet	Zeker niet	Misschien niet/ misschien wel	Zeker wel	Zeer zeker wel
Dat ik gemotiveerd ben om een voedingseducatie programma uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dat ik voldoende vaardigheden heb om een voedingseducatie programma uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dat ik voldoende kennis heb om een voedingseducatie programma uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dat ik me er zeker van voel dat ik een voedingseducatie programma kan uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dat de kinderen mee zullen werken aan een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dat de kinderen tevreden zullen zijn met een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dat ik gesteund word door mijn collega's bij het gebruiken van een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dat ik gesteund word door gezondheidsdeskundigen bij het uitvoeren van een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dat ik (indien nodig) op voldoende hulp van de schooldirectie kan rekenen bij het inzetten van een voedingseducatie programma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In welke mate heeft u het idee dat de volgende mensen verwachten dat u een voedingseducatie programma gebruikt?

	Zeer zeker niet	Zeker niet	Misschien niet/ misschien wel	Zeker wel	Zeer zeker wel
Ouders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Schoolleiding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collega's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gemeente en/of GGD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wat betreft het eventuele gebruik van voedingseducatie programma's, in welke mate houdt u rekening met de mening van de volgende mensen?

	Zeer weinig	Weinig	Niet weinig / Niet veel	Veel	Zeer veel
Ouders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Schoolleiding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collega's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gemeente en/of GGD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## EXTERNE FACTOREN

Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent

	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Het is norm onder scholen om gebruik te maken van educatie programma's over voeding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voedingseducatie programma's passen goed bij de bestaande landelijke regelgeving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Mogen wij u benaderen voor een eventueel vervolgonderzoek?

- Ja  
 Liever niet  
 Nee

Zo ja, wat is uw e-mailadres? .....

Heeft u nog verdere opmerkingen?

.....  
 .....

Ontzettend bedankt voor het invullen van deze vragenlijst. Dat helpt ons onderzoek weer een stuk verder. We sturen de uitkomsten van de effectmeting via de mail naar de contactpersoon van uw school

Hartelijk dank voor uw medewerking het afgelopen jaar!

Hartelijke groet,

Angeliek Verdonschot

Promovendus  
 Wageningen University & Research (WUR)  
 Email: angeliek.verdonschot@wur.nl

## Appendix IV – Questionnaire on EUS and TL



Beste Leerkracht,

Afgelopen jaar heeft uw klas meegedaan aan het EU-SCHOOLFRUIT programma en het SMAAKLESSEN programma. Dit jaar doet u mee aan de effectmeting van de studie naar de effecten van deze programma's. Daarom hebben wij nog wat vragen voor u. Het kan zijn dat u sommige vragen herkent van de vragenlijst van vorig jaar, toch zouden we u willen vragen deze nog een keer in te vullen. Er zullen over het EU-SCHOOLFRUIT en de SMAAKLESSEN dezelfde vragen gesteld worden. We zouden u willen vragen goed in de gaten te houden voor welk programma u de vragen invult. Het invullen van de vragenlijst zal ongeveer 20 minuten duren. Wij willen u vragen zo eerlijk mogelijk antwoord te geven. De antwoorden worden anoniem verwerkt.

Alvast bedankt voor de medewerking!

#### ALGEMENE INFORMATIE

Wat is uw leeftijd? .....

Wat is uw geslacht?

- Man
- Vrouw
- Zeg ik liever niet

Hoeveel jaar heeft u ervaring als leerkracht? .....

Hoeveel jaar werkt u op deze school? .....

Wat is de naam van deze school? .....

Welke groep geeft u les?

- Groep 7
- Groep 8
- Anders, namelijk .....

Heeft u vorig jaar het EU-SCHOOLFRUIT PROGRAMMA in deze klas uitgevoerd?

- Ja
- Nee, wie heeft het programma wel uitgevoerd? .....

Heeft u vorig jaar het SMAAKLESSEN PROGRAMMA in deze klas uitgevoerd?

- Ja
- Nee, wie heeft het programma wel uitgevoerd? .....

Hoeveel leraren werken er op deze school? .....

Hoeveel ondersteunende medewerkers werken er op deze school? (Schoolleiding, conciërge, klassenassistenten ect.) .....

Hoeveel kinderen gaan er naar deze school? .....

Hoeveel kinderen hebben het EU-SCHOOLFRUIT PROGRAMMA ontvangen afgelopen jaar? .....

Hoeveel kinderen hebben het SMAAKLESSEN PROGRAMMA ontvangen afgelopen jaar? .....

Op mijn school is/zijn één of meerdere personen aangewezen voor het coördineren van de invoering van het EU-SCHOOLFRUIT PROGRAMMA

- Ja, namelijk .....
- Nee

Op mijn school is/zijn één of meerdere personen aangewezen voor het coördineren van de invoering van het SMAAKLESSEN PROGRAMMA

- Ja, namelijk .....
- Nee

Op mijn school is/zijn één of meerdere personen verantwoordelijk voor het uitvoeren van het EU-SCHOOLFRUIT PROGRAMMA

- Ja, namelijk .....
- Nee

Op mijn school is/zijn één of meerdere personen verantwoordelijk voor het uitvoeren van het SMAAKLESSEN PROGRAMMA

- Ja, namelijk .....
- Nee

Zijn er momenteel of in de nabije toekomst, buiten het gebruik van het EU-SCHOOLFRUIT PROGRAMMA, andere veranderingen op de school die invloed hebben op het gebruik van het EU-SCHOOLFRUIT PROGRAMMA? (Bijvoorbeeld; andere (voedings-)programma's, reorganisatie)

- Ja een positief effect, namelijk .....
- Ja een negatief effect, namelijk .....
- Nee

Zijn er momenteel of in de nabije toekomst, buiten het gebruik van het SMAAKLESSEN PROGRAMMA, andere veranderingen op de school die invloed hebben op het gebruik van het SMAAKLESSEN PROGRAMMA? (Bijvoorbeeld; andere (voedings-)programma's, reorganisatie)

- Ja een positief effect, namelijk .....
- Ja een negatief effect, namelijk .....
- Nee

Voert uw school een actief voedingsbeleid? (meerdere opties zijn mogelijk)

- Ja, t.a.v. gezonde pauzehappen
- Ja, t.a.v. een gezonde lunch
- Ja, t.a.v. gezond drinken
- Ja, t.a.v. gezonde traktaties
- Ja, t.a.v. anders, namelijk .....
- Nee

Indien uw school geen actief voedingsbeleid voert, wat is de reden hiervoor?

Op sommige scholen zijn specifieke regels voor het meenemen van groente of fruit naar school. Is dat op uw school ook het geval? En zo ja, voor hoeveel dagen per week?

- Ja, voor ..... dagen per week  
 Nee

Hoe is het EU-SCHOOLFRUIT PROGRAMMA op uw school na afloop voortgezet (vanaf april 2019)?

- Wij hebben een abonnement afgesloten voor een gezond tussendoortje  
 Wij hebben de ouders aangemoedigd om groenten en fruit als snack mee te geven naar school  
 Wij hebben geen speciale actie ondernomen  
 Wij hebben .... vaste groente en fruit dagen ingesteld, of hebben het aantal dagen uitgebreid  
 Anders, namelijk .....

Geef voor de volgende producten aan hoeveel kinderen dit mee namen naar school op de verplichte groente en fruitdagen na afloop van het EU-SCHOOLFRUIT PROGRAMMA indien van toepassing

	Geen kinderen	Weinig kinderen	De helft van de kinderen	Veel kinderen	Alle kinderen
Groente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Koek	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Geef voor de volgende producten aan hoeveel kinderen dit mee namen naar school op de niet-verplichte groente en fruitdagen na afloop van het EU-SCHOOLFRUIT PROGRAMMA indien van toepassing

	Geen kinderen	Weinig kinderen	De helft van de kinderen	Veel kinderen	Alle kinderen
Groente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Koek	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wat gebeurt er als een regel of advies m.b.t. gezonde voeding niet wordt nageleefd (door een leerling of een ouder)?

.....  
 .....

Doet u zelf mee aan de voedingsadviezen, bijvoorbeeld door ook fruit te eten tijdens de vaste groente en fruitdagen of tijdens het EU-SCHOOLFRUIT?

- Ja  
 Nee

Ouders en/of leerlingen worden op de hoogte gesteld van onze regels/adviezen m.b.t. gezonde voeding door (meerdere opties mogelijk):

- Niet, wij hebben geen regels/adviezen  
 Schoolgids  
 Nieuwsbrief (papier en/of digitaal)  
 Bericht op de website  
 Ouderavond(en)  
 Het te noemen tijdens de les  
 Het te noemen bij de aanmelding van een nieuwe leerling  
 Anders, namelijk: ...

Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent

	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Deze school promoot interactie en kennisuitwisseling tussen collega's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deze school werkt samen met andere scholen wat betreft educatie over voeding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deze school werkt samen met andere organisaties wat betreft educatie over voeding (Bijvoorbeeld universiteiten, het voedingscentrum, de GGD)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deze school faciliteert het ontdekken van nieuwe kennis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### HET EU-SCHOOLFRUIT PROGRAMMA OP DEZE SCHOOL



Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent

	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Ik was betrokken bij de keuze om het EU-SCHOOLFRUIT PROGRAMMA te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De meerderheid van het schoolteam was betrokken bij de keuze om het EU-SCHOOLFRUIT PROGRAMMA te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tijdens het besluitvormingsproces over EU-SCHOOLFRUIT PROGRAMMA werd ik gevraagd om mijn mening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De leraren van deze school hebben genoeg expertise om het EU-SCHOOLFRUIT PROGRAMMA te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het EU-SCHOOLFRUIT PROGRAMMA past bij de doelen en prioriteiten van deze school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zijn meer voorstanders dan tegenstanders van het EU-SCHOOLFRUIT PROGRAMMA op deze school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Er is voldoende financiële ondersteuning in het uitvoeren van het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deze school geeft me voldoende tijd om het EU-SCHOOLFRUIT PROGRAMMA uit te voeren zoals bedoeld is in mijn dagelijks werk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zijn genoeg collega's om het gebruik van EU-SCHOOLFRUIT PROGRAMMA te ondersteunen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Op deze school krijg ik regelmatig feedback over de voortgang van de invoering van het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Op deze school kan ik regelmatig feedback geven over de voortgang van de invoering van het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het is makkelijk voor mij om informatie te vinden over het gebruik van het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zijn binnen deze school afspraken vastgelegd over het gebruik van het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### HET SMAAKLESSEN PROGRAMMA OP DEZE SCHOOL

Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent



	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Ik was betrokken bij de keuze om het SMAAKLESSEN PROGRAMMA te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De meerderheid van het schoolteam was betrokken bij de keuze om het SMAAKLESSEN PROGRAMMA te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tijdens het besluitvormingsproces over het SMAAKLESSEN PROGRAMMA werd ik gevraagd om mijn mening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De leraren van deze school hebben genoeg expertise om het SMAAKLESSEN PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het SMAAKLESSEN PROGRAMMA past bij de doelen en prioriteiten van deze school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zijn meer voorstanders dan tegenstanders van het SMAAKLESSEN PROGRAMMA op deze school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er is voldoende financiële ondersteuning in het uitvoeren van het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik krijg voldoende tijd om het SMAAKLESSEN PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zijn genoeg collega's om het gebruik van het SMAAKLESSEN PROGRAMMA te ondersteunen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Op deze school krijg ik regelmatig feedback over de voortgang van de invoering van het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Op deze school kan ik regelmatig feedback geven over de voortgang van de invoering van het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Het is makkelijk voor mij om informatie te vinden over het gebruik van het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zijn binnen deze school afspraken vastgelegd over het gebruik van het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### INDIVIDUELE INFORMATIE – ALGEMEEN

Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent

	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Het is belangrijk om kennis over groente en fruit te vergroten bij kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het is belangrijk om inname van groente en fruit bij kinderen te vergroten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het is mijn verantwoordelijkheid als leerkracht om een educatie programma over voeding te gebruiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### INDIVIDUELE INFORMATIE – EU-SCHOOLFRUIT

Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent

	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Ik ben gemotiveerd om het EU-SCHOOLFRUIT PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik heb voldoende vaardigheden om het EU-SCHOOLFRUIT PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik heb voldoende kennis om het EU-SCHOOLFRUIT PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik vind het belangrijk om het EU-SCHOOLFRUIT PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik voel me er zeker van dat ik het EU-SCHOOLFRUIT PROGRAMMA kan uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik word gesteund door mijn collega's bij het gebruiken van het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik word gesteund door gezondheidsdeskundigen bij het uitvoeren van het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik kan (indien nodig) op voldoende hulp van de schooldirectie rekenen bij het inzetten van het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik heb zelf besloten om het EU-SCHOOLFRUIT PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de kinderen mee zullen werken aan het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de kinderen tevreden zullen zijn met het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Hoeveel collega's op deze school gebruiken het EU-SCHOOLFRUIT PROGRAMMA volgens u daadwerkelijk?

- Geen enkele collega
- Bijna geen enkele collega
- Een minderheid
- De helft
- Een meerderheid
- Bijna alle collega's
- Alle collega's

In hoeverre bent u op de hoogte van de inhoud van het EU-SCHOOLFRUIT PROGRAMMA?

- Ik ken het EU-SCHOOLFRUIT PROGRAMMA niet
- Ik ken het EU-SCHOOLFRUIT PROGRAMMA wel, maar ik heb me er (nog) niet erin verdiept
- Ik ken het EU-SCHOOLFRUIT PROGRAMMA en ik heb me er oppervlakkig in verdiept
- Ik ken het EU-SCHOOLFRUIT PROGRAMMA en ik heb me er volledig en grondig in verdiept

	Zeer zeker niet	Zeker niet	Misschien niet/ misschien wel	Zeker wel	Zeer zeker wel
Het EU-SCHOOLFRUIT PROGRAMMA zal kennis over groenten en fruit vergroten bij de kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het EU-SCHOOLFRUIT PROGRAMMA zal de inname van groenten en fruit verhogen bij de kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In welke mate verwachten de volgende mensen dat u het EU-SCHOOLFRUIT PROGRAMMA gebruikt?

	Zeer zeker niet	Zeker niet	Misschien niet/ misschien wel	Zeker wel	Zeer zeker wel
Ouders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Schoolleiding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collega's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wat betreft het gebruik van het EU-SCHOOLFRUIT PROGRAMMA, in welke mate houdt u rekening met de mening van de volgende mensen?

	Zeer weinig	Weinig	Niet weinig/ Niet veel	Veel	Zeer veel
Ouders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Schoolleiding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collega's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## INDIVIDUELE INFORMATIE – SMAAKLESSEN

Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent



	Helemaal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Ik ben gemotiveerd om het SMAAKLESSEN PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik heb voldoende vaardigheden om het SMAAKLESSEN PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik heb voldoende kennis om het SMAAKLESSEN PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik vind het belangrijk om het SMAAKLESSEN PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik voel me er zeker van dat ik het SMAAKLESSEN PROGRAMMA kan uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik word gesteund door mijn collega's bij het gebruiken van het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik word gesteund door gezondheidsdeskundigen bij het uitvoeren van het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik kan (indien nodig) op voldoende hulp van de schooldirectie rekenen bij het inzetten van het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik heb zelf besloten om het SMAAKLESSEN PROGRAMMA uit te voeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de kinderen mee zullen werken aan het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de kinderen tevreden zullen zijn met het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hoeveel collega's op deze school gebruiken het SMAAKLESSEN PROGRAMMA volgens u daadwerkelijk?

- Geen enkele collega
- Bijna geen enkele collega
- Een minderheid
- De helft
- Een meerderheid
- Bijna alle collega's
- Alle collega's

In hoeverre bent u op de hoogte van de inhoud van het SMAAKLESSEN PROGRAMMA?

- Ik ken het SMAAKLESSEN PROGRAMMA niet
- Ik ken het SMAAKLESSEN PROGRAMMA wel, maar ik heb me er (nog) niet erin verdiept
- Ik ken het SMAAKLESSEN PROGRAMMA en ik heb me er oppervlakkig in verdiept
- Ik ken het SMAAKLESSEN PROGRAMMA en ik heb me er volledig en grondig in verdiept

Geef aan in hoeverre u het eens bent met de volgende stellingen

	Ze er ze ker niet	Ze ker niet	Missch ien niet/ Missch ien wel	Ze ker wel	Ze er ze ker wel
Het SMAAKLESSEN PROGRAMMA zal kennis over groenten en fruit vergroten bij de kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het SMAAKLESSEN PROGRAMMA zal de inname van groenten en fruit verhogen bij de kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In welke mate verwachten de volgende mensen dat u het SMAAKLESSEN PROGRAMMA gebruikt?

	Ze er ze ker niet	Ze ker niet	Missch ien niet/ Missch ien wel	Ze ker wel	Ze er ze ker wel
Ouders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Schoolleiding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collega's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wat betreft het gebruik van het SMAAKLESSEN PROGRAMMA, in welke mate houdt u rekening met de mening van de volgende mensen?

	Ze er we inig	We inig	Niet we inig /niet veel	Ve el	Ze er ve el
Ouders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Schoolleiding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kinderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collega's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### EXTERNE FACTOREN

Geef voor de volgende uitspraken aan in welke mate u het hier mee eens of oneens bent

	He le maal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	He le maal mee eens
Het is norm onder scholen om gebruik te maken van educatie programma's over voeding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De activiteiten van het EU-SCHOOLFRUIT PROGRAMMA passen goed bij de bestaande landelijke regelgeving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De activiteiten van het SMAAKLESSEN PROGRAMMA passen goed bij de bestaande landelijke regelgeving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ouders geven minder fruit mee <u>tijdens</u> het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ouders geven meer fruit mee <u>na</u> het EU-SCHOOLFRUIT PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ouders geven minder fruit mee <u>tijdens</u> het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ouders geven meer fruit mee <u>na</u> het SMAAKLESSEN PROGRAMMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### HET EU-SCHOOLFRUIT PROGRAMMA

Geef aan in hoeverre de volgende statements van toepassing zijn

	He le maal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	He le maal mee eens
Het EU-SCHOOLFRUIT PROGRAMMA....					
... past goed bij de manier waarop ik werk op school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... is makkelijk in het gebruik	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... vind ik geschikt voor mijn klas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... beschrijft duidelijk welke activiteiten ik moet uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... beschrijft duidelijk in welke volgorde ik de activiteiten moet uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... bevat alle informatie en materialen die ik nodig heb om goed te werken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... is gebaseerd op feitelijk correcte kennis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### HET SMAAKLESSEN PROGRAMMA

Geef aan in hoeverre de volgende statements van toepassing zijn

	He le maal mee oneens	Mee oneens	Noch mee oneens, noch mee eens	Mee eens	He le maal mee eens
Het SMAAKLESSEN PROGRAMMA....					
... past goed bij de manier waarop ik werk op school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... is makkelijk in het gebruik	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... vind ik geschikt voor mijn klas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... beschrijft duidelijk welke activiteiten ik moet uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... beschrijft duidelijk in welke volgorde ik de activiteiten moet uitvoeren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... bevat alle informatie en materialen die ik nodig heb om goed te werken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... is gebaseerd op feitelijk correcte kennis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Mogen wij u benaderen voor een eventueel vervolgonderzoek?

- Ja
- Liever niet
- Nee

Zo ja, wat is uw e-mailadres? .....

Heeft u nog verdere opmerkingen?

.....  
.....  
.....

Ontzettend bedankt voor het invullen van deze vragenlijst. Dat helpt ons onderzoek weer een stuk verder. Wij wensen u veel plezier met het uitvoeren van het EU-Schoolfruit programma en wellicht ook de Smaaklessen.

We brengen uw school op de hoogte van de uitkomsten van het onderzoek via de mail. We verwachten dat dit ergens halverwege 2020 zal zijn.

Hartelijk dank voor uw medewerking het afgelopen jaar!

Hartelijke groet,

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## Appendix V – Children’s questionnaire

# Vragenlijst over eten en drinken

## Hoi!

Je gaat wat vragen invullen over eten en drinken. Dat wordt in deze vragen producten genoemd.

Dit is geen toets, dus er zijn geen goede of foute antwoorden. Geef daarom een eerlijk antwoord op elke vraag en vul hem voor jezelf in. Je mag niet overleggen met je klasgenootjes!

Bij elke vraag wordt uitgelegd hoe je de vraag moet invullen. Je moet bijvoorbeeld het juiste antwoord omcirkelen.

Als voorbeeld: Wat is jouw lievelingsdier?

- Hond
- Poes
- Konijn
- Hamster

Wanneer je een antwoord wilt veranderen, geef je dit zo aan:

- ~~Hond~~
- Poes
- Konijn
- Hamster

Veel plezier met het invullen!

## Informatie over jou

### Hoe heet je?

Ik heet: .....

### Op welke school zit je?

Mijn school heet: .....

### Ben je een jongen of een meisje?

- Jongen
- Meisje

### In welke groep zit je?

- groep 5
- groep 6
- groep 7
- groep 8

### Hoe oud ben je?

Ik ben ..... jaar oud

## Wat is het meest gezond?

**Wat is het meest gezond?** Met gezonde producten bedoelen we producten die goed zijn voor je lichaam.

Omcirkel het goede antwoord:



● Sinaasappel



● Sinaasappelsap



● Ik weet het niet

**Wat is het meest gezond om in te bakken?**

Omcirkel het goede antwoord:



● Olijfolie



● Margarine



● Ik weet het niet

**Wat is het meest gezond om te snacken?**

Omcirkel het goede antwoord:



● Chips



● M&M's



● Popcorn



● Ik weet het niet

**Wat is het meest gezond om te drinken?**

Omcirkel het goede antwoord:



● Fristi



● Chocolademelk



● Melk



● Ik weet het niet

### Wat is het meest gezond om op brood te smeren?

Omcirkel het goede antwoord:



● Margarine



● Halvarine



● Roomboter



● Ik weet het niet

## De Schijf van Vijf

### Ken je de Schijf van Vijf?

- Ja, die ken ik en ik weet wat er in staat
- Ja, daar heb ik wel eens van gehoord
- Nee, die ken ik niet



### Uitleg

De Schijf van Vijf bevat 5 vakken met groepen gezonde producten. Bijvoorbeeld: in het groene vak zitten groente en fruit en in het blauwe vak zit het drinken, zoals water en melk. Je hebt deze producten nodig om te groeien en gezond te blijven. Bij elk vak staat hoeveel je ervan nodig hebt.

## Hoeveel heb jij nodig?

### Hoeveel fruit heb jijzelf (leeftijd 8-11 jaar) elke dag nodig om te groeien en gezond te blijven volgens de Schijf van Vijf?

Omcirkel het goede antwoord:

- een half stuk fruit
- 1 stuk fruit
- 1.5 - 2 stuks fruit
- 2 - 3 stuks fruit
- 4 stuks fruit
- Ik weet het niet

### Hoeveel groente heb jijzelf (leeftijd 8-11 jaar) elke dag nodig om te groeien en gezond te blijven volgens de Schijf van Vijf?

Omcirkel het goede antwoord:

- 0-50 gram groente
- 50-100 gram groente
- 100-200 gram groente
- 200-300 gram groente
- 300-350 gram groente
- Ik weet het niet

### Hoeveel water moet jijzelf (leeftijd 8-11 jaar) elke dag drinken om te groeien en gezond te blijven volgens de Schijf van Vijf?

Omcirkel het goede antwoord:

- 0.5 liter tot 1 liter drinken
- 1 liter tot 1.5 liter drinken
- 1.5 liter tot 2 liter drinken
- 2 liter tot 2.5 liter drinken
- 2.5 liter tot 3 liter drinken
- Ik weet het niet



= 0.5 liter



= 1.0 liter

**Als je brood eet, hoeveel sneetjes brood heb jijzelf (8-11 jaar) per dag nodig om te groeien en gezond te blijven volgens de Schijf van Vijf?**

Omcirkel het goede antwoord:

- 1-2 sneetjes
- 2-4 sneetjes
- 4-6 sneetjes
- 6-7 sneetjes
- 7-8 sneetjes
- Ik weet het niet

**Als je aardappelen eet, hoeveel aardappelen heb jijzelf (8-11 jaar) per dag nodig om te groeien en gezond te blijven volgens de Schijf van Vijf?**

Omcirkel het goede antwoord:

- 1-2 stuks
- 2-3 stuks
- 3-5 stuks
- 5-6 stuks
- 6-7 stuks
- Ik weet het niet

**Wat lijkt jou het meest gezonde bord met avondeten?**

Omcirkel het goede antwoord:

Een bord met 2 kipschnitzels, 3 aardappelen en broccoli op de helft van het bord



● bord 1

Een bord met 1 kipschnitzel, 3 aardappelen en broccoli op een kwart van het bord



● bord 2

Een bord met 1 kipschnitzel, 3 aardappelen en broccoli op de helft van het bord



● bord 3

Een bord met 2 kipschnitzels, 2 aardappelen en broccoli op een kwart van het bord



● bord 4

## Vitamines en Mineralen

### Uitleg

Vitamines en mineralen zijn stoffen die in kleine hoeveelheden in eten en drinken zitten. Je hebt ze nodig om goed te groeien.

### In volkorenbrood zitten ...

Omcirkel het goede antwoord:

- Minder vitamines en mineralen dan in wit brood
- Evenveel vitamines en mineralen als in wit brood
- Meer vitamines en mineralen dan in wit brood
- Ik weet het niet

### Waarom is het belangrijk om melk te drinken?

Omcirkel het goede antwoord:

- Melk is goed voor een gezonde huid en ogen
- Melk is goed voor je botten en tanden
- Door melk word je minder snel ziek
- Ik weet het niet

### Waarom zijn vitamines in fruit en groente belangrijk?

Omcirkel het goede antwoord:

- In vitamines zit veel energie
- Vitamines zorgen ervoor dat je goed kunt poepen
- Door vitamines word je minder snel ziek
- Ik weet het niet

**Waarom zijn vezels (uit bijvoorbeeld volkorenbrood) belangrijk?**

Omcirkel het goede antwoord:

- In vezels zit veel energie
- Van vezels krijg je veel spieren
- Vezels zorgen ervoor dat je goed kunt poepen
- Ik weet het niet

**Waarom is het belangrijk om aardappelen te eten?**

Omcirkel het goede antwoord:

- In aardappelen zit veel energie
- Van aardappelen krijg je veel spieren
- Aardappelen zijn goed voor een gezonde huid en ogen
- Ik weet het niet

## Groepen in de Schijf van Vijf

De Schijf van Vijf bevat 5 vakken met groepen gezonde producten. De volgende vragen gaan over welke producten in welke vakken horen.



**Welk plaatje hoort er niet bij?**

Omcirkel het goede antwoord:



- Bruine bonen
- Banaan
- Tomaat
- Pruim
- Ik weet het niet

**Welk plaatje hoort er niet bij?**

Omcirkel het goede antwoord:



- Havermout
- Rijst
- Pasta
- Hazelnoten
- Ik weet het niet

**Welk plaatje hoort er niet bij?**

Omcirkel het goede antwoord:



- Kwark
- Melk
- Kaas
- Halvarine
- Ik weet het niet

## Zintuigen

### Met je tong kun je proeven of ergens zout in zit

Omcirkel het goede antwoord:

- Waar     
  Niet waar     
  Weet ik niet

### Het maakt niet uit of je neus open of dicht zit, je proeft altijd evenveel

Omcirkel het goede antwoord:

- Waar     
  Niet waar     
  Weet ik niet

### Als iets lekker ruikt, gaat het speeksel in je mond lopen

Omcirkel het goede antwoord:

- Waar     
  Niet waar     
  Weet ik niet

### Als ik iets proef, kan ik zeggen of het zoet, zuur, bitter of zout is

Omcirkel het goede antwoord:

- Ja     
  Een beetje     
  Nee

## Biologisch

### Op biologische producten zitten dezelfde bestrijdingsmiddelen als op gewone producten

Omcirkel het goede antwoord:

- Waar     
  Niet waar     
  Weet ik niet

### Welk keurmerk past niet goed bij de rest?

Omcirkel het goede antwoord:



Keurmerk 1



Keurmerk 2



Keurmerk 3



Keurmerk 4



Ik weet het niet

## Wat heb jij gisteren gegeten?

### Welke dag was het gisteren?

Gisteren was het .....



## In de ochtend...

### Heb je gisteren ontbijt gehad of iets in de kleine pauze gegeten?

- Ja     
  Nee

### Zo ja, heb je gisteren tijdens je ontbijt of in de kleine pauze fruit of groente gegeten?

- Ja     
  Nee

### Zo ja, wat voor fruit of groente? En hoeveel heb je daarvan gegeten?

Schrijf 1 als je 1 hele appel hebt gegeten, schrijf een half als je een halve appel hebt gegeten. Als jouw fruit of groente niet in de tabel staat, kun je dat in de tabel zelf invullen.

Fruit in de ochtend			Groente in de ochtend		
Appel	.....	Stuk	Komkommer	.....	Schijfjes
Banaan	.....	Stuk	Snoeptomaatje	.....	Stuks
Mandarijn	.....	Stuk	Paprika	.....	Reepjes
Druiven	.....	Handje	Wortel	.....	Stuk
Gesneden fruit	.....	Bakje	Gesneden groente	.....	Bakje
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....



## In de middag...

Heb je gisteren lunch gehad of iets tussendoor in de middag gegeten?

- Ja       Nee

**Zo ja**, heb je gisteren bij je lunch of tussendoor in de middag **fruit of groente** gegeten?

- Ja       Nee

**Zo ja**, wat voor **fruit of groente**? En hoeveel heb je daarvan gegeten?

Schrijf 1 als je 1 hele appel hebt gegeten, schrijf een half als je een halve appel hebt gegeten. Als jouw fruit of groente niet in de tabel staat, kun je dat in de tabel zelf invullen.

Fruit in de middag		Groente in de middag			
Appel	.....	Stuk	Komkommer	.....	Schijfjes
Banaan	.....	Stuk	Snoeptomaatje	.....	Stuks
Mandarijn	.....	Stuk	Paprika	.....	Reepjes
Druiven	.....	Handje	Wortel	.....	Stuks
Gesneden fruit	.....	Bakje	Gesneden groente	.....	Bakje
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....

## In de avond...

Heb je gisteren avondeten gehad of iets als snack na het avondeten gegeten?

- Ja       Nee

**Zo ja**, heb je gisteren bij je avondeten of als snack na het avondeten **fruit of groente** gegeten?

- Ja       Nee

**Zo ja**, wat voor **fruit of groente**? En hoeveel heb je daarvan gegeten?

Schrijf 1 als je 1 hele appel hebt gegeten, schrijf een half als je een halve appel hebt gegeten. Als jouw fruit of groente niet in de tabel staat, kun je dat in de tabel zelf invullen.



= 1 opscheplepel

Fruit in de avond		Groente in de avond			
Appel	.....	Stuk	Komkommer	.....	Schijfjes
Banaan	.....	Stuk	Sperziebonen	.....	Opscheplepels
Mandarijn	.....	Stuk	Broccoli	.....	Opscheplepels
Peer	.....	Stuk	Bloemkool	.....	Opscheplepels
Frambozen	.....	Handje	Spinazie	.....	Opscheplepels
Druiven	.....	Handje	Gemengde salade	.....	Opscheplepels
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....



## Eetgewoontes

### Hoe vaak eet je vers fruit?

- Nooit
- Minder dan 1x per week
- 1x per week
- 2-4x per week
- 5-6x per week
- 1x per dag
- 2x per dag
- Meer dan 2x per dag

### Hoe vaak eet je salade met groente? Bijvoorbeeld een salade met sla, komkommer en tomaat.

- Nooit
- Minder dan 1x per week
- 1x per week
- 2-4x per week
- 5-6x per week
- 1x per dag
- 2x per dag
- Meer dan 2x per dag



### Hoe vaak eet je rauwe groente? Bijvoorbeeld een snoeptomaatje.

- Nooit
- Minder dan 1x per week
- 1x per week
- 2-4x per week
- 5-6x per week
- 1x per dag
- 2x per dag
- Meer dan 2x per dag



### Hoe vaak eet je aardappelen?

- Nooit
- Minder dan 1x per week
- 1x per week
- 2-4x per week
- 5-6x per week
- 1x per dag
- 2x per dag
- Meer dan 2x per dag

### Hoe vaak eet je gekookte groente (aardappelen horen hier niet bij!)

- Nooit
- Minder dan 1x per week
- 1x per week
- 2-4x per week
- 5-6x per week
- 1x per dag
- 2x per dag
- Meer dan 2x per dag

## Wat krijg jij mee van huis?

### Hoe vaak krijg je fruit of groente mee van huis?

- Elke dag
- 3-4x per week
- 2-3x per week
- 1x per week
- Nooit

### Hoe vaak krijg je snoep of koek mee van huis?

- Elke dag
- 3-4x per week
- 2-3x per week
- 1x per week
- Nooit

### Hoe vaak krijg je frisdrank of limonade mee van huis?

- Elke dag
- 3-4x per week
- 2-3x per week
- 1x per week
- Nooit

## Vragen over eten...

### Kijk je wel eens op een verpakking welke ingrediënten er in producten zitten?

- Ja, altijd
- Ja, meestal wel
- Soms wel, soms niet
- Nee, meestal niet
- Nee, nooit

### Als je zelf mocht kiezen, wat neem je dan het liefst mee naar school voor in de kleine pauze?

Omcirkel één antwoord:

- Snoep
- Chips
- Fruit
- Boterham
- Groente
- Koek
- Anders, namelijk .....

### Help je je ouders/verzorgers wel eens met koken?

- Elke dag
- 3-4x per week
- 2-3x per week
- 1x per week
- Soms
- Nooit

**Vinden je ouders/verzorgers gezond eten belangrijk?**

- Ja       Een beetje       Nee

**Vraag je je ouders/verzorgers wel eens om bepaalde soorten groente of fruit te kopen?**

- Ja       Soms       Nee

**Wordt er bij jou thuis over gezond eten gepraat?**

- Ja       Soms       Nee

**Gebruik je wel eens een recept om mee te koken?**

- Ja       Soms       Nee

**Maak je wel eens samen met anderen eten klaar?**

- Ja       Soms       Nee

**Maak je wel eens een gezonde snack?**

- Ja       Soms       Nee

Heb je alle vragen ingevuld?

Dan ben je **klaar!**

**Dankjewel voor het invullen!**



## Appendix VI – Semi-structured interview protocol

Nine interviews have been carried out in the first round of the Delphi study. These interviews were needed to collect information to be able to create the survey for the second round. Because participation in the Delphi study was anonymous, no names will be provided, only functions. They will be listed in a random order. The nine interviews that were carried out, were held with:

- Teacher, grade 7, Catholic primary school, Limburg
- Teacher, children aged 7 to 10, Special needs education, Overijssel
- Teacher, grade 7 and 8, Public primary school, Drenthe
- Teacher and schoolcoördinator, grade 7 and 8, Groningen
- Principal primary school, Waldorf education, Utrecht
- Project manager, GGD, Noord-Holland
- Programme manager, JOGG, National
- Project manager, Municipality, Zuid-Holland
- Project manager, Smaaklessen, Gelderland

### The protocol

#### **Verbale toestemming**

Even een formaliteit om mee te beginnen. De resultaten van dit interview zullen anoniem gebruikt worden in het onderzoek. Geef jij je toestemming dat dit interview opgenomen wordt?

Introductie methode

- Lengte van het interview 30-45 minuten duren
- Doel; praktisch informatie verzamelen over de huidige ervaringen met implementatie en mogelijkheden voor verbetering ervan

#### **Achtergrond informatie**

Afgelopen jaar is het smaaklessen programma (kort uitleggen als ze het niet kennen) geëvalueerd. Er is gekeken naar de effecten van het programma op de kennis en inname van groente en fruit. Vorig jaar heeft een mede student onderzocht hoe veel lessen van de vijf daadwerkelijk uitgevoerd zijn. Hier uit kwam dat er gemiddeld 2,8 lessen uitgevoerd zijn en dat er logischerwijs een relatie tussen het aantal uitgevoerde lessen en de toename in kennis was. Nou heb ik onderzocht waarom de implementatie niet zo hoog was. De fase voor implementatie is de adoptie, de keuze om het programma wel of niet te gebruiken. Ik heb onderzocht hoe het programma scoort op verschillende factoren die te maken hebben met implementatie.

#### **Mijn belangrijkste bevindingen:**

- Betrokkenheid bij de keuze
- Mening gevraagd over de keuze
- Het ontvangen van feedback
- Feedback geven
- Regels op school over het gebruik
- Samenwerken met scholen
- Professionele verantwoordelijkheid
- Professionele support
- De keuze om het te gebruiken
- Verwachtingen ouders

- Verwachtingen kinderen
- Rekening houden met ouders
- Rekening houden met kinderen

Het doel van deze stap is om te kijken of ik een tool of methode kan maken die zorgt dat zowel de adoptie als implementatie beter verloopt. Hiervoor wil ik graag input vanuit meerdere mensen in de praktijk. Ik heb leraren die het programma hebben uitgevoerd, leraren die het programma niet hebben uitgevoerd, schoolleiders, gezonde schooladviseurs, en JOGG makelaars uitgenodigd. Eerst zal ik alle informatie uit de interviews verzamelen. Om vervolgens een lijst te maken met functionaliteiten voor de tool of methode. Ik zal je dan deze lijst mailen met de vraag om jouw top drie van belangrijkste functionaliteiten er uit te kiezen.

Heb je voor zover nog vragen over dit onderzoek?

### **Ervaring met het implementeren van programma's (Smaaklessen)**

Wat is jouw ervaring met het implementeren van de smaaklessen of andere educatieve programma's?

- Wat ging er goed
- Wat ging er minder goed?

Wat zou je kunnen helpen met het implementeren van de Smaaklessen

- Feedback
- Training
- Samenwerking
- Concrete doelen

Wat zijn dingen die het implementeren van de smaaklessen in de weg zouden kunnen staan ?

Hoe zie je dat voor je in de praktijk ?

### **Afsluiting**

Dit was alles wat ik wilde vragen. Nu ga ik het verwerken en dan een lijst maken met functionaliteiten van de tool/methode. Deze zal ik je dan mailen en het zou heel fijn zijn als je daar dan je top drie uit zou willen kiezen. Ontzettend bedankt voor je tijd.

## Appendix VII – Survey

Seven of the nine panel members completed this survey. The goal of this survey was to set priorities for the development of the tool. The seven surveys that were carried out, were completed by:

- Teacher, grade 7, Catholic primary school, Limburg
- Teacher, children aged 7 to 10, Special needs education, Overijssel
- Teacher, grade 7 and 8, Public primary school, Drenthe
- Project manager, GGD, Noord-Holland
- Programme manager, JOGG, National
- Project manager, Municipality, Zuid-Holland
- Project manager, Smaaklessen, Gelderland

## Ronde 2

Beste deelnemer,

Bedankt voor je deelname aan de tweede ronde. Ik heb alle resultaten van de interviews verwerkt en hiervan een vragenlijst gemaakt om prioriteit te geven aan verschillende aspecten voor de tool. Deze verschillende aspecten zijn het doel van de tool, de doelgroep voor wie de tool bestemd is, de activiteiten in moeten worden opgenomen in de tool, de manier van aanleveren en de inhoud van de tool. In totaal zijn het 30 aspecten waarvan ik je ga vragen of je ze op een schaal van 1 tot 5 wil beoordelen, van minst belangrijk tot heel belangrijk. Ik wil je graag vragen om de vragen vanuit je eigen ervaring en expertise te beantwoorden.

### 1. Deelnemer

\_\_\_\_\_

### 2. Doel - Welke uitkomst moet de tool faciliteren?

*Vink alle toepasselijke opties aan.*

	1	2	3	4	5
Interne samenwerking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Externe samenwerking tussen leraren	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Externe samenwerking met andere partijen (schooltuinen, buurtcentra)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Het op maat maken van het programma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
De keuze maken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Het gebruik van de smaaklessen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 3. Doelgroep - Voor wie moet de tool zijn? Het doel van de tool hangt hier ook mee samen.

*Vink alle toepasselijke opties aan.*

	1	2	3	4	5
Leraren die vooroplopen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leraren die volgen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ouders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Directie	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 4. Activiteiten - Op welke plek kan de tool het best worden aangeboden?

*Vink alle toepasselijke opties aan.*

	1	2	3	4	5
Evenementen (beurzen, informatie markten)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Externe training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interne training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landelijke campagne	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 5. Vorm - Welke vorm moet de tool hebben?

*Vink alle toepasselijke opties aan.*

	1	2	3	4	5
Digitaal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analoog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



6. Inhoud - Welke onderdelen moet de tool bevatten?

Vink alle toepasselijke opties aan.

	1	2	3	4	5
Advies over het gebruik	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Achtergrond informatie over gezondheid en voeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Voorbeelden van het gebruik	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Checklist voor de benodigdheden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communicatie materialen (flyers, nieuwsbrieven, posters)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wetenschappelijke onderbouwing van het programma (effecten, inhoud)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gastdocenten die lessen komen geven	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Handvatten	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reminders voor het uitvoeren	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vraagbaak, de mogelijkheid om vragen te stellen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kort overzicht met de inhoud van het programma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-learning voor het gebruik van het programma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Appendix IX – Code groups

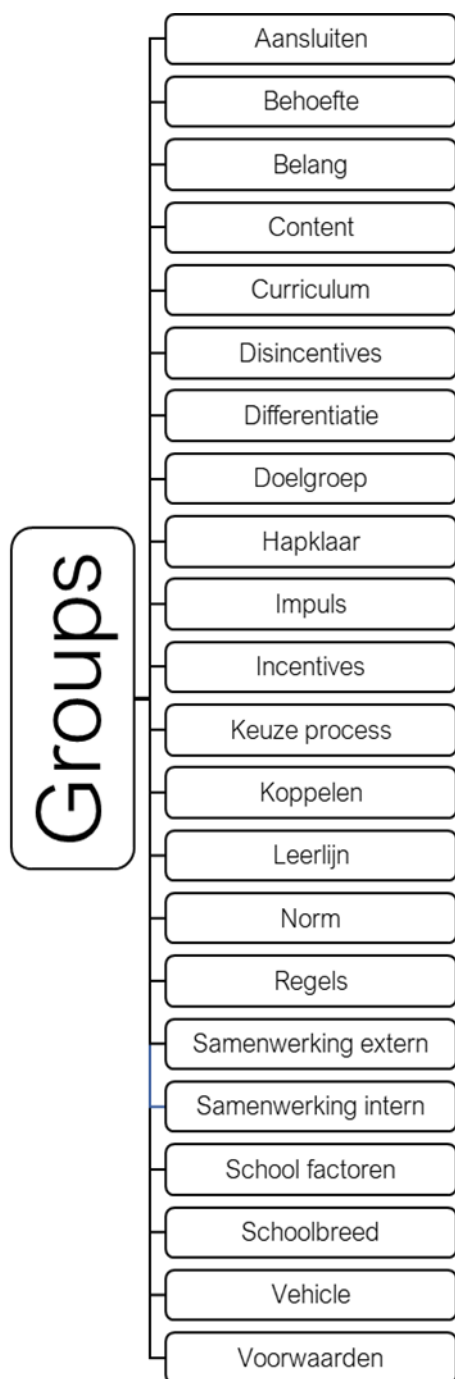


FIGURE 21 - CODING TREE AFTER AXIAL CODING

## Appendix X – Code clusters

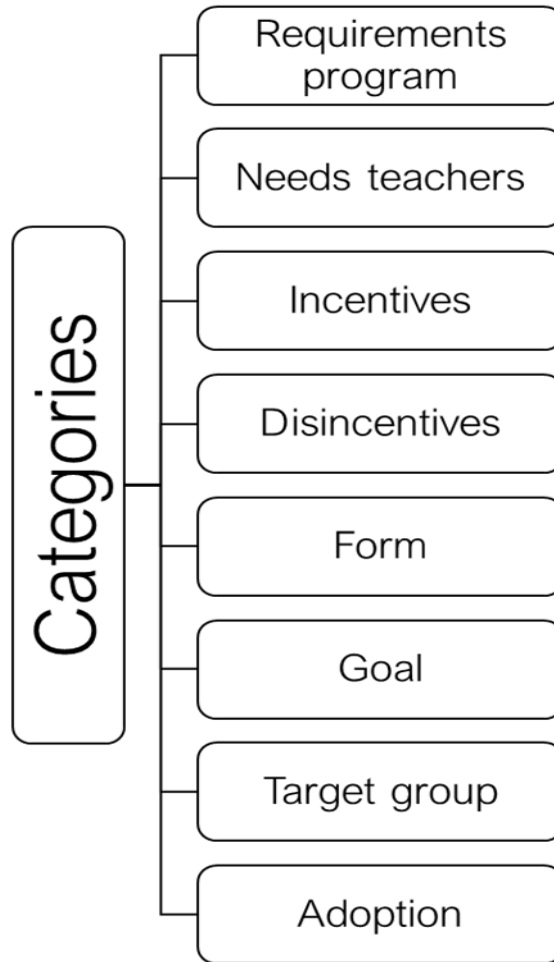


FIGURE 22 - CODING TREE AFTER AXIAL CODING

## Appendix XI – Code cluster after validation

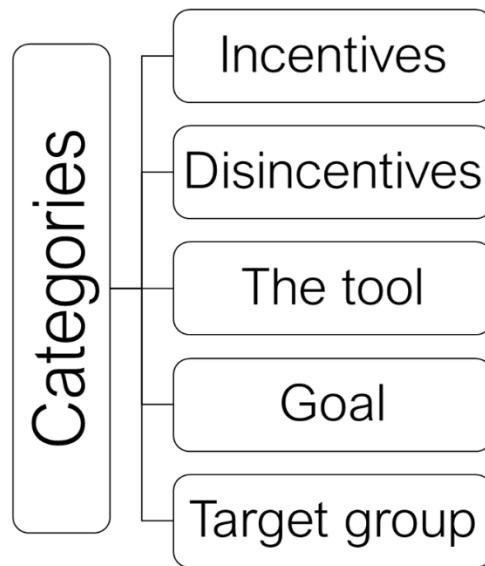


FIGURE 23 - CODING TREE AFTER VALIDATION

## **Appendix XII – Participants ideation, feedback and validation sessions**

Various experts and practitioners participated in different parts of this study. An overview of these people will follow below.

### **Validation of the questionnaires**

Wolf Reurik, Primary school teacher

Marieke Haring, Primary school teacher

Anouk Mesch, Student Nutrition and Health

### **The first ideation session**

Isabella Kropholler, Project manager local energy projects

### **Expert consultation**

Suzanne Haring, Project manager and process facilitator education innovation

Fieke Franken, Project manager Taste Lessons

### **Feedback sessions**

Linda Vos, MSc Science Communication

Martine Rottink, MSc Science Communication

Suzanne Haring, Project manager and process facilitator education innovation

Fieke Franken, Project manager Taste Lessons

### **Validation session**

Marieke Haring, Teacher grade 3, Waldorf education

Eline Sijbers, Teacher grade 3, Public education