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Food, taste and education. Experiences in and from food ateliers in a Reggio Emilia perspective

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In memory of my mother and father

Dedicated to Carla Rinaldi

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Abstract

Food education, particularly in school settings, has traditionally focussed on health-oriented issues like improving or developing healthy eating habits, combatting obesity or preventing and addressing eating disorders. Aspects regarding the emotional, relational and sensory aspects of food and taste have often not been considered among the main aims of the teaching/learning, although sensory experiences have been much studied from consumer and gastronomic perspectives, beyond the scope of this thesis. In recent years there has been a certain shift towards recognizing the importance and impact of experiential and bodily aspects of the role of food in education. One of the objectives of this PhD project is to enter into the dialogue regarding the aims of food and taste education, by studying how food ateliers can broaden and deepen an approach to multisensory food education. The empirical materials were collected during food ateliers in formal and non-formal settings carried out both in-person and online with participants ranging in age from preschool children to adults, thus in a lifelong learning perspective. The project was carried out in the context of Pause Atelier dei Sapori in Reggio Emilia, whose food ateliers aim to represent a sensitive and creative approach to food, not only focused on multisensory experimentation, but also contributing to joyful, participatory food education in line with the Reggio Emilia Approach (REA).

Three case studies highlight the fundamentally multisensory characteristic of food ateliers as a way to engage in food and taste education. They offer insight into learners' experiences of and with food, generated from their explorations in the atelier settings and/or the choice of foods explored and give examples of what sensuous

food-based education can look like. My research expands, concretizes and develops both previous research and offers insight into REA philosophy regarding taste and food education, more specifically with a lifelong learning perspective in food ateliers designed and conducted by Pause Atelier dei Sapori. Up until now the specific topic of food ateliers has not been discussed in the research literature and my work thus fills a gap in the knowledge base.

The PhD project is structured in three separate but related studies of food ateliers described in three papers I wrote. Paper 1, published in the international journal Food and Foodways in January 2024, describes the design of a pedagogical setting for taste and food education at a preschool, studying themes in the children's learning and thought processes focused on aspects highlighted by direct sensory experiences with foods as well as their broader meta-reflections about their attitudes towards foods. Paper 2, published in the Cambridge Journal of Education, studies an online food and taste atelier centered on learners' individual food choices and perceptions in a lifelong learning perspective. Taste was explored through and in relation to the other senses, as each participant rendered their taste experience through graphic mark-making. These drawings were subsequently analyzed both inductively and deductively using a tool developed specifically to study the role of expressive languages in exploring and representing their taste perceptions and experiences. Paper 3, published in the journal Food, Culture & Society, investigates the prefigurations of primary and secondary school students and teachers before participating in a series of non-formal food ateliers, and then surveyed what their reflections were after their experiences. Data

analysis revealed that the participants' thinking shifted thanks to their multisensory explorations.

This project thus has a dual purpose: 1) to create new knowledge about learners' sensory perceptions and experiences of and with food and 2) to present new artifacts/strategies regarding food and taste education. The case studies focus on the foods we see and eat every day, taking the time to explore, savor and hone sensory awareness, focusing attention on the intricacy and uniqueness of each person's multisensory perception of food, something we all have in common and yet is nonetheless intensely personal. Each case study exemplified how greater sensory awareness of attitudes or changes in attitudes towards foods, for example, was a result of the food atelier pathways the learners participated in. The multisensory experiences of and with food also deepened engagement by highlighting the crossmodal associations and sensory perceptions of the participants and in general created the opportunity for embodied learning to take place, connecting mind and body. While the food ateliers were not designed to offer "recipes" for implementing and engaging in taste and food education, they nonetheless offer concrete examples of what learner-centered, sense-based food education can look like and may offer insight into the thinking underlying the REA/Pause way of approaching food and taste education.

Acknowledgements

I have been fortunate to be directly involved with the Reggio Emilia approach since 2010, working as an atelierista at a school and then at Fondazione Reggio Children, where I also had the opportunity to collaborate with Pause Atelier dei Sapori, before becoming a PhD student. All of these experiences have enriched me personally and professionally. I would like to thank Cooperativa Panta Rei, my colleagues at Nidoscuola Eni06 and Pause Atelier dei Sapori for all of the training, projects and professional development opportunities I have been part of over the years, which laid the foundation for this PhD project.

My PhD supervisor, Erik Fooladi, supported and guided me through the whole process and my learning curve has been steep, challenging yet thrilling. The pathway to becoming a researcher, thanks to constant dialogue and exchange over the past three years, collaborating on two of the case studies and the period I spent in Norway working directly with Dr. Fooladi, have been invaluable experiences.

I would like to thank Paola Cavazzoni, CEO of Pause Atelier dei Sapori and co-supervisor of this thesis, for the numerous opportunities to deepen and broaden my knowledge and especially the inquiries around food, which inspired me to choose this topic for this thesis.

I would also like to thank Lorenzo Manera for his support and guidance as well as the other PhD fellows from the 37th cycle for the exchanges and deep connections that we forged.

Heartfelt thanks also to my friends Vincent Paone and Ilaria Muzzi and my sister Amy Bickers, for taking the time to proofread my writing.

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Milan, October 2024

List of publications

Paper 1 (published) : ”Exploring the Senses of Taste with Young Children: Multisensory Discoveries of Food”. 2024. *Food and Foodways, 32,1*.

DOI:10.1080/07409710.2024.2298175

Co-authored with Erik C. Fooladi and Lorenzo Manera.

Paper 2 (published): “Multisensory Experiences with and of Food: Representing Taste Visually and Verbally during Food Ateliers in a Reggio Emilia Perspective”. 2025. *Cambridge Journal of Education.* DOI: 10.1080/0305764X.2025.2459924

Co-authored with Erik C. Fooladi.

Paper 3 (published): “The States of taste: Primary and Secondary School Students’ and Teachers’ Ideas on Food Ateliers in a Reggio Emilia Perspective”. 2024. *Food, Culture & Society*, 1–17. DOI: 10.1080/15528014.2024.2443335

No co-authors.

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Note regarding photographs:

All photos were taken by the author during food ateliers and are property of Pause Atelier dei Sapori.
Some images feature Pause's cook atelierista, Alessandro Tagliavini.



1 Introduction

1.1 Purpose and objectives of the study

Underlying this research project is the importance of establishing positive, pleasurable and empowering experiences with food, starting from early childhood. Research has shown that children form lifelong eating habits starting as young as 2 years old (Wadhera et al., 2015), and that exposure to foods and having the opportunity to explore them in educational contexts can support and enhance curiosity and knowledge-building about food and taste (Laureati & Pagliarini, 2019; Wiggins et al., 2024). Food ateliers, here developed in the context of the Reggio Emilia approach (REA) and designed and conducted by Pause Atelier dei Sapori, are examples of unconventional, playful and pleasurable settings for engaging in food and taste education, starting with young children. This project investigates food atelier settings and the knowledge they promote, aiming to fill a gap in the literature in the field of food and taste education, as well as to situate REA thinking and Pause's activities with regard to other approaches to food and taste education over time.

This research project is also in dialogue with the broad field of sensory studies, since people's multisensory perceptions of and with food are central aspects of the case studies. It is important to point out that, while traditionally in Western culture sight and sound are considered "higher senses", this project aims to bring to the fore the knowledge generated by considering all of the senses and especially smell, taste and

touch, which have been called “lower senses” (Korsmeyer, 2004), supporting a holistic, multisensory vision of food and taste education.

While family dynamics around food and early childhood experiences at home during mealtimes are without a doubt very impactful on children’s taste development, there can be complex emotions at play and situations (beyond the scope of the present thesis) regarding issues like control, rejection of foods due to sensitivity to textures or the parents’ own (problematic or unhealthy) food attitudes which can influence children as they develop their own eating habits. This can result in the “normalization” of 3-6 year old children becoming obese or picky eaters (Pashman & Rutt, 2024). The best outcome is for children to be able to “regulate their own intake of food and choose the things that will do them good while giving them pleasure” (Wilson, 2015, p. 182). These important issues related to health and eating disorders, which are being diagnosed in younger and younger children nowadays, will not be addressed specifically in this thesis, but they are part of the landscape where food and taste education operate.

Another aspect of the articles written during the course of my PhD is that they offer examples of food and taste education that are characterized by a lifelong learning perspective[1], since Pause Atelier dei Sapori works with people of all ages during food ateliers that take place at the Centro Internazionale Loris Malaguzzi or off-site in formal and non-formal spaces or online, nationally and internationally. The case studies allowed me not only to gauge how successful the food atelier design intents were, but also to collect information about unexpected outcomes in general, which can be

[1] “Lifelong learning is a broad concept concerning an individual's education that is viewed as flexible, diverse and available at different times and places throughout life” as defined in The European Commission’s White Paper Teaching and learning: Towards the learning society [COM(1995) 590 final] available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:51995DC0590

valuable in future iterations of these or other food atelier experiences and in generating knowledge about people's experiences of and with food. The study offers insight into REA philosophy around taste and food education, since up until now the specific topic of food ateliers has not been discussed in academic literature. REA/Pause food and taste education aims to foster sensory and self-awareness regarding each person's experience of and with food, in an effort to create positivity and pleasure with regard to food and taste, guided by each participant's natural curiosity and multisensory perceptions.

1.1.2 Context of the thesis - Investigator background

The thesis project is thus firmly rooted within REA philosophy. I have a long-standing background in education and have been involved with REA since 2010, when I was hired as an atelierista at a newly opened school just outside Milan, designed and realized in collaboration with Reggio Children, set up according to REA philosophy. I worked there until 2019. In the meantime, in 2018, I began commuting between Milan and Reggio Emilia to be an atelierista in a new project on play and learning, scintillae[2], run by Fondazione Reggio Children and funded by the Lego Foundation. Throughout this entire period, I also developed an interest in food and taste education. While working at the school, my first year-long project was focused on language, drawing and food and over time I have been involved in several projects and study days about REA philosophy and food education. Since 2017, when Pause Atelier dei Sapori became part of Fondazione Reggio Children, I have been part of the Pause team, designing,

[2] See www.scintillae.org

conducting (together with Pause's cook-atelieristas), documenting and creating pedagogical documentation about food ateliers in formal and non-formal settings, in person and on-line, including carrying out basic data analysis regarding some of Pause's food and taste education initiatives. Thus food and taste education was a natural research direction to choose when starting this PhD project, not in the least because of a gap in academic and scientific research about this specific topic.

An important note about the ateliers analyzed in the articles: Pause Atelier dei Sapori created the concept, developed and conducted of each of the food ateliers discussed in the articles. These food ateliers are an expression of REA, in that the cultural and civic DNA of the ateliers stems from the kitchens of the infant-toddler centers and preschools of the city of Reggio Emilia, and I will refer to them as 'REA/Pause food ateliers' herein. Outside the field of early childhood education, REA is less well-known compared to some other child-centered educational *methods*- Montessori, Steiner, etc. (see Glossary), so this project and the case studies may contribute to generating knowledge about this educational philosophy and specifically its approach to taste and food education. Starting from this pedagogical approach, Pause's activities have brought REA food and taste sensitivity outside formal settings for children aged 0-6 for the first time, demonstrating how REA values, ideas and experiences are transferrable within a lifelong learning perspective.

My role as atelierista on the Pause team, as well as a researcher for this PhD project, has raised some challenges and dilemmas for me with respect to reliability and bias. Being an "insider" regarding REA has also afforded me in-depth, direct experience and knowledge of the specific experiences analyzed and REA educational settings in

general. As I strive to situate REA/Pause food and taste education within a broader frame of reference, I also aim to be objective in analyzing and presenting the data.

1.1.3 What is Pause Atelier Dei Sapori?

Pause Atelier Dei Sapori, a permanent lab which is part of Fondazione Reggio Children, designs and carries out ateliers, projects and informal research around themes linked to food and taste. Examples of foci and activities include sustainability, regeneration, cultural identity, the safeguarding and promotion of local traditions and customs, the role of the senses in exploring and investigating food, digital tools and materials as ways to further deepen and enhance explorations, community building and social cohesion, health and well-being, the promotion of healthy eating habits and the prevention of eating disorders and childhood obesity. All of these topics are explored within the context of REA thinking and practice, which focuses on group work, putting the child/participant at the center of their experience and co-constructing new knowledge and awareness together in a group, in formal and non-formal contexts, in Italy and abroad.

Pause Atelier Dei Sapori has an interdisciplinary identity thanks to the team that designs, develops and conducts the activities. The work group is comprised of a pedagogista, atelieristas and cook-atelieristas, with the active participation in all phases of the cook-atelieristas. This presence of the cook-atelierista, akin to the figure of the atelierista in REA schools (see Glossary) impacts the significance of the ateliers and innovates the concept of teaching and learning: the cooks, like the atelieristas, are professional figures who bring their specific knowledge and insight to support and

broaden the horizons of the people they work with: children, youth and adults (teachers, families, citizens). The role of these figures, whether in schools or in non-formal settings, is firstly to listen to the knowledge of the group, transforming traditional learning where the teacher or experienced adult guides or leads, into occasions for shared co-inquiry in order to build new knowledge that belongs to the group. This practice of participatory knowledge building, that characterizes both Pause Atelier dei Sapori and REA, sees cooks (as well as teachers and atelieristas) working together with children, families and their communities. The atelier, according to the pedagogista Paola Cavazzoni[3], is considered "a metaphor for the idea of knowledge that is not transmitted but experienced together with children and their poetics, constituted by the relationships and discoveries made during the atelier".

This working method characterizes the infant toddler centers and preschools in Reggio Emilia, based on educational values that were absolutely different from the schools that existed before WWII. Thanks to the will and vision of the women and men who built the first school in Reggio Emilia in the mid-1940s, a new idea of a school as a place to encourage and support the all-around development of children as people and citizens who are competent beings, capable of acting, relating, asking questions and seeking answers. At the heart of this new proto-REA school, "Villa Cella", was the in-house kitchen and lunchroom (Barazzoni & Malaguzzi, 2018). The choice to give importance to the knowledge from and through food in everyday life at school is a value and a practice that still characterizes REA schools, both in Reggio Emilia and around the world. Thus, from the experience of the schools of Reggio Emilia, the activities of

[3] 'La cucina come luogo che crea saperi e cultura: per una nuova educazione', presentation delivered by Paola Cavazzoni on 26 May 2021 at a conference at Centro Internazionale Loris Malaguzzi (Reggio Emilia).

Pause Atelier dei Sapori have sought further widening by engaging people of all ages, also in alternative spaces other than schools, for instance in food ateliers held outdoors, in informal and non-formal spaces, online, etc. Pause's food ateliers aim to investigate food as a language and build knowledge with and through food, by deconstructing it and experiencing its multisensory nature, also in light of the uniqueness of each individual, their history and memories, in the joyful, question-filled contexts of food ateliers.

1.2 Research questions

The main overarching research question for the entire project is:

How can food ateliers broaden and deepen a multisensory approach to food and taste education?

This open yet specific question has been articulated in greater detail in the exploratory case studies about food and taste ateliers in different settings, addressing different facets. As a way to trace the path that this research project has taken,

I will list the research questions that each specific case study addressed:.

How do multisensory food explorations in a Reggio Emilia approach atelier affect young children's conceptions of their food experiences?

How do young children/participants in the multisensory food ateliers articulate their taste experiences (broadly speaking)?

How do young children/participants in the multisensory food ateliers articulate changes in their taste experiences as a result of this pedagogical intervention?

What are students' and teachers' ideas about what a food atelier could be (before and after participating in them)?

How might sense-based inquiries of food impact the thinking of participants in non-formal food ateliers?

How are learners' multisensory experiences with/of food represented visually and verbally in non-formal Reggio Emilia approach food ateliers?

What insights about connections between learners' multisensory experiences with/of food related to language and visual expressions are generated from their exploration of it?

Prior to this thesis, academic research about REA/Pause food and taste education corresponds to a gap in the scientific literature, specifically regarding food ateliers as educational settings. Pause Atelier dei Sapori has published a few videos on their website[4], but these materials have a more documentational aim as no analysis was undertaken, and almost everything is available only in Italian. The starting point of the thesis project was not only to understand what learners self-reported experiences with food and taste were, but also their expectations and reflections after having experienced them, as well as to collect information about unexpected outcomes in general. The main contribution of the project is to investigate multisensory food ateliers as settings for engaging in food and taste education, in dialogue with other current pedagogical experiences, also in a lifelong learning perspective.

1.3 Design of the PhD project

The thesis is based on three case studies with several chapters that bind these into a coherent whole (Figure 1). Conceptually, the three case studies explore topics that are interrelated, focused on children's, young people's and adults' experiences of and with food and taste, which valorize each learner's personal, direct experience.

[4] https://www.pausesrl.it/it/?id=video

Figure 1 below briefly illustrates how the main research question was articulated in the three papers, supporting the knowledge-building process in line with REA philosophy.

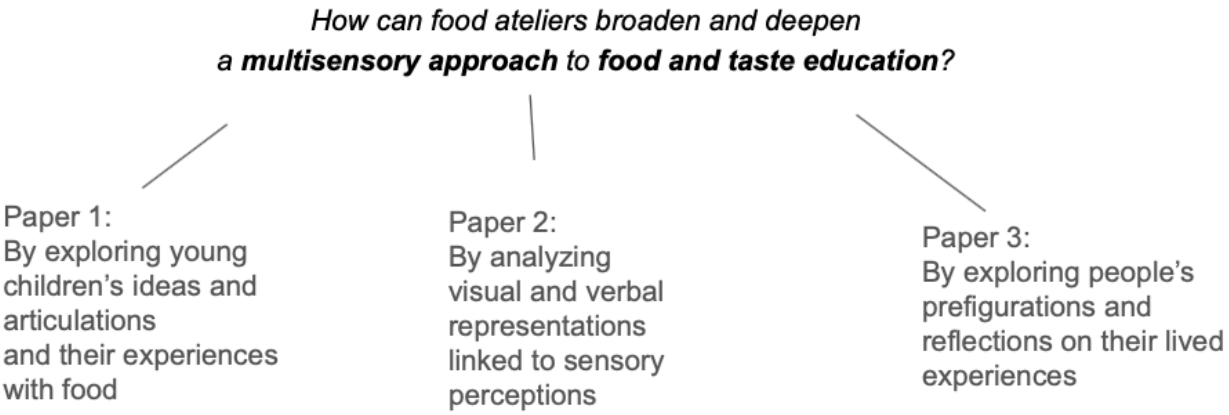


Figure 1. *Diagram of PhD project design*

This focus on lived experience is not unique to REA, but differs from other more structured approaches (see Table 6) because food is considered one of the hundred languages (see Section 2.1) through which people build their own knowledge, so the resulting learning is not linked to predetermined educational pathways and can open up numerous other possibilities that may well transcend food and taste *per se*.

2 Theoretical Frameworks

Several theoretical frameworks were reference points for the atelier experiences analyzed in the three articles. First and foremost is the Reggio Emilia approach (REA), in which my experience is rooted and it is the primary theoretical context of reference for the entire research project and the background out of which Pause Atelier dei Sapori developed. Following a discussion of the most pertinent concepts that especially informed the food atelier settings and the resulting analysis, two other theoretical frameworks seemed to be particularly pertinent and significant related to food and taste education and specifically to the food ateliers studied. These are Slow Pedagogy (Alison Clark), with emphasis on the concepts of time and temporality, embracing the unexpected and recursive patterns of inquiry; and the sensory hierarchy (Carolyn Korsmeyer) in light of the division, in the West, between the higher, intellectual senses, namely vision and hearing, and the lower, bodily ones: smell, taste and touch. This thesis strives to challenge this hierarchy, also in light of the more recent development of the field of Sensory Studies. The scholar David Howes (2013) wrote:

> *Sensory studies involves a cultural approach to the study of the senses and a sensory approach to the study of culture. It challenges the monopoly that the discipline of psychology has long exercised over the study of the senses and sense perception by foregrounding the sociality of sensation. History and anthropology are the foundational disciplines of this field. However, sensory studies also encompasses many other disciplines as scholars from across the humanities and social sciences have, over the past few decades, successively turned their attention on the sensorium.*

I am interested in how the sphere of education, specifically food and taste education, engages with this broad mix of disciplinary fields, as food and eating are undoubtedly highly sensory experiences. Within sensory studies, food has been addressed from a more neuroscientific point of view. This thesis considers food from an educational perspective.

2.1 The Reggio Emilia approach

The Reggio Emilia approach (REA) is an innovative educational approach that has developed a world-wide network over the years. It stems from the vision of Loris Malaguzzi, the philosopher, founder and guide of the educational experience of the municipal schools in Reggio Emilia for children aged 0-6 and his closest collaborators, including Carla Rinaldi (pedagogista and the former president of Fondazione Reggio Children) and Vea Vecchi (atelierista), among others. There are several volumes discussing Reggio philosophy and pedagogy in-depth (Edwards et al., 2011; Giudici et al., 2001; Rabitti, 1994; Rinaldi, 2009), so I will only mention a few aspects of REA thinking that informed my research project in particular.

The Pedagogy of Listening. The pedagogy of listening (Rinaldi, 2009) underlies REA philosophy in general and is exemplified in the case studies presented in the articles. It stems from what Rinaldi (Giudici et al., 2001, p. 77) calls

> *the search (ricerca) for meaning. ... One cannot live without meaning: it would mean precluding all identity, all hope, all future. And the child knows this, from the very beginning: s/he know it as a species, s/he knows it as an individual, s/he knows it as a person. This search for meaning in life, and for self in life, comes*

into being with the child, it is desired by the child: this is also why we call him/her competent and strong. A child who has the right to hope and the right to count; therefore, no longer …deemed fragile, needy, incapable. Our thinking and attitude toward a child whom we feel is active, and who is with us in exploring, in trying to understand something every day , to find meaning, a piece of life. ... To us these meanings, these explanatory theories, seem to be of great relevance and clearly reveal the ways children think, question, interpret reality and their own relationships with it and with us. This is where I think the genesis of the "pedagogy of relationships and listening", one of the metaphors that distinguishes Reggio pedagogy, lies.

Carla Rinaldi (2001, p. 2) wrote that listening can be distilled into several complex and multifaceted ideas. According to Rinaldi, listening

- can reveal patterns that connect us to others.
- involves all the senses, not just the ears.
- requires sensitivity to the many languages, symbols and codes used in communication.
- is also directed inward- "internal listening".
- takes time.
- is generated by curiosity, desire, doubt, uncertainty.
- raises questions, not answers.
- is influenced by and stimulates emotions.
- embraces differences and other points of view.
- is active.
- fosters deep awareness, openness to change, value of the unknown
- is the basis for any learning relationship.

• promotes understanding and awareness through sharing and dialogue.

These concepts that characterize the pedagogy of listening are also in dialogue with other pedagogical experiences, in particular with slow pedagogy as discussed below.

Because of its flexible, open-ended and inclusive pedagogical approach, REA has evolved and embraced new developments in education, in step with the changing times. Besides embracing the new, the unexpected and multitudinous perspectives simultaneously, it has also has always considered everyday routines, including eating and mealtimes, to be educationally significant moments that are a meaningful part of the school day (Rinaldi, 2009).

Regarding the approach to food and taste education, there has been no academic scholarship until the present thesis (See Appendix). Yet food and taste education has been part of REA from the very beginning: the very first school founded in 1945, Villa Cella, was literally constructed around the school kitchen (Rinaldi, 2009). It is important to keep in mind that this attention to food, eating, socialization, care and cultural identity has grown and developed in parallel with the rest of the REA experience over the decades and still continues to do so. While REA is best known for its educational experience with children aged 0-6, a lifelong learning perspective characterizes the work of Pause Atelier dei Sapori, a permanent lab that is part of Fondazione Reggio Children, aimed specifically at engaging in food and taste education with a much broader public that includes families, adults, adolescents, young adults and the general public. Pause's approach to food and taste education, shaped and informed by the educational experience and history of the schools of the city of Reggio

Emilia, also goes beyond the walls and the kitchens of the municipal infant-toddler centers and preschools to other non-formal contexts (es. local community centers, gardens or parks, museums, other public spaces). Food and taste education activities include seminars, practical workshops and especially food ateliers.

It is important to take a moment to mention a few main characteristics[5] of REA educational philosophy: the image of the child as a citizen with rights, the role of the adult (teacher, atelierista, parent) as a co-researcher together with children in the construction of knowledge, the practice and significance of pedagogical documentation in making learning processes visible, the environment as the third educator and the importance of family participation. In addition to these fundamental concepts, I would like to focus on those that have been especially significant regarding the REA/Pause approach to food and taste education and that underlie the case studies in the three articles. These ideas, for those unfamiliar with this educational philosophy in order to better comprehend the significance of the settings and the findings, are: the atelier context and the atelierista, the concept of the hundred languages and group work as the basis for the social construction of knowledge. All three articles refer to these fundamental concepts. I will briefly outline them below:

Ateliers and atelieristas- a brief overview. An "*atelier*" is a learning context dedicated to the exploration of a specific topic: nature and natural phenomena, digital tools and materials, manual activities, single materials, food, movement, mark-making, etc. (Giudici et al., 2001). It is important to make a distinction between a workshop (*laboratorio*) and an atelier. Vea Vecchi (2010, p. 38), one of Loris Malaguzzi's direct

[5] For more information, see Edwards et al., 2011; Giudici et al., 2001; Rinaldi, 2009.

collaborators who was intimately involved in conceptualizing and defining the characteristics of both an atelier and an ateliersista, pointed out that an atelier places attention on the process rather than the product (as opposed to a more mainstream educational workshop (in Italian schools these are called laboratorio), which are generally focused on the final product or result and thus is more instructional. These types of instructional workshops are not only held in Italian schools but in other schools as well). In addition, an *atelier* is a place where project work done in groups takes place (discussed below). But the idea, in the words of Vea Vecchi (2010, p. 2), is that an atelier "is associated with things taking shape through action; places where brains, hands, sensibilities, rationality, emotion and imagination all work together in close cooperation" starting from the everyday, which then takes on new value and meaning. The atelierista, often a person with an arts background, can be anyone with specific non-pedagogical training (cook, musician, biologist, dancer, architect/designer, actor, etc.) who works both with the children and the teachers to develop and document school projects, bringing their specific expertise and knowledge to the group. In the three articles, there are atelieristas who are cooks, musicians and people with visual arts backgrounds. The atelier and the atelierista promote the aesthetic dimension of learning, as Vea Vecchi (2010, p. 6) writes

> *what Malaguzzi called the 'aesthetic vibration' – (which) can become activators of learning … able to support and nourish kinds of knowledge not based uniquely on information; and… by avoiding simply definable categories, … can lead to the sensitive empathy and relation with things which creates connections.*

The centrality of sensory perception is a theme explored in the case studies, leading to empathy and creating connections between things and people. These sense-related

interrelationships are represented, for example, by the crossmodal correspondences in Paper 2 and the themes brought up by the children in the case study in Paper 1. "(Learning) from a constructivist and socio-constructivist (viewpoint) takes place in a multidisciplinary and multisensory way, and the atelier setting highlights this" (Interview with the pedagogista Simona Bonilauri in Vecchi, 2010, p. 56).

The hundred languages- a brief overview. The plurality of ways of knowing is distilled in the hundred languages, another fundamental concept. Children possess

> *a hundred ways of thinking, expressing, understanding, of encountering otherness through a way of thinking that weaves together and does not separate the various dimensions of experience. The hundred languages are a metaphor for the extraordinary potentials of children, their knowledge-building and creative processes.* (Indications, 2010)

Vecchi (2010, p. 9) explains "in Reggio pedagogy, a choice has been made to extend the term language beyond the verbal and consider *languages* as the different ways used by human beings to express themselves": there are numerous ways children (and all people) can express and explore their thinking, emotions and theories about the world– through words, using the body, various forms of art, using digital tools, etc.[6] Among the hundred languages, food offers both content and a context for exploration, learning and building knowledge, and all three articles exemplify this. The hundred languages theory represents different communicative possibilities that can dialogue with each other, thus REA hypothesizes "that learning processes take place in which several

[6] This is also described and discussed in discourse theory (see James Paul Gee) which has strong links to philosophy and linguistics, although to my knowledge such links have not been made explicit in REA literature.

languages… interact together… encouraging relations between processes and the flow of one into the other…giving greater richness and completeness to thought" (Vecchi, 2010, p. 18). An example of this could be the crossmodal correspondences that are analyzed in Paper 1 and especially Paper 2. This transdisciplinary aspect, by which people connect different languages to deepen their understanding of something (Vecchi, 2010), both intensifies and broadens sensory perception, as can be attested to in the case studies. It is not a coincidence that just as REA invented and imagined ateliers and atelieristas, it has also always maintained that schools needed their own on-site kitchens and that food and mealtimes were a vital element of this educational philosophy (Rinaldi, 2009; Vecchi, 2010).

The role of group work. Group work, another fundamental characteristic, as well as in other educational approaches, shaped the educational strategies of adults and children both before and during the food ateliers discussed in each of articles. Group work takes shape in constant alternation between small groups working together who then share their experiences with the entire group, in an ongoing process that keeps everyone informed and involved. The following characteristics were identified by researchers from Reggio Emilia and Project Zero/Harvard (Giudici et al., 2001, p. 18) regarding the characteristics of group work:

1. The learning groups consist of both adults and children.

2. Documenting children's learning processes serves to give visibility to learning and shape the learning itself.

3. Members of learning groups are involved in the emotional, aesthetic and intellectual dimensions of learning[7]*.*

4. The focus of learning in learning groups extends beyond individual learning to create a collective body of knowledge.

This 'collective intelligence' strategy, defined by Pierre Levy (2002, p. 65) as "the common sharing of cognitive capacities, abilities and memories of people participating in a flow of information" characterizes REA/Pause educational settings which can be considered transdisciplinary, thanks to the presence of several roles: pedagogistas, atelieristas, teachers, cooks, etc., and of course the participants, where each person contributes to building the group's knowledge.

This collective knowledge building practice is not only actuated in a classroom or an atelier, it is also as a work strategy used among adults. For example, a work group (comprised of a pedagogista, atelierista and teachers/educators) in a school or in another context, like Pause, together actively designs (*progettare*), leads and documents the ateliers and projects as they evolve and develop in real time, and this way of collaborating can be a model for an effective educational strategy. Regarding a specific relationship to food, Vea Vecchi (2010, p. 64) mentions another aspect of the organizational quality of group work in REA schools:

> *Another important element in school organization… is teachers and other staff lunching together as part of the organization of the working day. Food prepared by cooks in school kitchens is good and nutritious, prepared and presented with care…and the atmosphere established in a shared lunch is extremely pleasant…the atmosphere of socializing and friendship which is created becomes an important part of everyday life in the school*.

[7] I would also argue that the sensory dimension of learning is also essential, not to be overlooked, as the case studies herein attest to.

This attention to and relevance of food and mealtimes is worth mentioning again, as it underlies REA philosophy and represents the attention paid to this collective, shared part of everyday life, both for children and adults.

A significant term which has come up is *progettazione*, often translated as "design" in English, but the concept of progettazione is more dynamic. Below is a definition of the term (translated by me) from the official municipal website of Reggio Emilia, Scuolenidi[8] (n.d.):

> *Educational action takes shape through the progettazione of teaching, environments, participation and staff training, and not through the application of predefined programs. Progettazione is a strategy of thought and action that is respectful of and supportive of children's and adults' learning processes, accepts doubt, uncertainty and error as resources and is capable of changing in relation to evolving contexts. It is achieved through the processes of observation, documentation and interpretation in a recursive relationship. Progettazione is realized through a close synergy between work organization and educational research (inquiry).*

All three papers are examples of progettazione by the Pause team that subsequently implemented the ateliers, featuring the presence of the cook-atelierista, who shared specific expertise when designing (progettare), leading and then reflecting on the ateliers with the participants.

[8] See http://www.scuolenidi.re.it/Sezione.jsp?titolo=Progetto+0-6&idSezione=93, Sezione 2.7 (in Italian).

2.2 Slow Pedagogy

Alison Clark's 2023 volume on slow knowledge and slow education has informed the research carried out in this thesis. Slow movements stemmed from the slow food movement founded in Italy by Carlo Petrini in 1986 and have touched many aspects of people's lives, from food and eating, to education, medicine, lifestyle choices, etc., rejecting fast-paced life and superficiality in favor of a thoughtful, values-driven approach to life in general. The seeds of slow knowledge and slow pedagogy, rooted in the everyday, can be discerned in the writings of John Dewey (1956) and Maria Montessori (1988 (1950)), whose educational philosophies prioritized critical thinking and curiosity rather than the mere transmission of information and consequent standardized, ranked assessments (characteristics of "fast" pedagogy in our fast, results-oriented society). Honoré (2004, p. 13) distilled the goal of slow movements in one word: balance, meaning finding the "right speed": doing things fast sometimes, but slowly at other times. Searching for this balance is easier said than done, and Clark (2023) investigates what this balance, this "right speed", might look like in early childhood education settings, by interviewing an international group of educators and researchers about their slow practices in preschool settings. I find that their ideas are also pertinent to other age groups and contexts. Clark explores "pedagogies that are in keeping with alternative views of knowledge in which complexity and interconnectedness are valued, where there is time for the unexpected and local knowledge is respected" (Clark, 2023, p. 49). Among the characteristics of slow pedagogy and slow learning, Clark (2023) brings up and delves into several facets that

go way beyond early childhood educational settings: these are " 'being with', 'going off track' and 'diving deep' ".

"Being with" is the opposite of traditional lessons where the teacher is the focus, presenting and controlling the learning content. It has to do with "finding the rhythm of the children, but also attention to the 'rhythm' of colleagues, materials and ideas" (Clark, 2023, p. 39). In an interview with a Canadian researcher and practitioner, Silvia Kind, (Clark, 2023, p. 40) the theme of listening comes up, also connected to the pedagogy of listening discussed above:

> *It's not about teaching a child what to do, rather cultivating a space where we're helping each other notice, working together, borrowing each other's ideas, noticing others, working with somebody else's ideas… cultivating a way of being together and working together.*

Clark (2023, p. 41) explicitly mentions how the pedagogy of listening is a form of " 'being with' children, colleagues, parents, the environment and ideas. This openness to experiences and perspectives… underlies the unhurried nature of these encounters that revert to the concept of slow".

The idea of "going off track" and embracing the unexpected is another important characteristic of Slow Pedagogy, promoting openness to exploration, new ideas and new relationships which come up along the way. The starting point is known, but not where it will end up. This is inherently different from many educational experiences where the timing, content and objectives are mapped out even before the beginning of an educational experience or pathway. In her interview with Peter Moss (Clark, 2023, p. 43), he specifies that "Going off track" means "being present in the moment and

engaging in the co-creation of what comes next … basically (taking) time for thought and talk, time for discussion” .

“Diving deep” is just that: taking time and finding opportunities for in-depth inquiry, which can regard just children, just adults or adults and children together. Diving deep into an inquiry is also related to the concept of “deep time” that comes up in Clark’s interview with the educator Amanda Bateman (Clark, 2023, p. 46): “Interactions… where talk and gesture explore and ponder a concept of interest in great detail. It is less about linear time…it’s more about full engagement in the flow of deep time”. This diving deep can also be recursive, in the sense that in-depth inquiry can lead to different conclusions and discoveries at different life stages, as Kate Cowan brought up during her interview (Clark, 2023, p. 47), recalling Bruner’s concept of the spiral curriculum where content is revisited over time. Clark (2023, p. 47) remarks that

> *there is an in-built temporal dimension to Bruner’s concept of a spiral curriculum where repeated opportunities are given to revisit material. A slow pedagogy acknowledges that time is needed to go beyond a first glance and to enable multiple opportunities to revisit with close attention… to what new possibilities may emerge.*

All three of these characteristics are in dialogue with the concept and role of time that underlies slow pedagogy/slow knowledge, but the bottom line is that “slow knowledge is (in-depth) understanding that is built over time” (Interview with Deborah Harcourt in Clark, 2023, p. 46) and contrasts with linear, superficial clock time that sets the rhythm for so much of contemporary life. Clark argues for a more timefull, conscious, fluid and transformative relationship with time in educational settings, which starts from becoming aware of the limitations and possibilities of different ways and

directions time can flow. In Badyer-Saye's words "the ways we experience, name and interpret time contribute to the kinds of communities we imagine and inhabit" (Badyer-Saye quoted in Clark, 2023, p.125). The theme of time and participants' experience of and relationship to it is also discussed in the three case studies.

Interestingly, some of the first settings for practicing slow pedagogy, which promote experiential, hands-on learning as ideal contexts, have been school gardens or "edible schoolyards"[9], where students learn science and history as they choose and plant seeds, math as they calculate harvests, local culture as they prepare recipes, etc. This underlines the connection of slow food as a significant setting for slow pedagogy and the centrality of sense-based education as a starting point for the ideal of *Bildung*, which can "be broadly described as both the process (*Bildung* as a verb) as well as the result of learning" in both formal and non-formal contexts (Odegaard & White, 2016, p.2). This is also related to Leer and Wistoft's (2018) concept of reflective taste pedagogy. In chapter 6 I will discuss how these ideas intertwine with and are practiced in the REA/Pause food ateliers studied.

2.3 Sensory hierarchies

The five senses, as per the Western tradition, are central spheres of investigation and the main "tools" in the case studies, with reference to their "interconnectedness and interactivity" (Howes, 2024, p. 47), thus investigating and privileging a multisensory dimension of people's experiences of and with food. It is important to point out that this inclusive idea of the senses is a modern/contemporary development. In the Western

[9] See https://edibleschoolyard.org/

philosophical and historical tradition, two of our five senses have been considered superior to the other three: vision and hearing have traditionally been referred to as "higher, intellectual" senses, linked to knowledge, cognition and understanding, while smell, taste and touch are known as the "lower, animal/bodily" senses.

Specifically, Korsmeyer (2004) writes that smell and taste, according to this hierarchy, have little to do with thinking and serve to offer information about our safety in relation to consuming food and physical survival, for example, and were considered to not play a role in generating other types of knowledge. Korsmeyer (2004, p. 86) points out that touch can be a bit ambiguous, at times being used to confirm or disprove a visual impression: a speckled surface might be touched to discover its texture, or that something is a mirage, which can be seen but is impossible to touch. Due to the necessity for physical proximity and contact, touch has not historically been considered a higher sense. Korsmeyer (2004, p. 87) also points out that vision and hearing seem to be less embodied and more objective and abstract, in the sense that we can see and hear things at a distance and thus there is no physical contact (despite the fact that we are still using our bodies), while for smell, taste and touch, physical proximity and contact is necessary, making physical, sensuous experience "messier," considered without intellectual value.

Thus in the Western tradition, the mind was elevated over the body[10], which has in turn impacted the status of the various sense-modalities within the "hierarchy of the senses" over the centuries. Korsmeyer (2004, p. 87) points out that historically "the

[10] This mind-body split has impacted society and educational practices, and Malaguzzi's well-known poem about REA, "The hundred is there" (https://www.reggiochildren.it/en/reggio-emilia-approach/100-linguaggi-en/) mentions this: "School and society/separate the head from the body"- and REA has always aimed to address and possibly remedy this.

mental is considered superior to the physical" and human beings (mental creatures) differ from animals (physical creatures) due to their ability to develop complex knowledge and artistic creativity. The reasoning underlying the mind/body split, Korsmeyer explains, is if animals have beautiful feathers or fur, this is due to nature or physiology rather than intellectual or creative activity of some sort. In the same way, eating is also considered a physiological activity and as such is driven by a practical, physical need. The bodily senses, Korsmeyer (2004, p. 92) writes,

> *direct attention inwards towards the body…rather than outward towards the external world.. (thus) alleged to be too subjective… (while) sight and hearing operate with a distance between the organ and object of perception, and as a consequence they serve to draw attention away from the body…to the external object of perception.*

Korsmeyer (2004, p. 93) underlines this contrast between inward-oriented self-awareness and outward-directed discovery of the world , which in the past were considered less (the former) and more (the latter) "desirable".

Korsmeyer (2004, p. 93) also raises an interesting distinction between what is subjective and what is objective, at least according to the history of philosophy:

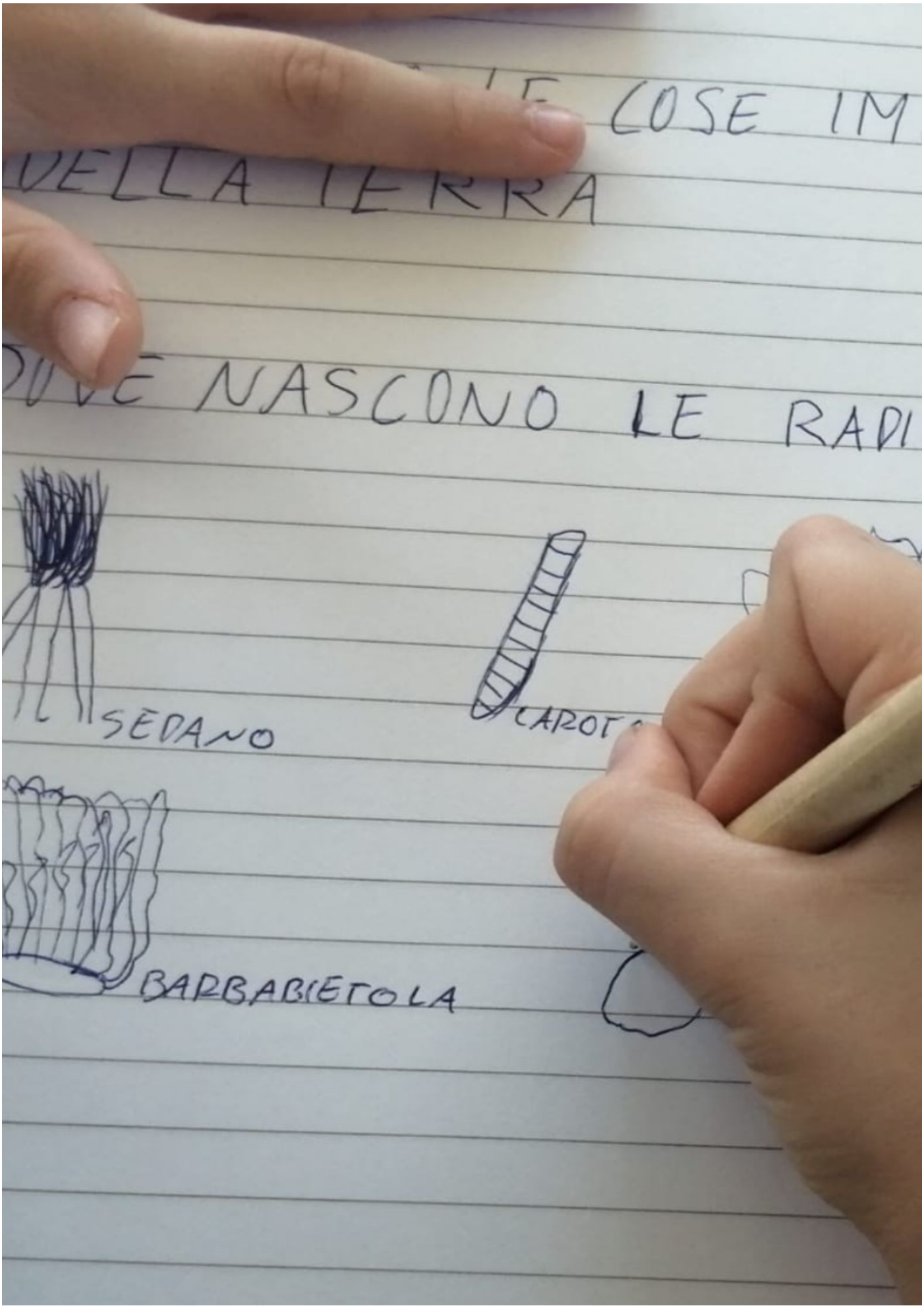
> *Vision and hearing are more "objective" (meaning they direct attention to their objects), whereas touch, taste and smell are more apt to be "subjective" (meaning they direct attention to the state of the perceiving subject). This contrast is reflected in the fact that the experience of touch, smell and taste are commonly labeled as "sensations" whereas (hearing and vision) are more apt to be called "perceptions".*

Specifically regarding the sense of taste, Korsmeyer (2004, p. 94) brings up the fact that "there is no disputing about taste", an argument to further underline the

subjectivity and inherent inferiority, historically speaking, of the “lower senses” and taste in particular, since there is no standard of reference. In addition, taste was considered to be meaningless, “it isn’t about anything… but itself… (it doesn’t contribute) to interpretations of the world”. These ideas are not Korsmeyer’s. She is just presenting the facts, before discussing why they are flawed, from a philosophical point of view, but these ideas set the stage for how the senses and food/eating were considered in the past and how they can be reconsidered in the present.

The study of the senses has not been limited to philosophy. The field of Sensory Science began in the 1940s, centered on investigating sensory evaluation, that is “the scientific discipline which encompasses all methods to evoke, measure, analyze and interpret human responses to the properties of foods and materials, as perceived by the five senses” (Civille & Oftedal, 2012). In the 1980s, this field split into branches; one more quantitative, regarding consumer research and psychology, and the other more qualitative, called “Sensory Studies” and stemming from anthropology and sociology. Yet even within the field of Sensory Studies, “far more attention has been devoted to seeing than to hearing, and to hearing than to touch, and so on” (Howes, 2024, p. 13). This vision-centric tendency is thus still widespread: “even in ordinary conversation we often say I see” meaning “I understand” … and visual images furnish by far the most common metaphors for knowledge and understanding” (Korsmeyer, 2004, p. 49). Although recent advances in neuroscience posit the “multisensory organization of the brain, crossmodal correspondences and sensory interaction and that even those experiences that first may appear to be modality-specific are most likely to have been influenced by activity in other sensory modalities” (Howes, 2024, p. 10), this is still an

understudied phenomenon, especially in qualitative educational research. This research project is an attempt to add to the knowledge base about food-and-taste related, sense-based educational settings and interventions in order to highlight the learning processes activated by combining the dimensions of “knowing-about” and “knowing-with” (Howes, 2024, p. 35) through sense-based education. In Korsmeyer’s words: “when I speak of taste experience, I am including the full range of sensory experience that eating calls into play” (2004, p. 87).


COSE IM
VELLA TERRA
DOVE NASCONO LE RADI
SEDANO
CAROT
BARBABIETOLA

3 Knowledge background and previous research

3.1 Food and taste education in recent academic literature

In formal and non-formal REA/Pause settings, the terms “taste and food education” have been used in conjunction with each other, they are aspects that intertwine, shape and give identity to a multifaceted attitude with respect to people’s experiences of and with food. Consequently, I refer to “taste and food education” herein when discussing food ateliers and REA educational philosophy. In reviewing the literature, however, I have found that they are not considered two parts of a whole but rather two different things. In fact, exactly what constitutes food education in academia, which can include taste education as a sub-field, is itself a subject of debate. Smith et al.’s 2022 study addresses the issue of how to define “food education,” which is characterized by a lack of common terminology, reflecting how fragmented this field of study is and the range of topics included. Regarding this field, the researchers report that “Home Economics” regards domestic settings and associated skills; “Food Technology”, science and design-based, has a focus on food manufacturing; “Nutrition Education” is centered on knowledge about health-related topics; “Cooking Skills” teaches practical skills and techniques; “Food Education” includes anything related to food; “Food Literacy” is broader and more comprehensive, addressing themes like sustainability and sociocultural aspects, combining food and health knowledge with practical cooking skills. Another recent area, not included in Smith et al.’s review, is “food pedagogy” which Flowers and Swan (2015, p. 1) explain

> *denotes a congeries of educational, teaching and learning ideologies and practices carried out by a range of agencies, actors, institutions and media which focus variously on growing, shopping, cooking, eating and disposing of food… (through) formal, informal and incidental education and learning, inside and beyond the classroom. … Examples of formal food pedagogies include cooking masterclasses, health education in schools, nutrition workshops in food security programmes, and permaculture courses; instances of informal food pedagogies are food programmes on television, community gardening, and social marketing campaigns led by food social movements or supermarkets; and incidental food pedagogies cover learning from social occasions, eating and drinking with friends, families and on holidays.*

Thus, most food pedagogy seems to occur outside of formal educational settings. Of note is that these perspectives do not seem to mention the role of multisensory perception as a specific, privileged context for exploring and relating to food as part of the educational process (extending to the sphere of lifelong learning). Therefore the present thesis can offer a contribution in this regard.

Table 1 below illustrates a few previous literature reviews regarding food and taste education[11]. The aim of some of the research analyzed in these reviews was to change/improve/direct children's eating habits, for example, to "choose vegetables as snacks" (Varman et al., 2021, p. 18). These specific reviews were chosen because they included analyses of what kinds of interventions were implemented in food education pathways and initiatives across a range of ages (0-adult) and in both formal and non-formal settings.

[11] I would like to point out the fact that these reviews only took into consideration studies that were available in English. This means that other significant studies, not available in this language, were not included in these reviews and thus in my research, and I realize this is a shortcoming.

Table 1. *Previous literature reviews regarding food and taste education*

Year	Authors/Title	Review focus	ages
2003	Thomas J, Sutcliffe K, Harden A, Oakley A, Oliver S, Rees R, Brunton G, Kavanagh J (2003) Children and Healthy Eating: A systematic review of barriers and facilitators. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.	Review focused in particular on barriers and facilitators in relation to children's consumption of fruit and vegetables.	4-10 year old children (majority >7 years old)
2018	Leer J and K Wistoft, "Taste in food education: A critical review essay". (2018) *Food and Foodways, 26:4*, 329-349, DOI: 10.1080/07409710.2018.1534047	Role of taste in food education	Children, young people and adults
2021	Varman,S.D. Cliff,D.P. Jones, R.A,; Hammersley, M.L., Zhang, Z. Charlton, K. Kelly, B. (2021) Experiential Learning Interventions and Healthy Eating Outcomes in Children: A Systematic Literature Review. *Int. J. Environ. Res. Public Health 18*,10824. https:// doi.org/10.3390/ijerph182010824	Examines the effects of experiential learning activities on dietary outcomes (knowledge, attitudes, behaviors) in preschool and primary school aged children.	Children aged 0-12

A main finding in the review by Thomas et al. (2003, p. 4) was that promoting healthy eating can be an integral and acceptable component of the school curriculum, but requires the implementation of specific activities to facilitate this. The interventions to this end analyzed in the review took place in formal settings and showed that a mixture of formal learning and hands-on experience (i.e. cooking and taste-testing), also involving parents, led to a small but measurable improvement in the range of foods the children were willing to eat. Interestingly, the authors (2003, p. 5) note that "interventions which did not emphasize the health benefits of fruit and vegetables showed larger effects than those which did", by focusing on other aspects, including "the promotion of fruit and vegetables as educational materials accompanied by access to fruit and vegetables" and the positive impact of children's agency in influencing the

meal contexts by ‘creating situations for children to have ownership over their food choices’ (2003, p. 4), i.e. during lunchtime at school.

I would like to briefly discuss the topic of lunchtime at school, which is not the focus of the food experiences analyzed in this thesis, but nevertheless is considered an important aspect in REA philosophy and is mentioned by researchers in these reviews. In Smith et al. (2022, p. 5), school meals as a setting for food education are excluded, because “they are not typically included within education policy”. That eating lunch at school is not considered part of food education in general seems contradictory, but underlines how, in many countries, lunchtime is not valorized. Of course there are exceptions (see Tuomisto et al., 2017, p. 124): for example, starting with John Dewey and the importance accorded to both cooking and “the group luncheon” (Mayhew & Edwards, 1966, p. 296). In Finland, lunchtime is considered an important pedagogical moment, and a recent study by researchers in Iceland examined empowerment, children’s agency and autonomy at lunchtime in a preschool setting (Dýrfjörð & Harðardóttir, 2023), supporting the importance of lunchtime at school. In a recent Swedish study by Wiggins et al. (2024, p. 8), school lunches with preschoolers were recorded and analyzed to focus on children’s spontaneous tasting practices and “witness how what might be described as children’s ‘willingness to try’ emerges and takes shape within an interactional context… (which is) integral to how tasting takes place”. The social, pleasurable, relational aspects of tasting food and eating with peers at school, which has been shown to impact liking and eating experiences and attitudes towards food (Laureati & Pagliarini, 2019; Rich & Evans, 2015) is outside the scope of this thesis.

Returning to previous research, Leer and Wistoft (2018) point out that taste has been disregarded as a topic within the field of food education until quite recently, and their critical literature review analyzed studies situated in the Nordic tradition regarding reflexive taste pedagogy that valorizes direct experience of eating and food in a democratic learning perspective. Their research found that the understanding and role of "taste" in educational contexts often disregarded children's taste, considering it an obstacle to developing "correct" eating habits and that taste education was used as "a tool to control children by pushing them towards predefined and rigid eating behaviors… (known as)... "hegemonic nutrition" (Leer & Wistoft, 2018, p. 331). In order to contrast this thinking, in their research which was part of the Danish Taste for Life project[12] (2014-2021), they promoted food education pathways (including taste education) that fostered the development of critical awareness, "involving children in reflective processes with the significance and meaning of taste, as well as the aesthetic, cultural and social dimensions of taste" (2018, p. 345). The present thesis contributes to the dialogue about the importance of multisensory taste education within food education, by offering practical examples of what sensuous taste education contexts can look like. The definition of taste in the context of REA and the research carried out in this thesis is broadly in line with Leer and Wistoft's idea that "taste is rooted in individual and social values, created through the interplay between individual memories/experiences and collective structures" (Christensen & Wistoft, 2016, p. 26). I argue, however, that the definition of taste according to REA thinking also necessarily includes the multisensory dimension.

[12] https://www.taste-for-life.org The Project addressed issues regarding health, well-being, learning, sustainability, gastronomy, innovation, practical culinary skills, interdisciplinarity etc.

In Varman et al. (2021), the role of experiential learning[13], defined by the authors as activities "where learners create meaning from direct experience", was specifically analyzed in order to gauge its effectiveness in improving children's eating habits. The study (2021, p. 1) included papers analyzing experiential learning linked to food education mainly in pre- and primary school settings, namely:

> *cooking, taste-testing, games, role-playing and gardening were effective in improving nutrition outcomes in primary school children. Sensory evaluation, games, creative arts and storybooks were effective for preschool children. Experiential learning is a useful strategy to improve children's knowledge, attitudes and behaviors towards healthy eating.*

Often two or more activities were used in combination with each other, so the positive results reflected this and the researchers did not analyze each individual activity separately. The stated goal, however, was explicitly to improve children's eating habits. The types of interventions discussed in the above-mentioned contexts may have been more engaging, since the children were active learners rather than passive participants. Active learning may have developed the children's critical thinking capacity, an idea also mentioned by Leer & Wistoft regarding food and taste education, "because they enable children to experiment, explore, play, and become familiar with materials and concepts" (Varman et al., 2021, p. 2).

Thus, even if interventions considered in these studies include "hands-on" experiences, the focus of recent food education curricula is primarily on nutrition education, cooking, measuring nutrition knowledge and health improvements, preventing obesity and eating disorders as well as promoting healthy eating habits, both

[13] Also see Illeris (2007) for a broader discussion of experiential learning in general.

at home and in school settings, and the studies do not address exploring food and multisensory perceptions of it in a more open-ended way. Studies conducted with preschool-aged children consider food education and exposure in terms of food policy and practice regarding foods served at school (Thomas et al., 2003), mostly aimed at the development of healthy eating habits. Smith et al. (2022) note that out of studies conducted in 11 different countries, only six regarded sensory education related to food, a finding that suggests an evolution which can be impactful regarding the development of self-awareness and positive experiences related to food from early childhood onward. Research has shown that promoting a positive relationship to food in childhood is essential, since during this period many lifelong eating habits are formed (Wadhera et al., 2015; Wilson, 2015).

Both Varman et al. (2021) and Smith et al. (2022) report there are currently few studies on food education curriculums in general, and those that exist generally refer to primary or secondary level education settings. They report that fewer studies have been carried out in preschool and non-formal/outside of school contexts, even if, regarding the latter, “these are ideal settings to develop personal understanding, knowledge, skills, and attitudes through active engagement and reflection on their experiences and activities” (Varman et al., 2021, p. 18). Therefore, the present thesis fills a gap in the knowledge base by focusing on food and taste education contexts in both formal preschool settings and non-formal activities in a lifelong learning perspective.

3.2 Situating food and taste education experiences before and after REA

While until now little significant research has been done regarding REA/Pause food and taste education (see Appendix), it is nonetheless important to put it into the context of what came before and after, in an effort to situate it and highlight similarities and differences with other food education related efforts and movements. Table 2 below summarizes some of the main theories, perspectives and efforts in the realm of taste and food education since the early 1900s, discussed below, starting with Dewey and Montessori.

Table 2. *Some educational theories, perspectives and efforts around food and taste ed.*

YEAR	NAME	AGES	SETTING	FOCUS
Early 1900s	Dewey	primary-high school	formal	gardening/cooking
Pre 1950	Montessori	PreK, primary	formal	Sensory Ed
1946	Reggio Emilia approach	PreK and all ages	formal/ non-formal	Taste/Sensory Ed
1985	Slow Food (Petrini)	All ages	non-formal	Food Ed
1995	Edible Education (Waters)	All ages	formal/ non-formal	Food Ed/gardening
(1974)/ 1999	Les Classes du Goùt/Sapere network (Puisais/Politzer)	All ages	formal/ non-formal	Taste/Sensory Ed
2010	Food Revolution (Oliver)	All ages	non-formal	Food Ed- obesity/policy
2014/2021	Taste for Life (DK)	children, teachers	formal	Food/Taste Ed
2023/2027	TASTE Project (DK and NO)	Children, teachers	formal	Food/Taste Ed

3.2.1 The conceptualization and development of food and taste education - Dewey and Montessori

John Dewey: "Learn to know by doing, and to do by knowing". Nature, gardening and food were part of the pedagogical philosophies that John Dewey in the US and Maria Montessori in Italy were developing around the turn of the 20th century. Traces of their thinking have informed and colored more recent experiences in different countries, as we will see below.

In "The School and Society", Dewey (1956, p. 61) wrote:

> *We cannot overlook the importance for educational purposes of the close and intimate acquaintance got with nature at first hand, with real things and materials, with the actual processes of their manipulation and the knowledge of their social necessities and uses.*

He thought food and cooking were an excellent medium for the development of critical, intuitive thinking, in line with his emphasis on experiential education. In putting into practice his "learn to know by doing, and to do by knowing" credo, a source for the concept of experiential learning (Illeris, 2007, p. 85), at the University of Chicago Lab school which opened in the early 1900s, there was a kitchen lab where cooking, eating and engaging in discussions together laid the foundation for a life based on inquiry and community participation. A volume about the Lab School written by two of the staff members (Mayhew & Edwards, 1966, p. 296) discusses Dewey's ideas about "the scientific and educational value of cooking". First and foremost, it was a social activity that promoted the exchange of ideas and suggestions regarding ingredients, recipes

and personal preferences. Besides this, “cooking involved fundamental relations to the physical and social environment, and gave reason for the study of geography, of plants and animals”, as well as the scientific observation of the physical and chemical changes heat and water had on food during the cooking process. In addition, food was discussed in relation to history and the arts[14]. While the focus might not have been on the emotional or sensory aspects of food as a part of daily life at school, it certainly played a significant role, as Koczanowicz (2016, p. 88) describes:

> *Children of all age groups were involved in cooking. The curriculum kept changing adaptively as they grew and developed new needs. The youngest kids helped prepare lunch each week. It gave the youngsters an opportunity to work on their own, display initiative and learn independence. Older kids were eager to continue cooking together. While some of them laid the table, others prepared cocoa, for example. Still another group would write stories to be read out during the meal. The children’s responsibilities included also serving the food and cleaning the table. Both girls and boys were involved in all these chores. Cooking stimulated the children’s creativity, in a broad sense of the term, and taught them planning ahead and team work. It is splendidly exemplified in a picture in which the kids stand behind each other in a row and tie each other’s aprons up. Responsibility for one’s particular task, the proper execution of which contributed to the success of the whole enterprise, turned into responsibility for the whole group; in this way team work promoted the immediate aim, i.e. the meal. Cooking connected the public sphere (school) and the private sphere (home). It offered an opportunity to merge the two, usually separated, orders, which was Dewey’s fond preoccupation.*

One way of crossing the border between public and private, through cooking and sharing a meal, created the opportunity for participating in democratic education.

[14] For a recent discussion on this, see Fooladi, 2020, p.362

Besides cooking, gardening was also an activity carried out by the children at Dewey's school. According to Ralston (2013, p. 64), Dewey considered gardening at school as an extension of natural history education that created the opportunity for close contact between school children and nature.

Specifically regarding the senses, Uhrmacher (2009) relates that for Dewey (1934), "the senses are the organs through which the live creature participates directly in the on-goings of the world about him" (1934, p. 22) and that "since sense-organs … are the means of this participation [of organism and environment]" ... and that "to perceive, a beholder must create his own experience" (1934, p. 54). Interestingly, such experiences can also be to a certain extent shared, either through communication (drawing) or through "joint subjective experience" thus representing intersubjective experiences (as implied by patterns in how people respond to crossmodal perceptions). Gardening and cooking are undoubtedly experiences that fully engage the senses. Uhrmacher (2009, p. 623) points out that furthermore "the sensory experience allows for perceptivity, and perceptivity allows for the building up of one's own experience" which can further connect the public and private spheres of each person's life.

Maria Montessori - sensory education and the natural world. In "The Discovery of the Child", Maria Montessori (1988 (1950), p.69) comments how "children live very far from nature and have few opportunities of coming into intimate contact with, or having any direct experience of, it", and she talks about gardening and harvesting food as an important vehicle for children to experience nature firsthand. She also notably mentions sensory pleasure (1988 (1950), p. 76) from gardening :

> *Little plots of fragrant plants can also have a practical interest. A child's activity then consists in searching for, distinguishing, and gathering the plants with different scents. An exercise in distinguishing things that look alike and in seeking out a scent rather than a flower is exacting and affords the satisfaction of discovery.*

In her writings, Montessori (1912) places her attention on the senses and maps out in great detail a sensory education pathway in The Montessori Method, based on the idea to educate, rather than explore, the senses, using an almost scientific method. Montessori (1912, p. 167) writes:

> *In a pedagogical method which is experimental the education of the senses must undoubtedly assume the greatest importance… Pedagogy…is designed to educate the senses. This is a point easily understood, yet one which is often confused. … The method used by me is that of making a pedagogical experiment with a didactic object and awaiting the spontaneous reaction of the child. This is a method in every way analogous to that of experimental psychology. … I make use of a material which, at first glance, may be confused with psychometric material. Teachers … seeing my material exposed, would recognise among it, measures of the perception of colour, hardness, and weight…my objects often do not permit a measure, but are adapted to cause the child to exercise the senses. … In order that an instrument shall attain such a pedagogical end, it is necessary that it shall not weary but shall divert the child. Here lies the difficulty in the selection of didactic material…. The aim of education is to develop the energies. … I have arrived at a selection of objects (which I do not here wish to speak of in the technical language of psychology as stimuli) representing the minimum necessary to a practical sense education. These objects constitute the didactic system (or set of didactic materials).*

It is interesting to note the sensory richness Montessori (1988 (1950), p. 70) describes regarding contact with nature, in unstructured encounters, which differ so much from the structured sensory education pathway Montessori developed, given the unquestionable importance of sensory education in her method. Sensory encounters with nature are linked to pleasure, happiness and harmony with the surrounding environment:

> *Let the children be free; encourage them; let them run outside when it is raining; let them remove their shoes when they find a puddle of water; and, when the grass of the meadows is damp with dew, let them run on it and trample it with their bare feet; let them rest peacefully when a tree invites them to sleep beneath its shade; let them shout and laugh when the sun wakes them in the morning as it wakes every living creature that divides its day between waking and sleeping…Only poets and little children can feel the fascination of a tiny rivulet of water flowing over pebbles. A child at such a sight will laugh with joy and want to stop to touch it with his hands as if to caress it.*

Regarding eating and food, Montessori's attitude seems in contrast to her considerations of nature above. In The Montessori Method (1912), Chapter VII is devoted to what kinds of foods are suitable for children to eat and how they should be prepared (by adults) and she only mentions briefly that "school lunch concerns 'practical life', consisting in the preparing of the table, arranging the table linen, learning its nomenclature, etc. …(thus constituting) a most important didactic instrument". Therefore, the value for Montessori of actually eating a meal at school does not necessarily seem connected to socialization, creativity or learning beyond the practical skills in setting a table, linked to everyday life. In the same volume, Montessori (1912, p. 190) describes how children can exercise the development of smell and taste:

The olfactory sense in children is not developed to any great extent, and this makes it difficult to attract their attention by means of this sense. We have made use of one test which has not been repeated often enough to form the basis of a method. We have the child smell fresh violets, and jessamine flowers. We then blindfold him, saying; "Now we are going to present you with flowers." A little friend then holds a bunch of violets under the child's nose, that he may guess the name of the flower. For greater or less intensity we present fewer flowers, or even one single blossom.

But this part of education, like that of the sense of taste, can be obtained by the child during the luncheon hour; when he can learn to recognise various odours. As to taste, the method of touching the tongue with various solutions, bitter or acid, sweet, salty, is perfectly applicable. Children of four years readily lend themselves to such games, which serve as a reason for showing them how to rinse their mouths perfectly. The children enjoy recognising various flavors, and learn, after each test, to fill a glass with tepid water, and carefully rinse their mouths. In this way the exercise for the sense of taste is also an exercise in hygiene.

Again, compared to the poetic appreciation of children in relation to nature, Montessori does not mention any of the emotional or affective aspects linked to the sensory aspects of food and taste[15].

In the aftermath of Dewey's and Montessori's work[16], we can discern the seeds of the subsequent development of food and taste education in diverse experiences in different countries around the world. Dewey's educational philosophy placed emphasis on practical skills, scientific inquiry, democracy and rights. Montessori, with practical life

[15] Fooladi (2020, p. 363) discusses three different dimensions of taste: 1) as a physiological dimension (taste as a noun), 2) taste as a descriptive or normative judgment (taste as a verb) and 3) taste as an aesthetic experience. Montessori's view of taste seems to touch primarily on Fooladi's Dimension 1 and possibly 2 of taste. The food ateliers explore all three of these dimensions.

[16] I would like to mention that Dewey and Montessori were situated in their time and cultural contexts, which needs to be kept in mind to avoid only seeing them and their work through contemporary eyes, based on present thinking.

skills and inquiry undoubtedly a main focus of her method, gave some relevance to the sensuous/sensory experience of coming into contact with nature (of which food is a part). Following we will consider a few of the main experiences or movements with respect to food and taste education which have come about in recent decades.

3.2.2 Recent approaches to food and taste education

Slow Food, founded in Italy by Carlo Petrini in 1986, is aimed at children, young people, adults, families and operates primarily in non-formal settings, although there are resources for educators online[17]. It defends the centrality of food and its value and promotes the right to pleasure, local and traditional cuisine, quality over quantity and food education among other things. Petrini said that "everyone has the right to good, clean, and fair food": *good*, meaning food that is high quality, and tasty; *clean*, regarding production and transportation; *fair*, in terms of pricing and treatment of both consumers and producers.

Alice Waters and The Edible Schoolyard Project, founded in California in 1995, can be considered a direct descendant of Dewey's pedagogical experiments at the University of Chicago's Laboratory School a century earlier (Ralston, 2013). It is focused on gardening, harvesting and cooking in formal, informal and non-formal settings, for children from pre-K to 12th grade, also involving families and anyone interested. In fact, the students *are* farmers, cooks, learners, and teachers. There are several figures involved in implementing the project, as explained on the Edible Schoolyard website[18]:

[17] See https://www.slowfood.com/education/
[18] https://edibleschoolyard.org/berkeley

> *In the kitchen classroom, chef teachers[19] are guides to the exploration of how culture and identity shape our personal relationship and access to food. Students, teachers, and community volunteers gather around the table to share meals and conversation. In the garden classroom, students are the keepers of the soil and shepherds of the harvest. They sow seeds and tend to the produce that fills bellies and fuels creativity, imagination, and learning. At school, students come to the garden with their science teacher and to the kitchen with their humanities teacher.*

Edible Education is based on the idea that all learning is integrated. Skills learned while cooking support academic learning, which in turn inspires the work in the garden, ideas which seem to be inspired by Dewey's educational philosophy.

Jamie Oliver's Food Revolution project (2010) works with communities, businesses and policy makers to make food education a priority. It aims at several things: reforming American school lunch programs in order to help fight obesity, changing/improving people's eating habits and raising awareness of and reducing sugar consumption through the development of cooking skills during hands-on food education programs in non-formal settings, for example: after-school programs and mobile kitchens reaching inner city populations, kids as well as adults.

This building up of interest in taste education within the field of food education is a more recent development, which has its roots in an earlier experience that started in France in the 1970s:

> *Taste education, or sensory education, differs from food education and nutrition education. Taste education cannot therefore be based on a purely analytical approach (separate study of each sense, one after the other); rather, it must take*

[19] Of note is the figure of the chef-teacher, similar to Pause's cook-atelierista, a way of acknowledging and involving professional figures with other fields of expertise within an educational setting.

into account the interactions between the different senses and move back and forth between "the whole and its parts". (Politzer, 2017)

During the mid 70s the French wine expert, philosopher and chemist Jacques Puisais created the basis for what would later become the Sapere method in the 1990s. His was a series of 10 lessons to be included in the school curriculum,"*les classes du goût*" for 8-11 year old children. He was concerned about globalization and the omnipresence of fast food and wanted to preserve national taste and identity in France. His taste curriculum, based on objective, scientific categories of taste, was implemented in schools until the late 80s. In 1999, the pedagogical aims of Puisais' taste education sessions were revised to focus on the individual experience of taste, centered on discussion and understanding how taste experiences differ between people (due to wide variation in chemosensory perception), thus becoming an opportunity to cultivate respect for other people's points of view and experiences (Mac Loed & Politzer, 2015). At present, the Sapere network[20] is active in Europe, Japan, Scandinavia and the UK. Sapere functions as a practical tool or method that can fit into larger educational frameworks, especially those emphasizing sensory learning and aesthetic experience. There are "classes du goût" also for preschool aged children as well as young people and families, held in formal and non-formal settings. There are also sessions dedicated to the food of other cultures, so the focus is no longer on safeguarding French food culture. All of the taste sessions are run by a specially trained educator, who comes into classrooms as an external expert and carries out guided taste education sessions. Other benefits reported in the literature include a lowering of food neophobia and the

[20] Sapere – Sensory food education: see www.sapere-association.com

promotion of a healthier and more varied diet, as one's taste identity is constructed, starting from childhood, although this is not the main focus of the sessions. "Les classes du goût" place primary importance on the sensory and sensuous pleasure of eating and "the pleasure for children of discovering themselves, becoming aware of their sensory acuity and the elements that determine their food choices." (Politzer, 2017). In fact, this link to sensory pleasure recalls Montessori's words cited above as well as REA/Pause food and taste education philosophy.

In particular, Finland has embraced the Sapere method of taste education on a national level, starting from preschools, in order to create, in Wilson's words (2015, p. 339) , a "positive and natural relationship with food and eating… children are positively encouraged to play with their food by exploring ingredients with all their senses", thus lunchtime became a pedagogically important moment of the school day. After a successful pilot program in the city of Jyvaskyla, Finland in 2004-2005, the program was extended to all Finnish preschools. One finding of this program was that by channeling children's curiosity, "learning by senses, learning by playing" (Arja Lyytikainen quoted in Wilson, 2015, p. 340), allowing children to discover their own tastes and food preferences, where there is also much discussion, rather than approaching taste education through explanation or the transmission of information, allowing children to discover their own tastes and food preferences has led to them developing an overall positive attitude to food and eating, thanks to playful, joyful, relaxed activities, where there is also much discussion (Wilson, 2015). Research done by Sapere network researchers has also shown that sensory food education has far-reaching, positive consequences regarding food acceptance and openness to unfamiliar foods in children,

beyond the foods tasted during the sessions at school (Kähkönen et al., 2018; Mustonen & Tuorila, 2010). Wilson (2015, p. 344) also mentions that in Finland there have been experiences regarding sensory food education using the Sapere method with adults and elderly people in a lifelong learning perspective, similar to the activities of Pause Atelier dei Sapori.

On Denmark's Taste for Life program (2014-2021) website[21], the mission statement says that the program "(focuses) on the flavor of food as a driving force for learning, education, food literacy, and good practice…to create a better and richer life for the Danish population, starting from children." Among the aims listed on this website, are:

> *taste experiences and acquisition of the knowledge and skills relevant to taste literacy and taste competence; implementation of sensory knowledge and cooking experience in producing positive taste experiences; use of taste as a theme for integrating different scientific disciplines; and taste as a key theme in food innovation and the development of new food preparation techniques.*

The main target is children/young people and their teachers. Leer & Wistoft (2018, p. 329)also mention actively cultivating and engaging in "reflective taste pedagogy" that recognizes taste "as an important sense, a source of pleasure, or a central way of sensuously understanding and approaching the world". The literature produced during the Taste for Life program challenges some of the traditional ideas on which food education is based: rigid rules that lead to predetermined eating behaviors, and several examples of what alternative, sensuous taste education could look like are discussed. "The student's individual experience should also be taken seriously and the education

[21] https://www.taste-for-life.org/mission

should facilitate development of awareness, competency and reflection in relation to taste." (Leer & Wistoft, 2018, p. 333). The authors (2018, p. 345) conclude that

> *children must be involved in a far more reflective process with an eye to the significance and meaning of taste as well as the aesthetic, cultural and social dimensions of taste. Measuring this form of education and learning would require completely different scientific methods and designs, and it would involve talking to the children to incorporate their ideas and experiences of food into the education programs. ... It would also require very different initial reflections on the pedagogical task, including a reflective clarification of the values and forms of knowledge involved as well as the roles played by teachers, students and researchers. … Macloed and Politzer (2015)- who revised/updated and conduct taste education sessions based on Jacques Puisais' classes du goût-...call for giving children's experience a more central role in taste education and using taste education to learn about diversity and tolerance.*

The researchers (2016) found that taste education offers great pedagogical possibilities and that a

> *reflective taste pedagogy … (which) focuses on value clarification and how taste education can develop critical awareness and reflection in specific contexts about food and a variety of other subjects in school, (as well as) help develop children's mental ownership and social competencies.*

Thus, the main aim of taste education, according to the researchers, should be to engage students in reflective work thanks to which each person becomes aware of their own sense of taste and consequently how this becomes a tool for understanding and navigating the world (Leer & Wistoft, 2016). The current Nordic TASTE project[22]

[22] TASTE-project: https://www.hvl.no/en/project/2550772/

(2023-2027) aims to develop a taste education pathway to promote children's informed and reflected food choices based on critical thinking.

3.3 Multisensory perception and crossmodal correspondences

Given the relevance to the multisensory aspect of food and taste education in this research project, I would like to make a few clarifications. First, it is important to point out that this thesis is not a neuroscientific study of food and taste, but one that approaches the multisensory dimension from an educational perspective. The literature of reference regarding multisensory perception and crossmodal correspondences considers both neuroscientific findings (Spence, 2019) as well as a sensory studies perspective (Wilson, 2015; Howes, 2013 and 2024) that investigate multisensory taste perception in both quantitative and qualitative ways.

In recent decades there has been much research in the field of sensory studies and the role of the senses in mediating between the mind and the body, ideas and objects, people and the environment (Howes, 2024; Wilson, 2015). Some aspects of multisensory perception can regard connections between the senses and affective/emotional phenomena: for example, olfaction has been found to be linked to memory (Van Campen, 2014; Wilson, 2015) and this was also a finding in Papers 2 and 3.

Advances in neuroscience have also added quantitative, measurable knowledge and in particular, scholars (Spence, 2019; Spence & Parise, 2015; Wan et al., 2014; Lee & Spence, 2022) have studied how the senses are integrated and give rise to rich, multisensory experiences specifically regarding people's multisensory perceptions of

their experiences of food and drink. Recent neuroscientific research focuses on crossmodal correspondences, defined as associations, or correspondences, that people make between a sensory feature in one modality: for example, color, shape, sound, texture and basic tastes (meaning: bitter, sour, salty, sweet and umami), with a different sensory feature in another sensory modality (Lee & Spence, 2022). Parings between sets of two different sensory modalities have been documented and analyzed (Spence & Parise, 2012). Crossmodal correspondences are not to be confused with synesthesia, a rare condition where involuntary or automatic associations are made between sensory modalities and often involving a fusion of two sensory modalities (seeing sounds or tasting words, for example). Crossmodal correspondences are associations people make between two sensory modalities and express through language, but they do not actually experience their combining in a physiological way.

To study crossmodal correspondences, data is usually collected in laboratory-like settings, where people are given tastants, shape outlines, color swatches and/or descriptors and the correspondences identified between color and taste or between shape and taste, for example, have proven to be quite robust (Lee & Spence, 2022) as the findings have been confirmed several times. Lee and Spence (2022, p. 5) pointed out that while some earlier studies were carried out with a primarily WEIRD[23] demographic, more recent studies (Wan et al., 2014) have aimed to mitigate this, seeking to analyze cross-cultural populations. So far, the basic findings have been corroborated across cultures. In connection to the articles written for this thesis, although the aim of the case studies was not to confirm previous findings, Paper 2, which involved young people from 15 different countries, also found generally the same

[23] WEIRD is an acronym for Western, Educated, Industrialized, Rich, Democratic

shape/taste correspondences, however, in my study the participants freely chose their foods and used their own words to describe their taste experiences, so the approach to investigating people's multisensory experiences of and with food was from a completely different angle and was exploratory.

Researchers in the adjacent, more qualitative, culturally-oriented field of Sensory Studies like Bee Wilson (2015) and David Howes (2013, 2024) have focused more on the experience and expression of people's multisensory perceptions related to food and taste, although usually not in educational settings, as these scholars are primarily sociologists, anthropologists and psychologists. Thus this thesis aims to build bridges between (abstract) concepts and language on the one side and sensuous bodily experiences on the other as fundamental aspects of food and taste education in formal and non-formal educational settings. Promoting bodily and sensuous learning experiences is also connected to the notion of the hierarchy of the senses that historically considers sight and hearing as "higher senses (worthy of attention)... allied with the mind, leaving touch, taste, and smell in the realm of the body and its physical sensations" (Korsmeyer, 2004, p. 87), positioning these as"'lower senses". Striving to contribute to the democratization of all aspects of the sensuous and sensory awareness within an educational framework is another goal of this thesis.

4 Research Design and Methods

4.1 Overall research design

In this chapter, I will discuss the research design and methods of my thesis project. First, I will give an account of the overall research design. Then I will discuss the research methods that were used in the thesis. Finally, I will address the issues of validity, reliability, limitations and ethics.

The research project was conceived of as an article-based thesis. The three articles, each one a case study, therefore build the thesis, and their submission to/publication in international journals offers a substantial benefit, as the peer review process provides valuable feedback from independent international level academics as well as invaluable experience in academic work and practice as a new researcher.

The main overarching research question for the entire project is: How can food ateliers broaden and deepen a multisensory approach to food education? In order to explore this topic, I gathered and analyzed a series of empirical materials collected during food atelier pathways designed and conducted by Pause Atelier dei Sapori carried out in a preschool, online and at the physical space of Pause, located at the Loris Malaguzzi International Center. Table 3 gives a detailed overview of what data was gathered for each case study and and how it was analyzed.

Table 3. *Overview of the entire research project*

Paper (case study)	Research Question(s)	Theory	Research methods	Participants	Sampling method	Data collected
1	*How do multisensory food explorations in an atelier affect young children's conceptions of their food experiences?*	Pedagogy of Listening	Qualitative, Thematic analysis (Survey)	Twenty 4-5 year old children, 1 atelierista, 2 teachers and 1 cook	Parent meeting, in-person food ateliers with small groups of children	Survey forms, photos and teacher notes
2	*How are multisensory experiences represented in the graphic depiction, and the accompanying explanations, of the experience of a food?*	Multisensory perception and crossmodal correspondences	Qualitative/ mixed methods, Constant comparative analysis, Analytical deductive/ inductive tool	113 young people aged 6-19, Pause team, atelieristas, interpreters	Video recordings of 10 online ateliers	Transcripts of 10 sessions of the same atelier, photos of participants' drawings
3	*What are students' and teachers' ideas about what a food atelier could be (before and after participating in them)?* *How might sense-based inquiries of food impact the thinking of participants in non-formal food ateliers?*	Slow pedagogy	Qualitative, Thematic analysis	73 children aged 11-13 (3 classes:1 primary, 2 secondary) and their teachers.	Video and audio interviews with a small group for each class, video clips of ateliers	interviews, photos, video clips

As can be seen from Table 3, the food atelier settings covered a broad range of ages (preschool to adults) and settings (formal, non-formal, online and in-person), using a variety of data collection and analysis methods which will be discussed in detail below.

All three case studies highlight and discuss the fundamentally multisensory characteristic of food ateliers, not centered only on eating and tasting, as a way to engage in food and taste education in a lifelong learning perspective. They offer insight on learners' experiences of and with food, generated from their freely chosen explorations in the atelier settings and/or the choice of foods explored and give examples of what sensuous food-based education can look like, going beyond cooking lessons and taste-testing sessions, which resulted among some of the most common food education practices implemented in both formal and non-formal settings according to the findings of the literature reviews discussed in Chapter 3. I would like to point out that my research project was not designed in full prior to starting, but evolved along the way.

4.1.1 Case study

All three papers are case studies, which, according to Yin (2014, p. 18), "investigate a contemporary phenomenon in depth and within its real-life context", addressing how and why questions (i.e. explanatory questions), like the ones in this research project (see Section 1.2 for a complete list of all the research questions that were investigated throughout the course of the project). Stake identified three types of case studies: intrinsic where a "case is of interest… in all its peculiarity and ordinariness" (Stake, 1995, p. 437) and no attempt is made to generalize beyond that specific case; instrumental, where a case is meant to provide insight on a broader topic and collective, where a number of cases investigate a larger phenomenon. In this thesis, each case is studied in depth, yet the whole project is focused on the broader

topic of food and taste education and what sensuous learning might look like. Educational case studies study a naturally occurring phenomenon (Denscombe, 2014), when the phenomenon and context are intertwined (Yin, 2014). Case studies focus on an individual, a group or groups of people (Cohen et al., 2009). The data collected for all three of the articles refer to specific experiences with diverse groups of people (from age 4 to adult) who experienced one or more food ateliers in a group setting. Each research context was unique and focused on the dynamics of the lived experiences, in order to give an idea of 'what it is like' to participate in a food atelier and to catch the close up reality and 'thick description' (Geertz, 1973) by analyzing the participants' experiences, thoughts and feelings to identify broadly generalizable insights about people's experiences with food and taste. Each case study in this thesis could be considered part of a "collective case study" (Cohen et al., 2009, p. 255), which taken together strive to offer a broader picture of the topic being investigated. The main disadvantage of case study is in its lack of generalizability, which will be discussed further below.

Thus there are some reasons why case studies were a suitable vehicle for studying, analyzing and generating knowledge about food ateliers as settings for engaging in food and taste education. The case studies focus on unique features of this specific educational setting and the patterns identified in the data collected (surveys, drawings, interviews, for example) which can deepen and broaden understanding and knowledge about food and taste perception, offering insight about what might constitute holistic sensory pedagogy.

4.2 Research methods

A qualitative approach overarches this project in terms of general research methodology, and since each case study was centered on different research questions, several qualitative methods were used (Silverman, 2000). Qualitative research studies participants' experiences, perceptions and behavior, focused on the hows and whys, not how many or how much. Thus primarily inductive processes were used to identify patterns in empirical materials in all three case studies in this thesis. Using qualitative methodologies like Constant Comparison (CC) and Thematic Analysis (TA) to analyze the data collected created the opportunity to consider the ateliers from a new viewpoint, by searching for patterns in the empirical data which could offer new insights that generated new knowledge and might also inform future iterations of the food ateliers. In the data analysis of the materials collected and set forth in the three articles, all of the data collected was included in each case study to support the validity and reliability of the results. In Papers 1 and 2, the empirical data (which included surveys, drawings, direct observation, videos, photographs and drawings) had already been gathered beforehand and was not specifically designed for the analyses subsequently carried out, while in Paper 3 the data (including interviews, photographs and video clips) was designed and gathered *ad hoc*. The sample populations in all three case studies were limited, but can nonetheless offer insight into the research questions investigated. Some quantitative analyses were also performed on the data to accurately describe and quantify aspects of the data collected in Papers 1 and especially Paper 2.

Delving into the research methods used specifically, different qualitative methods were used in this project: in order to collect the data, several sampling methods were

chosen, including interviews, surveys, observation, documentary and drawing analysis. These choices were closely linked to the design of each atelier studied. Data analysis methods utilized included: survey analysis, thematic analysis, constant comparison and interviews. Table 4 gives an overview of the empirical materials collected and data analysis methods used for each Paper.

Table 4. *Overview of research methods used*

Paper	Nature of empirical material	Data analysis method
1	Survey forms, photos, teacher notes	Thematic analysis (survey)
2	Transcripts of 10 sessions of the same atelier, photos of participants' drawings	Constant comparative analysis, Analytical deductive/inductive tool
3	One-to-one and group interviews, photos, video clips	Thematic analysis, interview

In the next sections I will discuss each research method one at a time, also in relation to each case study.

4.2.1 Interviews

To understand learners' points of view and thinking, interview is a suitable methodology. Open-ended interview questions allow the interviewees to freely express their thoughts and ideas, possibly leading to "unexpected or unanticipated answers which may suggest hitherto unthought-of relationships or hypotheses" (Cohen et al., 2009, p. 357). Interviews were used in Paper 3.

The open-ended interview questions were carefully sequenced and framed (see Paper 3 for the questions included). The goal was to gather data on the participants' expectations and lived experiences. Teachers were interviewed one at a time (one-to-one interview), while the students were interviewed in small, 3-person groups, fostering "the potential for discussions to develop, thus yielding a wide range of responses" (Cohen et al., 2009, p. 373), a choice made also due to time constraints. In addition, since most of the people interviewed were students (children/young people), the group interview setting "(enabled) them to challenge each other and participate in a way that (might) not happen in a one-to-one, adult – child interview" (Cohen et al., 2009, p. 375). The interviews were video recorded and subsequently transcribed verbatim before the material was translated into English and analyzed.

4.2.2 Survey analysis

Cohen et al. (2009) describe different kinds of surveys: an exploratory survey is "useful for gathering factual information, data on attitudes and preferences, beliefs and predictions, behavior and experiences – both past and present" (2009, p. 207), while a confirmatory survey tests a model, causal relationship or hypothesis. Large amounts of data give surveys broad generalizability, while those on a small scale "portray the specificity of a situation, its uniqueness and particular complexity" (2009, p. 207).

Paper 1 included a brief exploratory small-scale survey that subsequently impacted the design of the rest of the study. In this case, the survey aimed at "gathering data at a particular point in time with the intention of describing the nature of existing conditions" for simple frequency counts (Cohen et al., 2009, p. 205), thus survey

analysis was one of the data analysis methods. The survey was the starting point for the data collection for that paper, and the data collected, which was then further developed and explored using thematic analysis, shaped the design of the rest of the study (as discussed in Paper 1).

4.2.3 Constant comparison

Grounded theory (GT) is an inductive approach where theories emerge from the data, rather than “fitting” data into existing theories, thus patterns become identifiable, as one does not know what is going to emerge from the data beforehand. It is the opposite of hypothesis-deductive research where data serves to prove or disprove already formulated theories, thus in GT, empirical data is analyzed in order to develop theory rather than test it (Denscombe, 2014).

According to Cohen et al. (2009, p. 491), the principles of GT state that:

> *Theory is emergent rather than predefined and tested. Theory emerges from the data rather than vice versa. Theory generation is a consequence of, and partner to, systematic data collection and analysis. Patterns and theories are implicit in data, waiting to be discovered.*

The authors (2009, p. 492) further explain that

> *grounded theory sets aside any preconceived ideas, letting the data themselves give rise to the theory, certain abilities are required of the researcher, for example:*
>
> *_tolerance and openness to data and what is emerging*
>
> *_tolerance of confusion and regression (feeling stupid when the theory does not become immediately obvious)*
>
> *_resistance to premature formulation of theory*

> *_ability to pay close attention to data*
> *_willingness to engage in the process of theory generation rather than theory testing; it is an experiential methodology*
> *_ability to work with emergent categories rather than preconceived or received categories.*

This approach enabled and supported data analysis in my research, where the setting/environment, the actions and the interactions between people give shape, meaning and direction to the group inquires being undertaken that were developing in real time.

In particular, constant comparison (CC) was used in Paper 2 where the data underwent quantitative analysis through a double coding process, using a tool specifically devised (which I conceived of after researching drawings analysis, in particular a study by Deguara (2019). The *ad hoc* tool was fine-tuned to consider both the visual characteristics and the verbal descriptions of the materials in a process that included both inductive and deductive steps. (See methods section of Paper 2 for a detailed description). This coding process was used, in the words of Ezzy (2002, p. 94) for

> *disassembling and reassembling the data. Data are disassembled when they are broken apart into lines, paragraphs or sections. These fragments are then rearranged, through coding, to produce a new understanding that explores similarities, differences, across a number of different cases.*

The process of interpreting the interrelationships between the codes to identify the patterns is discussed in Paper 2. CC, besides searching for patterns in data, is also in dialogue with previous research and theories, possibly leading to new codes and categories to deepen and broaden the knowledge base. This was the case in Paper 2,

regarding research in the fields of crossmodal correspondences (Spence, 2019) and sensory studies (Wilson, 2015; Howes, 2024).

4.2.4 Thematic Analysis

Thematic Analysis (TA) is a flexible and open-ended methodology for identifying themes in qualitative research, not linked to a specific theory (as CC is linked to and stems from GT, for example). As Braun and Clarke (2006, p. 81) state:

> *thematic analysis is not wedded to any pre-existing theoretical framework, and therefore it can be used within different theoretical frameworks (although not all), and can be used to do different things within them. Thematic analysis can be an essentialist or realist method, which reports experiences, meanings and the reality of participants, or it can be a constructionist method, which examines the ways in which events, realities, meanings, experiences and so on are the effects of a range of discourses operating within society. It can also be a 'contextualist' method, sitting between the two poles of essentialism and constructionism, and characterized by theories… which acknowledge the ways individuals make meaning of their experience, and, in turn, the ways the broader social context impinges on those meanings, while retaining focus on the material and other limits of 'reality'. Therefore, thematic analysis can be a method that works both to reflect reality and to unpick or unravel the surface of 'reality'.*

Due to the spread of TA as a qualitative methodology in different disciplines, in a paper published recently, Braun and Clarke (2022, p. 428) discussed the subsequent misreadings, misconceptions and misunderstandings of TA, clarifying key concepts and terms regarding the specific type of TA they advocate: reflexive TA[24] which "involves

[24] Reflexive TA is one among other TA approaches.

asking questions that are not just about very surface-level observations or simple descriptions of experience… (centered on) researcher reflexivity".

Reflexive TA as described by Braun and Clarke (Braun & Clarke, 2006; Braun et al., 2022) was used for data analysis in Papers 1 and 3. It was used to analyze and interpret patterns (themes) in the data collected, based on the active, decision-making role of the researcher in identifying/selecting the themes. This active role is clarified in order to contrast criticism of TA, i.e. that researchers are "giving voice" to their subjects or that themes are simply "discovered" or that they "emerged" from the data (Braun et al., 2022, p. 431). The possibility to use reflexive TA in conjunction with other theoretical perspectives allowed me to identify and reflect on nuances and aspects of both REA and other perspectives related to food and taste education. Because of my background as an atelierista, the shift from my pedagogical documentation practice to engaging in qualitative research opened up a new way of viewing and understanding the food atelier experiences I was part of.

4.3 Validity and reliability

In qualitative research, validity regards the suitability of the methods and instruments chosen to generate data to help answer the research questions, while reliability is linked to how trustworthy and consistent the results are. Regarding validity, Tables 3 and 4 illustrate several sources and methods of data collection for each case study, in addition to triangulation, which is "the use of two or more methods of data collection…in an attempt to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint" (Cohen et al., 2009, p.

141), done through data sources, data collection methods and types and researchers (co-authors). This included both *"*Investigator triangulation: (engaging) more than one observer, data are discovered independently by more than one observer (Silverman, 1993, p. 99)... (as well as) Methodological triangulation: …(using) either the same method on different occasions, or different methods on the same object of study." (Cohen et al., 2009, p. 142). The triangulation of data sources, data types, or researchers promotes the idea that data should be viewed and explored from multiple perspectives (Miles & Huberman, 1994; Yin, 2014). For example, the use of CC in Paper 2 meant that identified codes and categories were compared during coding and consensus was reached among the researchers through discussion where needed, in addition to the fact that the original data set was returned to during the analysis process in order to align the findings with the results (Silverman, 2000). Regarding Papers 1 and 3, data, investigator and methodological triangulation were meant to address validity issues. Miles & Huberman (1994, p. 278) refer to validity in terms of " 'truth value': Do the findings of the study make sense? Are they credible to people we study and to our readers? Do we have an authentic portrait of what we are looking at?". According to this view, validity in qualitative research thus might be more similar to the idea of "authenticity" and "credibility".

All three case studies are qualitative, and thus the reliability of the findings is linked to the how the analyses were carried out, for example, regarding the semi-quantitative and qualitative analysis in Paper 2, the two researchers worked closely together, both during the coding process and in the subsequent analysis. The aim was not to produce replicable findings but to clarify and make explicit the analysis

processes that were developed and carried out regarding the data collected, with the objective of making the analysis as transparent as possible. In Paper 2, some of the findings were in line with previous, quantitative research, thus perhaps supporting them. Also, the groups of participants in the online food ateliers discussed in Paper 2 activated and engaged in different learning processes, despite the fact that the atelier was conducted in the same way with each group. Thus it seems that the subjectivity of the group might both impact and broaden the validity of the findings because of (or thanks to) the inclusive analysis approach based on reflexive TA.

In all three case studies, the findings were based on choices made by the researcher(s) in interpreting the data, so it must be noted that the findings might have been different if other researchers had carried out the analyses, since the same data can tell different stories depending on the research question and how the data is analyzed. In order to attempt to present the data in an objective way, however, I made efforts to avoid “unstated implicit assumptions and make the research process itself accessible… (in order to) contribute towards the ‘democratization’ of decision-making (and knowledge itself)... (allowing) readers to judge the implications of a study for themselves” (Cohen et al., 2009, p. 256).

4.4 Limitations

Each article presented particular limitations due to the nature of the data being analyzed. In Paper 1, the parents completed a questionnaire reporting their children’s attitudes toward various foods in terms of liking or disliking, but their responses may not accurately portray what their children like or accept eating when they are with others,

i.e. when they eat at school, or they may have over-reported the broadness in food acceptance with regards to their children. In Paper 2, as Spence (2019) notes, actual tastants can be problematic when generalizing about a particular crossmodal correspondence beyond an individual's direct experience, so while the findings are examples of participants' particular experiences, they do shed light how people experience food. In Paper 3, the small sample of interviewees, nine students and three teachers in total, means that the data does not provide broadly generalizable insights, but the themes identified through the analysis of the data can offer ideas about the expectations and experiences of the people who participated in the food atelier pathways and also traces to the evolution of their thinking.

The findings of the studies have limited generalizability due to the small sample sizes of the participants: from 20 in Paper 1, to 58 in Paper 2, to nine in Paper 3. However, they all offer insights into people's thinking and experiences related to food and taste, and each case study should only be considered as an example. Also, since they are case studies of specific experiences, transferability is limited, although they provide examples of how food and taste education might be implemented in a variety of settings.

Language plays a significant role in the expression of personal sensory experiences and perceptions. Most of the original data in two of the three case studies were collected in Italian, then transcribed and translated by me. In Paper 2, the *lingua franca* for the online atelier was English, but most of the participants had a different mother tongue, so some of the data collected was translated into/from these languages into English by translators participating in the ateliers in real time. Extra attention was

paid when working with translated content to seek highest possible equivalence between original description and translation. For example, in all of the articles, this was the case regarding the Italian words flavor, “sapore”, and taste, “gusto”, which are often used interchangeably in both English and Italian but have different meanings, or the verb “sentire” which can be translated as feel, touch, hear in English depending on the context, so it is quite a holistic term in Italian, where all of these meanings are expressed in a single verb.

4.5 Research Ethics

4.5.1 Voluntary Informed Consent

The families of all the children who participated in the case studies and the adults who took part in them were asked for their consent and signed release forms, since participation was voluntary, in line with the ethical parameters for qualitative research (Santiago-Delefosse et al., 2016). All participants (or parents in the case of minors) received a statement of informed consent, that included the following:

- Understanding that participation is voluntary.
- Understanding that withdrawal is permitted at any time for whatever reason and this will delete any information.
- Understanding how to address concerns or complaints.
- Understanding that all answers are anonymous, and no personal information is collected, such as name, ID, or other contact details.
- Understanding that the raw data on which the results of the study depend will be retained in secure storage for up to five years, or until no longer necessary.

- Understanding that data from the study might be published.

The signed release forms with the names of the participants or, in the case of minors, of the parents and their children, with no other personal data, the electronic data collected (videos of the atelier sessions, photographs or audio recordings) and the transcripts (translated into English and anonymized by the author) are stored in compliance with the European General Data Protection Regulation (GDPR). The project adheres to Fondazione Reggio Children rules and regulations regarding research ethics and the studies were approved by the scientific committee of Fondazione Reggio Children.

4.5.2 Anonymity and Confidentiality

The names of the participants were not included to protect their privacy. In some case studies, when using direct quotes, the first initial of the name and the age were indicated. In other cases, only the role (Student or Teacher) was clarified.

4.5.3. Researcher-oriented ethical concerns

Because the study balances educational design, the promotion of REA philosophy, Pause Atelier dei Sapori (a private entity) and academic research, I have been aware of dilemmas and challenges regarding this thesis, for example: conflation of production, promotion and research in the study. To contrast this, I have been transparent about my role as a researcher/atelierista/member of the Pause team, mindful of how this could impact the validity and reliability of the thesis. Receiving feedback from my supervisor and discussing the use of language (es. jargon) was

illuminating for me in becoming aware of unintentional bias in favor of REA/Pause, which is a threat to validity, as I am an insider with respect to what I am studying (Cohen et al., 2009, p. 144). Besides working closely with my supervisor, in order to minimize threats to reliability and validity, I have also done my best in

> *avoiding subjective interpretation of data… reducing the halo effect, where the researcher's knowledge of (...) the situation exerts an influence on subsequent judgements…recognizing spurious correlations and extraneous factors which may be affecting the data (i.e. tunnel vision)... avoiding making inferences and generalizations beyond the capability of the data to support such statements… avoiding selective use of data.* (Cohen et al., 2009, p. 145)

While the work I am presenting is my own work, having the opportunity to explain, clarify, communicate and be challenged by my supervisor during the entire process has given me both more distance from my research topic as well as the opportunity to see my work as a PhD candidate in relation to historical and current scholarship, thus a bit more through the eyes of an outsider.



5 Brief description of the research papers

This chapter describes and summarizes the findings of the three case studies in this PhD project. This research project aims to study the REA/Pause approach to food and taste education as implemented by Pause Atelier dei Sapori by analyzing the context of the food atelier as a setting for engaging in multisensory, learner-centered, sense-based education. The three case studies explore experiences with a range of ages, from preschool to adult, studying how REA philosophy, known for its pedagogical approach for children aged 0-6, is relevant and effective also with older children and adults in a lifelong learning perspective. They offer concrete examples of implementing strategies and concepts in formal and non-formal educational settings centered on food and taste, while not offering ”how-to”s, or (educational) recipes to follow. The activities and descriptions are examples of ways of thinking in education and communication, specifically of what this approach to food and taste education might look like.

Following is a list of the papers:

- Paper 1 (published) : ”Exploring the Senses of Taste with Young Children: Multisensory Discoveries of Food”. 2024. *Food and Foodways, 32,1.* DOI:10.1080/07409710.2024.2298175

  Co-authored with Erik C. Fooladi and Lorenzo Manera.

- Paper 2 (published): “Multisensory Experiences with and of Food: Representing Taste Visually and Verbally during Food Ateliers in a Reggio Emilia Perspective”. 2025. 2025. *Cambridge Journal of Education.*
  DOI:10.1080/0305764X.2025.2459924
  Co-authored with Erik C. Fooladi.

- Paper 3 (published): “The States of taste: Primary and Secondary School Students’ and Teachers’ Ideas on Food Ateliers in a Reggio Emilia Perspective”. 2024. *Food, Culture & Society*, DOI: 10.1080/15528014.2024.2443335
  No co-authors.

Paper 1 describes design and study of a pedagogical setting for taste and food education in a preschool, highlighting themes in the children’s learning and thought processes that focus on some of the aspects that direct sensory experiences with food as well as their broader meta-reflections about how their attitudes towards food formed and subsequently transformed thanks to their lived experiences, as they asked questions, tested hypotheses and made sense of the world around them.

Paper 2 describes an online setting for food and taste education that studied learner’s individual food choices and perceptions spread over time and space that intersected in a shared atelier in a lifelong learning perspective. This atelier did not focus only on tasting, but explored taste through and in relation to the other senses as each participant rendered their taste experience through a graphic mark. These drawings were subsequently analyzed both inductively and deductively using a tool

specifically developed to study the role of expressive languages, referring to the REA concept of the hundred languages, in exploring and representing their sensory perceptions and experiences of the foods freely chosen to be tasted.

Paper 3 investigates the prefigurations of primary and secondary school students and teachers before participating in a series of non-formal food ateliers and then again afterwards to survey what their *ex-post* reflections were. The series of ateliers were primarily multisensory experiences, where once again sight and taste were at times subordinated to “lesser” senses like smell and touch (using hands). Data analysis revealed that the participant’s thinking shifted thanks to their multisensory explorations.

The main findings from each paper are presented in Figure 2.

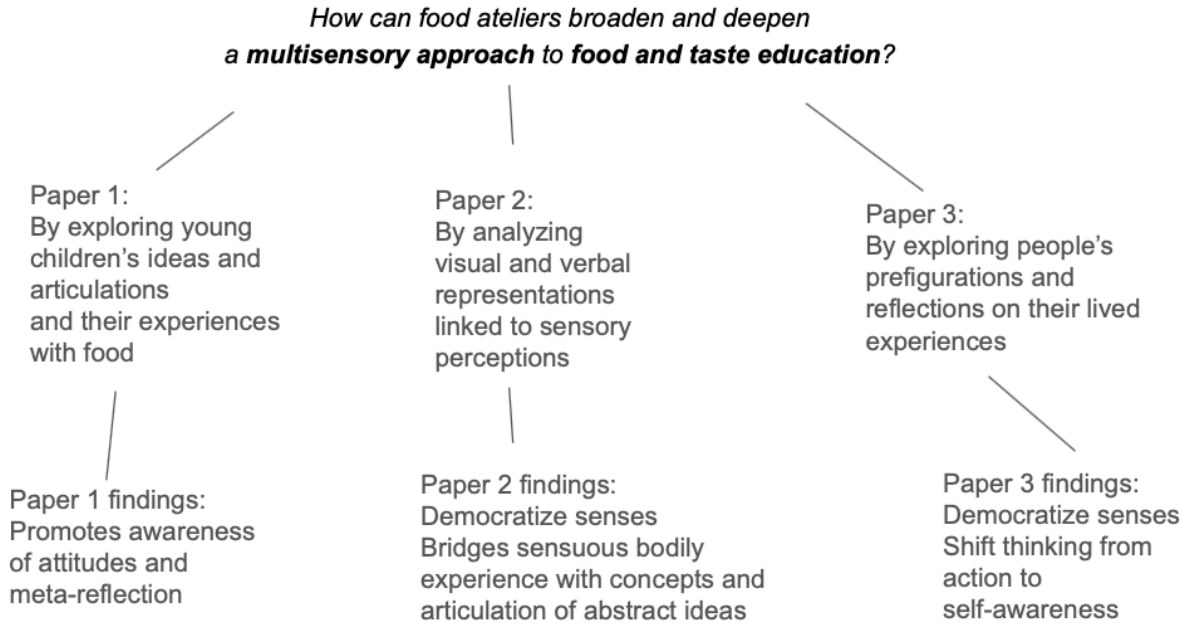


Figure 2. *Main findings of each paper*

All three case studies are open-ended investigations[25] that were constructed together with the participants, whether in formal or informal settings, carefully and thoughtfully set up and designed by Pause's pedagogista, atelieristas and cook-atelieristas. These food ateliers were not aimed at reaching a particular end point, or transmitting specific knowledge. REA/Pause food and taste education has not been a research focus prior to this thesis, and food ateliers have not been described and analyzed in literature before now. The three articles (see Appendix) together paint a picture of what food and taste education can look like, but only partially, because they are "site-specific" experiences and case studies that cannot be exactly replicated. They can, nonetheless, offer a view of what a sense-based, learner-centered approach to food and taste education that values and valorizes the expression of people's multisensory experiences through the hundred languages can look like. The findings of the case studies demonstrate that investigating a single sense ends up becoming a multisensory exploration: Paper 1 and Paper 2 are examples of this.

5.1 Author contributions

My contribution for each article is as follows:

Paper 1: The data for this article had been collected previously. I was involved in conceptualizing the focus of the paper, analyzing data, writing and revising the article. I was responsible for submitting the article to the journal and preparing the manuscript for

[25] REA educational philosophy and its practice in general are discussed in detail elsewhere (Edwards et al., 2011; Giudici et al., 2001; Rinaldi, 2009) and beyond the scope of this project.

publication. Written together with PhD supervisor, Erik Fooladi and Dott. Lorenzo Manera from Unimore/Fondazione Reggio Children.

Paper 2: I was involved in conceptualizing and designing the food atelier analyzed in study, collecting and analyzing data, writing and revising the article. I conceived of the analytical tool used for the drawings analysis. I was responsible for submitting the article to the journal and preparing the manuscript for publication. Written together with PhD supervisor, Erik Fooladi.

Paper 3: I was involved in conceptualizing and designing the study, gathering data, writing and revising the article. I was responsible for submitting the article to the journal and preparing the manuscript for publication. I wrote this article myself, with feedback and guidance from my PhD supervisor, Erik Fooladi.


Fotocamera

6 Discussion

This chapter will provide a synthesis of issues raised in preceding chapters and then move on to future perspectives. First, I will discuss how REA philosophy is in dialogue with the theoretical perspectives outlined in Chapter 2 and the knowledge base mapped out in Chapter 3, highlighting how my contributions fit in, complement, question, expand, concretize and develop these theories and previous research (broadly outlined in Table 5 below). Then I will address the challenges of the research methods as they played out in my research and the possibilities they offered. Finally I discuss implications of this study regarding food and taste education, since this thesis is meant to fill a gap in the knowledge base, in both formal preschool and non-formal settings, and consider both how it contributes to expand and further develop food and taste education as well as look towards possible future directions for continuing this research. This table is meant to represent a roadmap for the following sections: although it is not a complete listing of all of my contributions, it gives a general idea of what seem to be important aspects. For specific citations see text for references.

Table 5. *How my research is part of the bigger picture (NB:Specific literature citations omitted; see text for references).*

Fits in	Shares many points in common with Slow Pedagogy; the concept of “Bildung”
Complements	Leer & Wistoft’s “Reflexive Taste Pedagogy”
Questions	Focus of previous research on changing/improving children’s eating habits or preventing and addressing eating disorders as the main aim of food and taste education
Expands	Korsmeyer’s ideas regarding the sensory hierarchy and the significance and meaning of food; the idea that each (food) atelier is a unique experience that nonetheless gives insight regarding the questions posed
Concretizes	The REA concept of the hundred languages; offers concrete examples of pedagogical design around food and taste education; the intersubjective dimension of food and taste education
Develops	Food and taste education within the Slow Pedagogy framework; Leer & Wistoft’s idea of taste education to feature/focus on multisensory exploration of food

6.1 Links with the theoretical perspectives

The theoretical perspectives discussed in Chapter 2, namely Slow Pedagogy (Clark) and Sensory Hierarchies (Korsmeyer), have links to REA in general and the food atelier settings studied in the articles. Rendering these connections explicit, which formerly have not been examined, might serve to create new dialogues between researchers in different fields. I would therefore like to discuss the links with Slow Pedagogy and Sensory Hierarchies in this section.

REA and Slow Pedagogy have a lot in common and seem to be aligned in their perspectives in several respects, as Clark (2023, p. 41) has also mentioned in her work. In fact, the Slow Knowledge/Pedagogy movement stemmed from the Slow Food movement founded in Italy in 1984 by Petrini (Shaw & Russell, 2013). There are many parallels with Slow approaches (to food, education, life), as they place emphasis on

reflection, well-being, creativity, complexity, inquiry, dialogue, autonomy, quality over quantity, making connections and the relationships between people and between people and the environment/nature. The foundation for these practices is a respect for and the appreciation of time, in the sense that it is essential, as Clark (2023, p. 34) states, to "become friends with time… (i.e.) not being trapped by time or escaping time (timelessness), but establishing a different relationship" with it. Recognizing the value of slow knowledge related to sensory-based food experience and perception offers learners the opportunity to build knowledge in a way that is more direct, in-depth, multisensory. This claim is supported by the findings in all three of the case studies herein regarding the food and taste education specifically. It is most explicit in Paper 3 where students and teachers reflected on their experiences of food ateliers, specifically mentioning awareness of their learning processes. In Papers 1 and 2, the insights of the participants were built on their direct sensory awareness that was promoted through their explorations of and with food, expressed both conceptually/verbally and through the additional language of drawing (in Paper 2).

Some main themes to both of these thought frameworks are also central to Pause food and taste ateliers. One is the importance of being co-inquirers together, which Clark (2023, p. 39) refers to as 'being with' and embracing the "multiple ways of listening to and 'being with' children, colleagues, parents, the environment and ideas… (which is) time consuming and underlines the unhurried nature of these encounters" (2023, p. 41). Clark's discussion of the concept of 'being with' is based on several interviews she conducted with colleagues who mention other educational theorists, among them Carla Rinaldi, in reference to the ideas of 'cultivating a culture of thinking

together' (Interview with Silvia Kind in Clark, 2023, p. 40) and the importance of the development of a pedagogy of listening (Rinaldi, 2001; Rinaldi, 2009), discussed above. This practice, on the part of adults, of being a co-inquirer in educational activities and valorizing the contributions and ideas of all the participants underlies the educational relationship that supports the food atelier inquiries discussed in all three case studies which, while not the focus of my research, was a foundational part of it.

The temporal aspect is fundamental for both slow pedagogy and REA thinking. Carlsen and Clark (2022, p. 208) point out that "the depth of engagement" is proportional to making and taking time to engage "in a multisensory way". Qualifying deep engagement as a result and a state linked to savoring sensory experiences is also seen in the educational environments and the findings in the three case studies, where the multisensory aspect of knowledge building was central and explicitly commented on by the participants, especially during post-atelier reflections. In the case studies, this relationship between time and multisensory knowledge building are exemplified not only in terms of how the experiences were paced, but also the realizations expressed verbally regarding taking and making time for inquiry. In Paper 1 the children discussed taking/making time during a meta-reflection session at the end of the period of the ateliers, and in Paper 3 there are several remarks about this relationship to and experience of time in the post-atelier interviews as differing from the usual "school time" that students and teachers were used to. This sensitivity to time that has characterized "modern" education has its roots in early 20th century educational philosophy. Cuffaro (1995, p. 42) pointed out that John Dewey recognized that

> *non-fragmented stretches of time not only give children the opportunity for more in-depth involvement and experimentation, but also allow room for situations to*

> *evolve, to become meaningful in a way that they may not be at first glance. Within this stretched time, greater possibility exists for making choices and for experiencing the consequences of one's doing. Such an approach requires that time be viewed as perspective, as rhythm, as opportunity, and that the present moment be fully valued.*

Structured time vs. more fluid time in educational settings has continued to be a topic of reflection and discussion by researchers: Clark (2023, p. 31) discusses a broad, nuanced concept of time which not only spans the "timeless nature of inquiry to the timetabled nature of school/daily life but also thinking about the different ways time is experienced, in an effort to "become friends with time" (2023, p. 34) and establish a different relationship with it.

Another fundamental aspect that links slow pedagogy is an attitude of openness to what is unexpected and the willingness to fluidly change direction. By letting people absorb new knowledge at their own pace through their explorations, ideas and actions, we are all embracing the unexpected or, as Clark calls it, 'going off track' , and, quoting from her interview with Peter Moss (Clark, 2023, p. 43), he stated:

> *...Slow pedagogy is about being open to exploration, to looking for somewhere new… the idea of emergence… where people are saying 'let's see where this takes us'; 'That's really interesting, we need to understand that'; 'We need to go deeper into that' ...*

As seen in the case studies, new possibilities are generated following the exploratory dynamics of an ongoing inquiry in real time, rather than moving along a pre-determined pathway where the end point and the timeframe were already defined before the activity even began. All of the food atelier experiences in the case studies start from a carefully

planned and designed (*progettazione*) incipit and then develop organically, according to the interests, input and individuality of the children/participants and the group as a whole, and each inquiry is unique in this sense. The uniqueness of each individual and/or group experience seems to be less explicitly mentioned in Clark, but it is an important and characteristic quality of REA in general and the Pause food ateliers in the case studies: in Paper 2, for example, each of the ten groups participated in the same online atelier, but each group generated a unique collection of drawings, since the participants freely chose the foods they tasted and then represented them graphically, and at the end of the atelier these images were collected on a single (digital) page to create a "taste manifesto" that each group then gave title to, which represented that group's shared, interpersonal experience.

Another point of contact with slow pedagogy practice has to do with 'diving or digging deep' (Clark, 2023, p. 46), which results from taking time to 'be with' and to 'go off track'. As the educator Kate Cowan pointed out in conversation with Clark, this also has to do with Bruner's idea of a recursive Spiral curriculum (Bruner, 1977, p. 52; Clark, 2023, p. 47) and the idea of reconsidering and revisiting ideas to deepen them over a period of time. In another interview by Clark with Mara Krescevsky, the two researchers discuss the long-standing research project between Harvard's Project Zero and Reggio Emilia, leading to the realization that making learning visible (through documentation) is not an *end* but a *means* to deepen learning (Clark, 2023, p. 48). Clark further sums up some fundamental qualities of slow pedagogy, which, in my opinion closely mirror REA thinking in general and the approach to food and taste education in particular. I will summarize some aspects of Clark's list (2023, p. 49) below that I find particularly

pertinent for food ateliers. I believe these particular aspects are inherent in the food ateliers described in the case studies, so I would like to point out that both:

-are attentive to the rhythm of children, adults and materials

-prioritize taking and making time for listening and collaboration

-celebrate the group as well as the individual

-take the long way, cultivating over time

-value what can be difficult to measure

- seek to enable deep discovery and strengthen relationships

Slow pedagogy is rooted in the everyday, including mealtimes and one's relationship with food. Considered from the perspective of the related Slow Food movement and the Slow Food Education Manifesto (Slow Food, n.d.) published online[26], food and eating are valued for their pleasurable and social aspects, which can start from early childhood and last throughout life. In my own experience in REA educational settings and inherent in the theory is that every moment of the day is meaningful and significant. Learning is not circumscribed to just the "work period" in the morning, thus all of the "in between" activities, for example: changing shoes, washing hands, preparing for lunch, among others, are valued and valuable moments. The case studies offer some examples of how slow pedagogical practices, in line with REA thinking, can be implemented around experiences with food and also give examples of the role[27] of educators/teachers/atelieristas. The fact that food is one of the hundred languages and considered a material for inquiry, thus not limited to eating, mealtimes or structured

[26] https://www.slowfood.com/wp-content/uploads/2023/10/slow-food-education_manifesto.pdf

[27] I do not discuss the role of adults in REA in detail in the case studies or in this thesis, which is a broad topic discussed in other volumes (see Edwards et al., 2011; Giudici et al., 2001; Rinaldi, 2009) and is a foundational aspect of REA philosophy,

activities like making a recipe, underlines the connections between bodily sensory awareness, the articulation of concepts and knowledge-building processes, as seen in the case studies and the insights the findings offer. Thus, awareness and appreciation for the everyday, in this case specifically food and taste, are opportunities to create meaning, make connections and promote sensory awareness.

Regarding sensory hierarchies, Korsmeyer (2004, p. 93) underlines the contrast between those that foster more inward-oriented self-awareness (smell taste and touch) and those oriented towards the outward-directed discovery of the world (vision and hearing), which in the past were considered less (the former) and more (the later) “desirable”. This contrast is reflected in the fact that the experience of touch, smell and taste are commonly labeled as bodily “sensations”, whereas (hearing and vision) are referred to as mental/cognitive “perceptions” (2004, p. 93). I would argue that sensations and perceptions are closely linked and related to each other and that sensory stimuli do not fall into just one category or the other. According to psychology, sensations are physiological responses to sensory stimuli, and perception regards the cognitive interpretation of those stimuli (Foley & Bates, 2020, p. 2). This opens to other fields and goes beyond the scope of the present thesis, but the knowledge-building processes at the basis of the food ateliers analyzed and the findings from each case study are examples of the broad and inclusive mechanisms activated thanks to sense-based education. In Papers 1 and 3, the participants in the food ateliers were invited to concentrate on specific sensory input in each session that opened their inquiries towards unprecedented and unexpected discoveries and articulations. In Paper 2, the invitation to explore one sensory modality, taste, through a seemingly

unrelated language, graphic representation, created a new way to consider something seen and eaten every day, and offered insight into people's sensory experience of and with food. I would say that currently, differently from in the past, there is exchange and dialogue between internal and external realizations and thoughts that bring to light both individual/subjective and "objective" experiences of people, creating an intersubjective dimension that reveals aspects of the surrounding world to individuals and vice versa. I am thinking specifically about working in a group and the co-construction of knowledge in educational settings like in food ateliers, Sapere network tasting sessions in classrooms or Taste for Life workshops in schools (see Table 6 below).

The above ideas are based on the recognition of food as a meaningful material in and of itself, which is not to be taken for granted. Korsmeyer (2004, p. 96) rejects the

> *denial of meaning and cognitive significance (of) foods… (which) is demonstrably inaccurate (as) eating is an activity we freight with (considerable significance)... Foods qualify as meaningful in a host of ways, for they are representational and expressive as well as nutritional and tasty… Foods represent (themselves) or something else, (eating) is a common practice that occurs with profound significance…and also playfully.*

She continues (2004, p. 97) by arguing that

> *food and drink are quotidian elements of necessity and routine, and we often lose sight of their deep significance… the very flavors in our mouths are "about" something, and standard theory has been quite wrong in concluding that savoring them ensnares us in our own bodily sensations, oblivious to the social, cultural and personal meanings that taste provides. Undeniably, taste is subjective because it occurs in one's own mouth and requires one's own experience. But that experience is just as communicable as more standard…judgements, and (can be) debated and assessed. What is more, the*

strong social contexts in which we often eat make the joint experience of eating even more public

i.e., shared and shareable[28]. In her view, food is a material, a content and context, not to be taken for granted or pushed aside. This is also in line with the thinking of REA/Pause. In this sense, this project offers a significant contribution by making people's shared experiences and perceptions visible and explicit (through one or more languages) and the object of study in themselves, placed at the center of attention.

6.2 In dialogue with previous research and experiences

In situating REA/Pause food and taste education with regard to previous research and experiences, it was important first to identify and discuss the points of reference as I did in Chapter 3. Now I would like to connect these specifically, recognizing the fact that REA is quite unspecific with few (if any) "how-to" instructions, rather it is a set of educational values and a pedagogical philosophy that can be adapted to different settings, cultures and situations. Nonetheless, I have traced how I see a dialogue with several theories, perspectives and efforts over time. Table 6 summarizes similarities and differences with REA/Pause thinking regarding significant theories, perspectives and efforts in food and taste education since the 1900s.

[28] That is, food, drink, eating, and the experiences thereof, are conceptualized as fundamentally "shared and shareable".

Table 6. *In dialogue with other theories, perspectives and efforts around food and taste education*

YEAR	NAME	SIMILARITIES - REA/PAUSE	DIFFERENCES - REA/PAUSE
Early 1900	Dewey	Right to food; Food creates community, sense of democracy; Direct experience essential	Sensory perception seems to follow established sensory hierarchy
Pre 1950	Montessori	Making and taking time for sensory pleasure and exploration (in general)	Focus on practical activities, guided/closed materials (can only be used in one way)
1986	Slow Food (Petrini)	Everyone has a right to food	Mainly involved in setting food policy and safeguarding local commercial/business
1995	Edible Education (Waters)	Chef-teachers and other professionals (gardeners) working with children; child-centered experiences	Sustainability focused- farm to table, local sourcing, DIY materials
(1974)1999	Les Classes du Goùt/Sapere network (Puisais/Politzer)	primary importance on the sensory and sensuous pleasure of eating and children of discovering themselves; open questions, ad hoc trained figure to conduct sessions	Guided sessions- adult led
2010	Food Revolution (Oliver)	bringing taste and food education to the people in different non-formal settings (community)	Explicit aims to impact business and public policies
2014/2021	Taste for Life (DK)	promote settings for positive taste experiences based on sensory awareness, food as a way to know and understand the world	More structured experiences than REA, also skills-based instruction (cooking)
2023/2027	TASTE project (NO and DK)	Promote individual and community-based taste practices starting from early childhood, reflection on personal experience using different taste dimensions	Aims to create a taste didactic for national (DK and NO) implementation to teach taste competence

Points of similarity to prior theories, perspectives and efforts have to do with the rights of children to food (Dewey, Slow Food), the primacy of multisensory direct experience (Montessori, Sapere, Taste for Life, TASTE project), bringing food

education out of classrooms into non-formal settings also in a lifelong learning perspective (Edible Education, Food Revolution) and the involvement of non-pedagogical figures with expertise related to food (chefs, farmers, etc.) who work with children (Edible Education, Food Revolution, Sapere). These aspects are actuated in different ways in each pathway, but they are all ideas in dialogue with REA/Pause thinking. Main differences have to do with focus on influencing or creating food policy as a main goal (Slow Food, Edible Education, Food Revolution) and in terms of aspects which differ regarding educational style. I would argue that some of the other perspectives considered are more top-down, in the sense that the sessions are structured and led by adults (Montessori, Sapere, Taste for Life) in comparison to the more open-ended inquiry that characterizes REA philosophy in general where adults are co-inquirers alongside the children/learners, as seen in the case studies[29].

In tracing the development of food and taste education from the 20th century onwards, REA/Pause food and taste education has been shaped by past thinkers and is in dialogue with other current experiences, but also offers an angle that other approaches do not necessarily develop. Hopefully, moving forward, REA/Pause philosophy and practices will enter into the current debate and offer resources around the culture of food and taste education that is ongoing in and between many countries throughout the world. As King et al. (2009, p. 45) suggest, striking a balance between the construction of knowledge, multisensory inquiry and recognition of their value in one's own life signifies that what is ultimately most "meaningful… (has) utilitarian,

[29] Granted, I acknowledge that these other perspectives are shaped by their own specific teaching and learning aims/goals, which may be very different from REA and the conditions in which the various approaches exist are important or cannot be disregarded. These aspects are related to questions of policy and curriculum which go beyond the scope of this thesis. There are, however, examples of REA thinking being implemented in other countries and the challenges this poses (see for example Edwards et al. (2011) about the challenges and adaptations in implementing REA in American preschools).

aesthetic, or personal value". I would say that learner-centered, sense-based education strives to actuate this type of "authentic pedagogy", involving intellectual, emotional, psychological, existential and sensory spheres.

6.2.1 Aims of food and taste education

One of the objectives of this study is to enter into the dialogue regarding the aims of food and taste education. Previous research seems to suggest that it has primarily focused on health-related issues (see Chapter 3 for a discussion of previous research), thus other aspects pertaining to the emotional and relational aspects of food and taste, including creativity and pleasure (Rich & Evans, 2015), have often not been sufficiently considered. The case studies herein pay attention to the "smaller" more "mundane" things (Fooladi & Barth, 2022) like food we see and eat every day. They also exemplify taking the time to explore, savor and "be with" (Clark, 2023), which become part of our awareness, focusing attention on the intricacy and uniqueness of each person's multisensory perception of food, something we all have in common and yet is nonetheless intensely personal, constituting, in other words, the intersubjective.

Among the theories and perspectives considered above, I have been particularly struck by the concept of reflective taste pedagogy, which is part of the scholarship produced during the Taste For Life project (Leer & Wistoft, 2016; Leer & Wistoft, 2018), based on a holistic (combining the body and the mind) mind-set which is open to and connects individual people's perception of and experience with food and taste in social settings that foster empathy, social skills, critical thinking and creative connections between different disciplinary and sensory domains. These ideas have much in

common with the underlying ideas and qualities of REA/Pause food ateliers: for example, the importance given to starting from people's prior knowledge, experience and perceptions of their own experiences. The food ateliers described in the case studies can offer an example of what reflective taste pedagogy might look like, perhaps broadening the spectrum of possibilities for engaging in food education practices that focus on and valorize the experience of individuals within a group.

Gaining knowledge of the self and others is another point of intersection between food ateliers and reflective taste pedagogy: Leer and Wistoft (2018, p. 343), citing an idea by Schnack (2000), write that

> *the reflective ideal is based on the tradition of Bildung (personal and cultural development) or self-development. In this tradition, learning is characterized as an expansion of consciousness through gaining not only new insight and knowledge experiences but also the capacity to reflect critically on these and relate them to one's situation.*

The emphasis on dialogue, listening and expressiveness in REA/Pause settings, including food ateliers, foster the development of self-awareness and personal development, for both children and adults.

The definition of taste in the context of the research carried out in this thesis is broadly in line with Leer & Wistoft's idea that "taste is rooted in individual and social values, created through the interplay between individual memories/experiences and collective structures" (Christensen & Wistoft, 2016, p. 26), but I argue that the definition should also include the multisensory dimension of exploring foods and the consequent crossmodal associations people make thanks to their taste experiences with and of food. I have chosen to concentrate on the multisensory aspect of food and taste

education and not delve into the sociological/cultural perspective of taste education and development (e.g. taste understood in the Bourdieusian sense) which leads too far off in another direction, outside the scope of this thesis.

Starting from the idea that taste, as Leer & Wistoft write, “is seen as a barrier to the adoption of “correct” eating habits and is not recognized as an important sense, a source of pleasure, or a central way of sensually understanding and approaching the world" (Leer & Wistoft, 2018, p. 331), their statement is pertinent regarding developing children’s tastes within the approach to taste and food education that characterizes REA/Pause. While Italy has been promoting taste education since the 1980s and the Italian Ministry of Education (MIUR) has published guidelines regarding food education, currently there is no obligation to include it in school curricula (Ueda, 2018). In REA schools (whether in Reggio Emilia or other parts of Italy or the world), lunchtime (briefly discussed in Chapter 3) is considered a pedagogically significant and meaningful moment of the day and is an important part of the curriculum, in addition to the other non-meal related experiences of food during food ateliers. Although the food atelier settings studied in the articles do not specifically regard lunchtime, it is nonetheless important to point out that the attention paid to food in the educational setting is broad and deep, encompassing both lunchtime as a moment of pedagogical importance as well as other moments for exploring food, not linked to eating or tasting. During food ateliers in Paper 1, for example, the atelier settings were decidedly not focused on cooking, eating/tasting per se but on sensory awareness. This attitude and sensitivity around food also informs food ateliers in a lifelong learning perspective: in Papers 2 and 3, participants were older children, adolescents and adults. Specifically, in Paper 2,

participants were invited to use an expressive language, mark-making, to explore their taste perception, as a way to broaden and deepen their everyday experience of and with food. In Paper 3, participants were interviewed before and after participating in a series of food ateliers to understand whether and what shift in their thinking might have occurred. Thus REA/Pause conceptualize food and taste as educational contexts involving cooking, eating, exploration and experiencing and, also according to this educational philosophy, it is fundamental to give children's experience a central role. In fact, by cultivating and engaging in "reflective taste pedagogy" (Leer & Wistoft, 2018), it is possible to promote the development of critical awareness and reflection (Christensen, 2019; Christensen & Wistoft, 2016) as well as highlight children's thinking and learning processes as they inquire into and make meaning about their worlds (Hedges, 2014). This might help to shift dominant perceptions that consider food education a "correction" of learners' taste to improve eating habits, since constructivist/socio-cultural educational approaches like REA focus on learners' perspectives and lived experiences.

Reggio started its food and taste education experiences right after WWII, so this aspect of the educational philosophy and approach has always been present. Food is one of the hundred languages (see discussion in Chapter 2), considered both content and context for inquiry and the development of knowledge about the self and the world. In the case studies, the emphasis of the inquiry contexts, food ateliers, highlights fostering multisensory, crossmodal perception and the ateliers are focused both on experiencing/perceiving (taking in) and subsequently on verbalizing, depicting or finding other ways to express one's perceptions, thoughts, hypotheses and sensory

experiences (communicating) with food. Both of these equally important phases: 1) direct experiencing and 2) communicating are part of the knowledge building process in REA thinking. Pause food ateliers in non-formal settings (and often food ateliers at school) are carried out together with a cook-atelierista, who brings their expertise and knowledge to the experience, without directing or guiding it, but works together with the children, as described in the case studies. Finally, according to REA philosophy, the learning processes and strategies put into practice by the children are of greater interest and value than the final product. The learning processes with and about food have been gathered, analyzed and thus made visible in the case studies. Thanks to data collection and analysis, it is possible to identify and discuss what kinds of discoveries people make and in what domains. These results might be surprising and different from what the initial intentions are on the part of the teachers, atelieristas, etc., but the unexpected viewpoints offer new information and points for reflection, both about food ateliers and more in general about people's experiences of and with taste and food.

6.2.2 Links with crossmodality

My research seems to specifically link crossmodal correspondences and multisensory perception to food ateliers for the first time. As far as I know, REA literature has not referred to the term "crossmodal" (where associative connections are made between perceptions across senses, i.e. the color red and/or rounded shapes are associated with sweetness, etc., see Paper 2), although the words "multimodal" and "multisensory" are certainly present, especially in relation to digital environments (Tedeschi et al., 2021). Thus the multifaceted character of sensory-based inquiry is part

of REA thinking, and I would argue that while there is consciousness around crossmodality, it has been something latent without explicit discussion or identification before now. This might be due to the fact that the study of the REA/Pause approach to taste and food education made the crossmodal aspects of such sensuous pedagogy more evident, or it might be that considering the existing literature by neuroscientists in particular raised my awareness of these characteristics of the inquiries with and about food and taste. A third reason might be that the main perspective is holistic, which does not split up an experience in terms of the senses but thinks of it as "a whole". As with the other adjacent experiential, theoretical and practical examples considered in Chapters 2 and 3, there are many other ideas and practices that fit well with REA philosophy, just as REA thinking can offer insight and deepening to other theories, efforts and practices.

6.3 Challenges and possibilities of the research methods

Despite the fact that food and eating are shared aspects of daily life in all cultures, the field of food and taste education encompasses many different foci and lacks a coherent set of terms, definitions and aims, which makes scholarship quite fragmented. For the case studies, most of the data analyzed was not specifically collected for the analyses carried out, thus no standard observation grid was utilized (Papers 1 and 2). The role of transcribing and translating between two or more languages (see Chapter 4 for discussion) and the small number of participants in each case study limited transferability[30], although this project offers a model for taste and

[30] I would argue that REA thinking in general has broad transferability, since the underlying educational philosophy provides context and means for meaningful, sensuous, multisensory educational activities.

food education in both formal and non-formal environments. The case studies are not meant to offer "how-to" examples, but to show what REA/Pause food and taste education looks like and the thought underlying the design of the ateliers. As such, the studies and ateliers described represent operationalizations of REA thinking in education with taste and food. The decision to submit/publish to journals both in the fields of Food Studies and Education was made to establish and acknowledge links between several disciplines and to enter into the current debate around food and taste education in general.

6.4 Overall findings

The overall design and broader findings are summarized below in Figure 3.

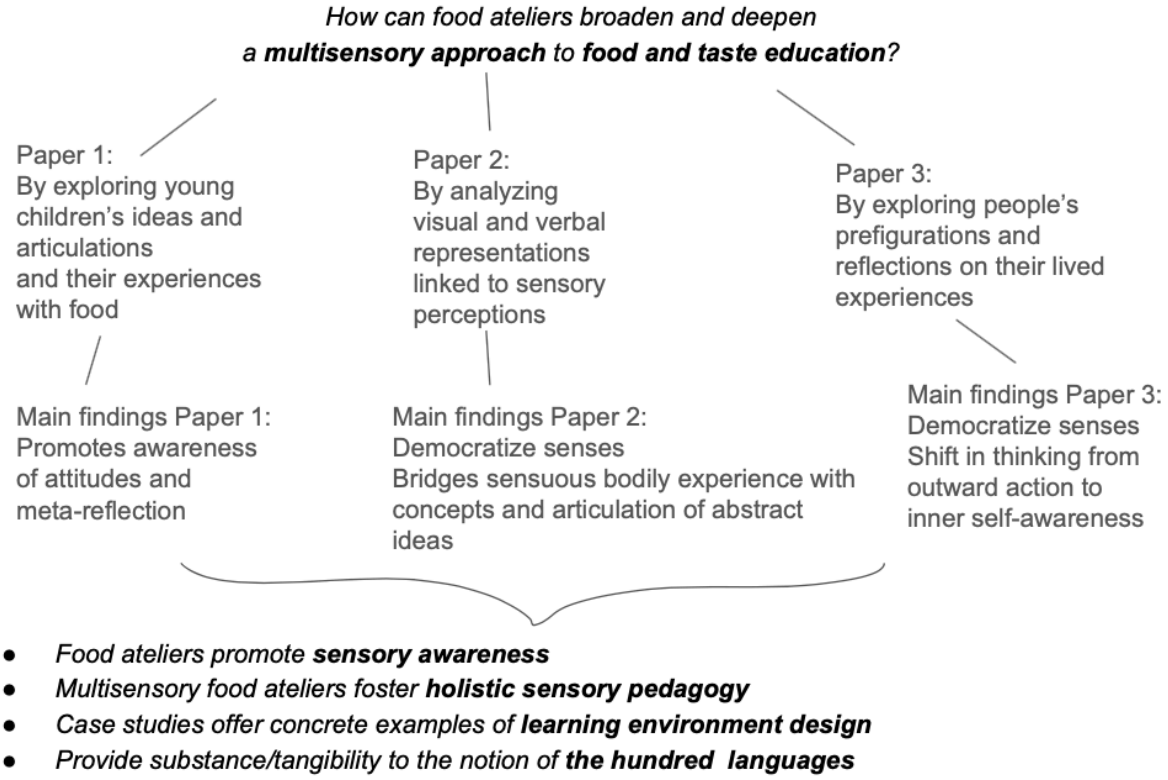


Figure 3. *Overall design and broad findings of the case studies*

While each paper arrived at different conclusions, looking at all of the conclusions led to this synthesis of the “findings of the findings” based on all three papers. Each case study exemplified how greater sensory awareness of attitudes or changes in attitudes towards foods, for example, was a result of the multisensory food atelier pathways the learners participated in, also thanks to supporting and creating space for developing or articulating thinking and building new knowledge starting from what was already familiar or known by the learners. The multisensory experiences of and with food also deepened engagement by highlighting the crossmodal associations and sensory perceptions of the participants and in general created the opportunity for embodied learning to take place, connecting mind and body and taking time to focus on one of the “small things,” food, that are part of everyday life. While the food ateliers were not designed to offer “recipes” for implementing and engaging in taste and food education, they nonetheless offer concrete examples of what learner-centered, sense-based food education can look like and may offer inspiration for adapting and modifying not only the specific experiences, but especially the thinking underlying this way of approaching food and taste education. By studying multisensory food ateliers as a way to implement food and taste education pathways in a lifelong learning perspective, this thesis has aimed to fill a gap in the knowledge base.

6.5 Concluding remarks and future perspectives

To return to the broader food education scenario, Smith et al. (2022, p. 19) find that there is no standardized approach to the topics included in a food education curriculum in schools:

> *Each studied country has a unique approach to food curriculums. All employ a combination of food and non-food curriculums, but this is where similarities end. Country curriculums each address different collections of competencies, take either a health or practical perspective. Some have a minimal food education in the curriculum, whilst others have detailed, comprehensive and broad curriculums. Contrary to insight from the literature, collectively these findings show food education is addressed within academic curriculums, but a standardized approach to topics is lacking, unlike in other curriculums, such as mathematics.*

Given the shared, everyday experience of food and eating that every person in every culture experiences and can relate to, it is surprising that such a fundamental aspect remains somehow invisible, or at best primarily considered in light of fostering healthy eating habits or practical skills. It would seem that the emotional-socio-sensory aspects of food and eating are either taken for granted or not valorized sufficiently, given the impact these aspects have on lifelong attitudes and habits. This links to Korsmeyer and her writing about sensory hierarchies. Taste, smell and touch, "the lower senses", are considered perhaps not worthy of academic pursuit at school because they are (too) bodily and mundane. They may thus be delegated (or relegated?) to what should be learned at home or elsewhere. In addition, taste is considered individual and thus not a matter of discussion or learning, following the notion that there is no arguing/accounting for taste(s) (Korsmeyer, 2004, p. 94). While this has proven wrong in much research (Christensen & Wistoft, 2016; Fooladi, 2020; Wilson, 2015), it still appears to be a common way of thinking.

6.5.1 Recommendations/implications for practice and/or curriculum

Looking forward, Smith et al. (2022, p. 2) suggest adopting the overarching term "Food Literacy" that has a broad perspective, including sustainability and sociocultural topics, combining food and health knowledge in conjunction with practical cooking skills. The researchers suggest that "aggregating all food subtopics within a food literacy curriculum could reduce nomenclature variation, broaden food education curriculum scope, consequently creating…comprehensive…food education that teaches children to navigate the food system." (2022, p. 19). This proposal, while attempting to broaden and standardize the field, still does not place adequate attention on the more emotional/relational/sensorial aspects of food perception and experience. No mention is made of taste development, which is a process that starts in early childhood and continues throughout life.

Among the reasons for these omissions, we may consider the fact that it *takes time* to savor, explore and elaborate on our sensory perceptions of food, which is not in sync with mainstream educational policies in general. Broadly speaking, school curriculums are aimed at covering all the material in the syllabus and often this means disregarding student diversity (i.e., prior knowledge, skills, learning styles, etc.) and the key element of time in allowing students to approach their learning in different ways and at different paces, practices that are certainly at odds with Slow Pedagogy and REA philosophy as discussed above. Perhaps it is useful to consider for a moment what a more "traditional" coverage-oriented learning environment is missing out on. As one teacher (interviewed in Paper 3) said:

> *"I think (food ateliers) can serve to open the horizons of children with respect to food… and also the feelings that food gives you, that probably in daily life we*

> *can't always linger over and pay attention to and stop for a moment to smell the smells, trying to hear the noises that food makes. We can't in everyday life and especially in our school. The food arrives ready-made, already cooked, and on a plate."*

This image of receiving something already finished, simply to be ingested, may provide a metaphor that indirectly promotes the value and importance of taking an active role in one's own learning, built on interpersonal and sensory experiences.

Korsmeyer (2004), while approaching food from a philosophical standpoint, brought up the fact that food has historically been considered to have no aesthetic value, although she argues against this mindset (see Chapter 2). This concept of the aesthetic experience as pertaining to food and taste is also discussed by Fooladi (2020 p. 364), who points out how Dewey "operates with a broad notion of aesthetic experience across multiple contexts, not exclusively associated with formal arts" and uses examples linked to food and taste in his article. Starting from Dewey's thinking on aesthetic experiences, Uhrmacher (2009) specifically muses on how aesthetic experiences, also with food, relates to educational contexts and can provide students with opportunities for deeper, more engaged learning experiences. He mentions that "engaging students through the constructivist lens of having teachers set up engaging learning activities, understand children's understanding, and ask significant questions as a way to provoke learning" (2009, p. 615), which mirrors REA pedagogy (see Chapter 2), including the food and taste education pathways described and analyzed in the case studies. As exemplified in this thesis, multisensory dimensions are the context and content of REA thinking and knowledge building processes, connecting students' lives with knowledge building through inquiry to life experience, beyond the confines of

the lesson/classroom[31]. This broad scope of educational experience, whether it be with young children, adolescents or adults, as part of a person's identity is a fundamental feature of REA philosophy, also within a lifelong learning perspective.

I was struck by the strong similarities between the ideas set out by Leer & Wistoft regarding reflexive taste education, Korsmeyer's arguments to consider taste and food as having intrinsic aesthetic value and Uhrmacher's ideas about the centrality of multisensory perception in the knowledge-building and meaning making processes. In their recent literature review, Leer & Wistoft (2018, p. 331) concluded that

> *children must be involved in a far more reflective process with an eye to the significance and meaning of taste as well as the aesthetic, cultural and social dimensions of taste. Measuring this form of education and learning would require completely different scientific methods and designs, and it would involve talking to the children to incorporate their ideas and experiences of food into the education programs. ... It would also require very different initial reflections on the pedagogical task, including a reflective clarification of the values and forms of knowledge involved as well as the roles played by teachers, students and researchers.*

Perhaps these three case studies can contribute to this process of redefining and reimagining possible food and taste education pathways, starting from children and the idea of co-inquiry together with adults. I feel that in this study I have responded to both Leer & Wistoft's and Uhrmacher's invitation to provide practical applications and examples and "to see in what ways aesthetic learning experiences may be utilized alongside constructivists' ideas" (Uhrmacher, 2009, p. 615).

[31] Uhrmacher cites research connecting authentic pedagogy and aesthetic learning experiences- see King, Newmann and Carmichael, 2009.

6.5.2 Recommendations for further research

There are several questions that have been raised by this study which could be explored in future research. One regards the further development of the design (*progettazione*) of educational contexts for food and taste education. The case studies offer some practical examples of utilizing several different languages (food, drawing, verbal expression), but the question remains open regarding educational contexts that could also juxtapose other languages in the multisensory exploration of food and taste. Fooladi (2020), for example, explored representing taste through sound with primary school students. Using a mixture of expressive languages or representing one sensory modality, like taste, using other modalities or languages, is far from being mainstream and might take participants out of their comfort zones. However, as the case studies show, this might reveal further unexpected and meaningful insights about people's experiences of and with food all throughout life, in a variety of settings, fostering creative, non-linear thinking.

Another avenue for future research could be to continue to develop the connection between food and taste education and aesthetic experience. Urmacher (2009, p. 616) mentions that Dewey's aesthetic ideas related to education have been studied in relation to some disciplines, such as art education, science education, social studies, so food and taste education would be a novel application and might offer practical examples of how to mix "constructivism, authentic pedagogy, and aesthetic learning" (2009, p. 615) in both formal and non-formal educational settings specifically related to food. Of note, in his article Uhrmacher (2009, p. 628) specifically chooses taste perception to illustrate this point, mentioning a moment for "reflection by the

students (as) a key experience that ought to be included in aesthetically oriented lessons". This clearly ties into Leer & Wistoft's idea of reflective taste education and REA/Pause practice as illustrated in my research.

Why is this moment of reflection so important? Uhrmacher (2009, p. 630) puts it this way:

> *We naturally experience the world in a multisensory way. This multisensory … activation can come from the eyes, ears, nose, or any of the senses… An increase in perceptual knowledge is part of the construction of knowledge itself. The more one distinguishes, the more one comes to know—literally. Someone who "recognizes" that grass is green knows little of the variety of greens found in a blade of grass. By seeing and looking—really perceiving—one comes to know that a blade of grass is made of a variety of shades of green as well as brown, yellow, and perhaps even blue. Perceptivity provides for discrimination, which allows for an increase in knowledge through subtle distinctions. We might refer to this kind of knowledge as perceptual. … Meaning making refers to the idea that students have found some value in what they have learned that has personal consequences. Aesthetic experiences expand our horizons and can contribute meaning and worth to future experiences*

as well as fostering creativity and imagination. I include this quote in full because the idea that nuanced multisensory perception, which can be somehow articulated (even if just in thought, not necessarily verbally), is the basis for meaning-making and knowledge-building that is significant for each of us in our lives. Howes (2024, p.2) in his recent volume also makes the case for "'leading with the senses' (in place of cognition or representation) in the study of mind, society and cosmos, the better to sense, and make sense of, whatever may emerge". Food should be a vehicle for promoting this way of knowing and, as I hope I have shown in this study, it can be.

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Glossary

Atelier. An "*atelier*" is a learning context dedicated to the exploration of a specific topic: nature and natural phenomena, digital tools and materials, manual activities, single materials, food, movement, mark-making, etc. (Giudici et al., 2001). In Vea Vecchi's words, an atelier "is associated with things taking shape through action; places where brains, hands, sensibilities, rationality, emotion and imagination all work together in close cooperation" (Vecchi, 2010, p. 2) starting from the everyday, which then takes on new value and meaning.

An atelier can be set up in a permanent, dedicated (formal) space (es. in a school) or it can be a temporary installation/educational context set up virtually anywhere, indoors or outside, in informal and non-formal spaces, thus it is not just a physical place but a possibility that goes beyond a schoolroom into the neighborhood or nature. The atelier, according to Paola Cavazzoni[32], is also considered as "a metaphor for the idea of knowledge that is not transmitted but experienced together with children and their poetics etc., constituted by the relationships and discoveries made during the atelier". The ateliers analyzed in this thesis, called *atelier del gusto* or *atelier del cibo*, are referred to as food ateliers, since food is both the context and content, recognizing food as a language with its own grammar and that taste is among the most refined senses which, as Paola Cavazzoni maintains, "is not only in the mouth but in the whole body". (Also see Section 2.1)

[32] 'La cucina come luogo che crea saperi e cultura: per una nuova educazione', presentation delivered by Paola Cavazzoni on 26 May 2021 at a conference at Centro Internazionale Loris Malaguzzi (Reggio Emilia).

Atelierista. Often a person with an arts background, an *atelierista* can be anyone with specific non-pedagogical training (cook, musician, biologist, dancer, architect/designer, actor, etc.) and an interest in education, who works both with children and teachers to develop and document projects, bringing their specific expertise and knowledge to the group. Thus atelieristas have a degree in a specialized field and interest in education. Atelieristas always work together with a teacher because they are considered resources for everyone and a participant of the process of inquiry, dynamic project development, documentation, etc. ongoing in the class. While in the past there were training courses ("*Corsi per atelieristi*"), there is currently no recognized pathway for "certification." I was first hired as an atelierista because I had a degree in painting from Brera (Fine Art Academy in Milan) and experience as a teacher. Becoming an atelierista, gaining expertise and know-how, is developed through direct experience and participating in professional development, which takes time. (Also see Section 2.1)

Pedagogista. A *pedagogista* is an expert in pedagogy and education who usually works in several schools and oversees/trains/supervises the teachers and the atelieristas. In the past, before the qualification process evolved into the current university-based pathway, a teacher in an REA school, after a few years of experience, first became the pedagogical coordinator of the school (the liaison between the pedagogista and the working group when the pedagogista is not present) and then eventually became a pedagogista. Presently, people can study pedagogy at university to become a pedagogista without having been a teacher first. This role is not exclusive

to REA schools, it is a formal position that is part of the organization of schools in Italy. Just as teachers and atelieristas who have trained to become REA practitioners approach the educational relationship according to particular values and ways, the pedagogista in a REA settings also promotes and practices REA educational philosophy.

Reggio Emilia approach (REA). A socio-constructivist educational philosophy named after the city where it originated rather than the person who developed it, Loris Malaguzzi. Malaguzzi was the philosopher, founder and guide of the experience of the infant-toddler centers and preschools in Reggio Emilia, based on a collective and social educational vision and a movement that belonged to everyone. It draws on the thinking of many giants in the fields of pedagogy and psychology[33]: Dewey, Montessori, Piaget, Vygotsky, Bruner, Hawkins, Goodman, Bateson, Gardner, Resnick. Malaguzzi initiated long-term dialogues and relationships with several of them, and his closest collaborators (Carla Rinaldi, former President of Fondazione Reggio Children, for example) have continued to cultivate the relationships Malaguzzi had established during his lifetime. All of these thinkers influenced the design of the core values of the Reggio Emilia approach which include: the image of the child as a citizen with rights, the hundred languages, the role of the teacher, participation of the family and the environment as the third educator. The experience of the schools in Reggio Emilia has always been in dynamic dialogue with the development of REA over time, informing and shaping it.

I would like to point out the difference between a method and an approach, as they are often confused. REA is an educational *philosophy*, and not a method. A

[33] See Rabitti 1994 for excerpts of interviews with Malaguzzi discussing this.

method (as in the Montessori Method) is a prescribed way of teaching, where teachers have specific guidelines and objectives, while an approach is a broader concept that is based on principles that can be applied in different ways. Method suggests homogeneity. Any Montessori school, for example, has the same Montessori materials (pink stairs, etc), offered in the same order more or less, and there is a progression or logic behind what the children do and when in terms of their developmental stage. This is also the case in Waldorf/Steiner schools. REA is an educational philosophy, a way of engaging in educational dialogue and practice that can and should be adapted in dialogue with the surrounding culture and setting. To this end, Gandini (2003, p. 27) wrote:

> *Educators in Reggio Emilia have no intention of suggesting that their program should be looked at as a model to be copied in other countries; rather, they consider their work as an educational experience that consists of reflection of theory, practice, and further careful reflection in a program that is continuously renewed and readjusted. … Teachers and parents in each school, any school, anywhere, could in their own context reflect on these ideas, keeping in focus always the relationships and learning that are in process locally to examine needs and strengths, thus finding possible ways to construct change.*

The qualification of REA as an educational approach rather than a method is fundamental. Its philosophy, meaning the ideas, values and ways of enacting REA, are open to and influenced by the surrounding culture: REA schools in Reggio Emilia are similar to, but not the same, as REA schools in other parts of Italy, or in other countries, and in some places REA might look very different because of the culture it is in dialogue with. While educational methods, like Montessori and Steiner/Waldorf, have been

extremely influential all over the world and have unquestionable educational value, they differ from REA in fundamental ways.

Research. In REA terminology, the word “research” is fundamental and appears often. It describes the small or large group activities carried out by the children together with the atelieristas, teachers, parents etc., who are referred to as “co-researchers” Research does not mean empirical, structured, scientific research (i.e. a study), but rather the terms aligns with the idea of inquiry, co-inquiry, inquiry-based learning. Some confusion might arise with the translation of the word “*ricerca*”, because in Italian it can be translated as “scientific research” but also “to look for, delve into, investigate”. Herein I have used the term “inquiry” rather than “research” when analyzing the data collected in the articles and in the thesis chapters, which are aimed at a broader audience who might not be familiar with the Reggio Emilia approach and its specific terminology. “Learning is the emergence of what was not there before; it is a search (*ricerca*) by the individual, by the Other, by the Others who meet around a topic.” (Giudici et al., 2001, p. 42)

It is also important to point out the overarching aim of this inquiry: in Loris Malaguzzi’s words: “Making an amiable school (active, creative, livable, documentable and communicable, a place for research, learning, exploration and reflection) where children, teachers and families are comfortable, is our goal... where the meaning of life and the future is being sought” (Giudici et al., 2001, p. 56). Carla RInaldi adds to this idea of the search for meaning: "Research to describe the individual and communal journey in the direction of new universes of possibility. Research as the unfolding and

revealing of an event. Research as art: for research occurs when, as in art, one searches for being, essence, meaning" (Giudici et al., 2001, p. 148).

Documentation plays a fundamental role in the practice of inquiry described in REA. In Carla Rinaldi's words (Giudici et al., 2001, p. 148):

> *Documentation (visual and verbal records, traces, slides, recordings) does not merely make visible what is, but, on the contrary, by making visible an experience, in a sense, makes it exist, and makes it shareable and open to the "possible" (possible interpretations, multiple interactions of children and adults). Moreover, I think that narrating the learning process requires the use of verbal and visual language not only in a narrative and argumentative way, but also in a poetic, metaphorical, musical, gestural, scenographic way .... What we are in fact going to document - and thus make exist - is the moving sense of the search for meaning that children and adults are experiencing together. A poetic sense that a poetic, metaphorical, analogical language can construct and return in its holistic fullness. ...With these meanings, we have used the term ricerca - or rather ricerche - in an attempt to describe the vital effort that can unite children and adults in and out of school.*

The hundred languages. The concept of the hundred languages underlies all aspects of the Reggio Approach, based on the belief that there are multiple ways of seeing and being through which children can express and explore their thoughts, feelings and theories about the world. (See Section 2.1)



Appendix

Published papers

Paper 1: ”Exploring the Senses of Taste with Young Children: Multisensory Discoveries of Food”. 2024. *Food and Foodways, 32,1*. DOI:10.1080/07409710.2024.2298175

Co-authored with Erik C. Fooladi and Lorenzo Manera.

Paper 2: “Multisensory Experiences with and of Food: Representing Taste Visually and Verbally during Food Ateliers in a Reggio Emilia Perspective”. 2025. *Cambridge Journal of Education.* DOI: 10.1080/0305764X.2025.2459924

Co-authored with Erik C. Fooladi.

Paper 3: “The States of taste: Primary and Secondary School Students’ and Teachers’ Ideas on Food Ateliers in a Reggio Emilia Perspective”. 2024. *Food, Culture & Society*, 1–17. DOI: 10.1080/15528014.2024.2443335

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Exploring the senses of taste with young children: Multisensory discoveries of food

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ABSTRACT

Offering children multiple occasions and settings to approach new or least-liked foods has value both from a taste development perspective as well as a pedagogical one. New food experiences in positive atmospheres foster pleasure, curiosity and willingness to interact with these ingredients in multiple manners, not only eating or tasting them. This qualitative case study reports 4 and 5-year-old children's articulation of their experiences in exploratory food ateliers at their preschool. During the study the children's ideas and perceptions about their sensory experiences with food were documented, while keeping the children at the center of their explorations, in line with the Reggio Emilia approach. Results indicate that the children reflected on changes in their own attitudes and taste toward least-liked foods, as well as including meta-reflections on complex phenomena such as multisensory perception, cross-modal correspondences and taste development. Thus, by promoting multiple multisensory explorations, the study suggests that children can become more open-minded and self-aware, broadening the spectrum of food experiences.

KEYWORDS

Food education; Multisensory perception; Reggio Emilia approach; Taste development; Preschool

Introduction

Research maintains that not only do parents influence their children's diet, food choices and eating habits (Peters et al. 2012), but from age two, children begin to exercise autonomous choice regarding which foods they are willing to eat, usually accompanied by a reduction in the range of foods consumed compared to the first year of life (Cashdan 1994; Addessi et al. 2005). Thus, developing positive food-related attitudes from early childhood—especially toward fruits and vegetables–is of importance for health and well-being. Taste development, however, is not confined to the home and family, but is also subject to influence in formal and non-formal educational contexts, both as part of deliberate food-oriented pedagogical activities and through meals eaten during the time spent at preschool and

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school. In a critical review essay on food education, Leer and Wistoft (2018, 331) highlighted how common approaches to taste education are focused on modifying children's eating habits in order to "improve" the children and/or their habits, thus demonstrating "a reductive understanding of taste… that (is) mistrustful of children's taste. Taste is seen as a barrier to the adoption of 'correct' eating habits and is not recognized as an important sense, a source of pleasure, or a central way of sensually understanding and approaching the world."

Taste, in the present study, refers to physical sensation, sensory perception and *experience-with* the senses, involving physiological, socio-cultural and especially subjective aspects. The objective of this case study was to promote sensory-based food education with young children by designing, implementing and documenting multisensory food ateliers featuring sense-based, exploratory activities.

Taste education, the Reggio Emilia approach and its ateliers

Our study is situated in the context of Reggio Emilia, Italy, a city known for its innovative approach to education for children aged 0–6. The Reggio Emilia approach began after WWII and became the educational approach of the entire municipality in the 1970s. The educational philosophy is based on specific ideas about children between the ages of 0–6, recognizing them as competent citizens with rights whose ideas and points of view deserve to be listened to. Childhood is considered a time of immense potential where, through relationships with peers and adults, indoor and outdoor environments, "the 100 languages" and encounters with materials, children construct their personalities within learning groups (made up of children and adults), in settings which aim to integrate the body and the mind, doing and thinking, play and learning, and to learn with joy (Giudici, Rinaldi, and Krechevsky 2001). The 100 languages is a concept underlying all aspects of the Reggio Emilia approach, based on the idea that there are multiple ways through which children can express and explore their thoughts, feelings and theories about the world–verbally, physically, through various forms of art, using digital tools, etc. Among the 100 languages, food offers both content and a context for exploration, learning and creating relationships with nature, people and oneself.

While Italy has promoted taste education since the 1980s and the Italian Ministry of Education (MIUR) has published guidelines regarding food education, currently there is no obligation to include it in school curricula (Ueda 2018). The Reggio Emilia approach, since the beginning, has always considered food, meals and food experiences pedagogically significant and meaningful moments of the day and an important part of the curriculum (Cavallini and Tedeschi 2007), but their effectiveness has not been subject

to academic research. This study is an effort to start filling the gap in research-based knowledge.

Sense-based food education is among the defining characteristics of the Reggio Emilia approach. In addition, sensitivity on the part of the adults, to listen to, document and valorize children's ideas and perceptions, refers to the "pedagogy of listening," another pillar of the Reggio Emilia approach (Rinaldi 2021). In the ateliers described here, this is expressed by keeping children at the center of their learning processes within a group regarding their sensory experiences and explorations with food. By cultivating and engaging in such "reflective taste pedagogy" (Leer and Wistoft 2018), critical awareness and reflection can be promoted (Christensen 2019; Christensen and Wistoft 2016), and children's thinking and learning processes are made visible as they inquire into, and make meaning of, their worlds (Hedges 2014). In this way, the apparent gap between dominant perceptions in food education (i.e. as a "correction" of learners' taste) and pedagogy (taking the perspective of the learner, a characteristic of both constructivist and socio-cultural learning theories) might be reduced.

How can the Reggio Emilia approach to food and taste education be situated with regard to other experiences and movements? Nature, gardening and food were part of the pedagogical philosophies actuated by Dewey and Montessori at the turn of the twentieth century. Dewey described food as an excellent medium for the development of critical thinking and at the Lab School in Chicago he emphasized practical skills, inquiry, democracy and rights (Dewey 1956 [1900, 1902]). While practical life skills and inquiry were also main foci of her method, Montessori also underlined the sensuous/sensory experience of nature and she advocated paying attention to the senses as they linked to pleasure, happiness and harmony with the surrounding natural environment, including gardening and food (Montessori [1950] 1988).

Connected to these notions are several more recent efforts. Les Classes du Goût, developed in the 1970s by Jacques Puisais to preserve French national taste and identity and subsequently revised in 1999, focus on the individual experience of taste and are inspired by the Sapere Network (1995). The Slow Food Movement (1985) aims to raise awareness and promote local food traditions. The Edible Schoolyard (1996) centers on gardening, harvesting and cooking. Jamie Oliver's Food Revolution (2010) combats obesity and sugar consumption by reforming school lunches. The Danish Taste for Life project (2014) misson statement[1] says that it focuses "on the flavor of food as a driving force for learning, education, food literacy, and good practice (…) to create a better and richer life (…) starting from children." In the thinking of Reggio Emilia, starting from the opening of the first school after WWII (Barazzoni and Malaguzzi, 2018), school kitchens have always been places with great symbolic and

cultural power, capable of expressing care for others, valuing traditions and promoting well-being. Over time, food and taste education and lunchtime at school have become central to this pedagogical approach. Although not yet extensively documented in the research literature, Reggio Emilia food ateliers, centered on multisensoriality as well as democratic and self-regulated learning, have much in common with both the Dewey and Montessori perspectives, and have traits especially similar to Les Classes du Goût/Sapere Network and Taste for Life.

Regarding architectural design, both in schools built specifically or in existing buildings that were repurposed, the school kitchen is visibile thanks to glass walls and partitions, allowing children and cooks to see one another. Children have daily contact with cooks and carry out meal-related activities like setting the table, taking turns distributing bread, and serving themselves from shared communal dishes during lunch. Besides being sites for preparing meals, school kitchens are open ateliers where cooks spend time exploring foods using many different "languages" during dedicated ateliers with small groups of children, *atelieristas*, and teachers.

The term "*atelier*" refers to a learning context or environment dedicated to the exploration of a specific topic–in this case, food–but it can also be dedicated to nature and natural phenomena, digital dimensions, manual activities, single materials, etc. (Giudici, Rinaldi, and Krechevsky 2001). The *atelierista*, often a person with an arts background, works both with the children and the teachers to develop and document school projects. The school cook is also considered an *atelierista*. Documentation plays a significant role as a tool and a strategy to make the children's learning processes visible and shared in real time with parents, colleagues and the children. It shows what the children know and do, both individually and as a group, highlighting content and process, not the end result (Giudici, Rinaldi, and Krechevsky 2001). By spotlighting and reflecting on the relational, emotional, and pleasurable aspects of food and eating, children may gain new perspectives on something they do every day. Food is thus not only nourishment but becomes possibility, experience, inquiry, knowledge; an object of exploration for the mind, the senses and the emotions (Cavallini and Tedeschi 2007).

This case study was carried out in two phases at Nidoscuola Clorofilla, a private Reggio Emilia approach preschool in Milan, Italy, together with the research team from Pause Atelier Dei Sapori, a permanent food education and research lab that is part of Fondazione Reggio Children, based in Reggio Emilia, Italy. Pause Atelier Dei Sapori designs and carries out ateliers, projects and informal research around themes linked to food and taste–sustainability, regeneration, cultural identity, the safeguarding and promotion of local traditions and customs, the role of the senses in exploring and investigating food, community building and social cohesion, health

and well-being, promotion of healthy eating habits and participation in the struggle against childhood obesity–in formal and non-formal contexts, nationally and internationally. The photos included here depict atelier contexts designed by Pause. One of the authors worked as an *atelierista* in a Reggio Emilia approach school starting in 2010, before joining the research team at Pause Atelier Dei Sapori in 2018, so had first-hand, direct experience with the contexts described.

Research questions

The main purpose of this study is to examine the Reggio Emilia approach *atelier* as pedagogical context to explore children's food experiences through a multisensory journey investigating varieties of fruits and vegetables. The main question this paper addresses is: How do multisensory food explorations in a Reggio Emilia approach atelier affect young children's conceptions of their food experiences? In order to explore this research question, we formulated the following sub-questions: How do young children/participants in the multisensory food ateliers articulate their taste experiences (broadly speaking)? How do young children/participants in the multisensory food ateliers articulate changes in their taste experiences as result of this pedagogical intervention?

Research design and methods

Prior to the intervention, parents filled out a questionnaire about their children's food preferences (Phase 1). The results were used in the design of the activities in Phase 2, which were organized during the regular school day for twenty 4 and 5-year-old children over a five-week period. The operational team conducting the ateliers included the school cook, a musician, the *atelierista,* the class teacher and the pedagogical coordinator.

Phase 1—Food preferences questionnaire (family participation)

The questionnaire distributed to the parents (Table 1) was a reworking of the ICFNS—Italian Child Food Neophobia Scale (Laureati, Bergamaschi, and Pagliarini 2015). It gave insight into the parents' conceptions of their children's eating habits and food preferences, specifically regarding new or unfamiliar foods and which fruits and vegetables tended to be rejected. The focus on fruits and vegetables was motivated by the importance of fostering life-long, positive food attitudes during childhood (Wadhera et al. 2015).

Table 1. Questionnaire administered to the parents of the children involved in the study - Part 1.

Survey question	No/never	Sometimes	Usually	Always	Sum
Your child avoids new foods	6	6	3	0	15
If there is a new food, your child won't taste it	10	2	1	2	15
Your child likes tasting new foods and different flavors from other countries	0	2	5	8	15
Your child tastes new foods when he/she is at a friend's party	1	2	8	4	15
Your child is afraid to taste a food he/she has never tasted before	8	5	1	1	15
Your child is very picky about food	8	5	1	1	15
Your child will eat almost any food	0	0	7	8	15

Phase 2—Food ateliers

After summarizing the questionnaire results, the teachers, the school cook and the *atelierista* held conversations with children in order to probe the children's perspectives as well (Irwin and Johnson 2005). The multisensory food exploration was divided into five ateliers, one each week for five weeks. Each atelier, dedicated to a different area of sensory inquiry, took place during the morning and lasted at least 40 min. The children worked together as a group during class discussions and were subsequently divided into smaller groups for the food ateliers. Each atelier took place once, with 3–6 children together with 2–3 adults (teacher, *atelierista* and/or school cook), so that each of the 20 children took part in one atelier. After each atelier, the small group shared their experiences with the rest of the class. The data collected included the teacher's and *atelierista*'s photographs, notes and observations during the class conversations, audio recordings during the atelier dedicated to documentation of each of the food ateliers.

Analysis of the data was carried out by way of reflective thematic analysis drawing on guidelines proposed by Braun and Clarke (2006): the qualitative data collected was inductively analyzed by identifying themes that could explain the children's experiences and perceptions in order to answer the research questions. This choice is supported, at the methodological level, by an epistemological paradigm that considers "human experience to be, as a whole, an interpretative activity mediated and supported by signs" (Baškarada 2014, 15), consistent with the cognitive framework upon which the Reggio Emilia approach is built.

Ethical considerations, validity, reliability and limitations

Following an initial meeting to present the study, the families were asked for their consent since participation was voluntary, in line with the ethical parameters for qualitative research (Santiago-Delefosse et al. 2016). The adults carrying out the ateliers verified that the children understood the research project. In Reggio Emilia approach schools, children are accustomed to their words and

actions being documented by teachers and the resulting documentation is regularly shared with the class as projects develop (Giudici, Rinaldi, and Krechevsky 2001). Thus, the children in the case study were used to their activities and actions being documented. The project adheres to Fondazione Reggio Children rules and regulations regarding research ethics and it was approved by the scientific committee of Fondazione Reggio Children.

Recent research on the impact of context and environment on children's eating behavior has indicated that these strongly influence liking and food perception (Laureati and Pagliarini 2019). Thus, the parents' reports of their children's attitudes toward various foods may have variable reliability as their answers may not encompass what their children like or accept eating when they are with others, i.e. at school. The parents might have sought to give the best possible impression of their children's food preferences, i.e. over-reporting broadness in food acceptance. Counihan (2004), in her research also set in Italy, found there was a positive moral value on children eating what was put before them, while Ochs, Pontecorvo, and Fasulo (1996) found that Italian parents generally supported their children's food likes and dislikes and that "Italian adults encouraged children to express individual tastes as part of what it means to have a personality" (Ochs, Pontecorvo, and Fasulo 1996, 7). While this paper is not meant to study Italian cultural food attitudes in-depth, eating and food permeate Italian culture and identity from early childhood, including in school settings. The questionnaire was also a way to promote parent participation, directly involving them in the study and creating a dialogue about their children's eating habits and attitudes toward food, not only between the parents and the school, but also at home with their children.

The results have limited generalizability or transferability in terms of the effect on taste development among children, and should only be considered an example. The educational approach, however, has broader transferability. The model as a whole, or parts of it, provides context and means for meaningful, sensuous, experience-based educational activities in general and for the promotion of taste development more specifically in both formal and non-formal environments.

Language nuances are pertinent when talking about sensory experiences and perceptions. All original data were in Italian and subsequently translated into English by one of the authors. In cases where the Italian word is ambiguous, alternatives have been included. For instance, in Italian "gusto" is usually translated as "taste" (literally and figuratively) and "sapore" is usually "flavor," but they are sometimes used interchangeably. The word "rumore" is usually translated as "noise" and "suono" as "sound," but this distinction is sometimes ambiguous. The Italian verb "sentire" can also be challenging to translate, as it has multiple meanings in English: feel, taste, hear, smell–it seems to express a holistic, all-encompassing conception of

taste (Sutton 2010). Thus, in some cases classifications may be affected by such language-based distinctions, which therefore called for extra attention both when working in the original language and in translation.

Results

The following sections report the results of the questionnaire and the ateliers. Each of the ateliers includes a description of the setting and reports the children's activities, actions and articulations as documented by the adults working with them. One of the authors participated in data collection together with the team involved in the project. The post-atelier results describe how changes in attitudes regarding food was gauged: (i) the children's interest in novel food combinations with the least-liked foods, (ii) the children's meta-reflections about their (changed) attitudes toward new foods and (iii) informal parent feedback about their children's interest in, and openness to, new or different foods following the study period.

Results of the questionnaire

The first part of the questionnaire surveyed the parents' views of their children's openness, acceptance and avoidance of new/unfamiliar foods, fruits and vegetables (Table 1).

From the results in Table 1, the majority of the parents reported that their children would never or only sometimes avoid new foods and that their children were open to tasting new foods. They all stated that their child would usually or always "eat almost any food."

The second part of the questionnaire sought to explore the children's fruit and vegetable preferences according to their parents, asking them to list the three fruits and vegetables, respectively, that their child liked most and least (Table 2). Although explicitly asked to list three fruits/vegetables, the number of foods specified varied between none and four, thus, counts do not add up. Our data do not give insight into the reasons behind the varying numbers, e.g. we cannot conclude that parents listing no fruit/vegetable actually meant that there were no fruits/vegetables that were most or least liked by their child. Some of the foods appear both as most- and least-liked, reflecting that people's taste preferences vary.

Based on the questionnaires and conversations, the least-liked vegetables turned out to be artichokes, peas, cucumbers and peppers. As for fruits, pear, kiwi and mango were the least-liked. Of these, the fruits and vegetables that were in season at the time of the study were featured in the sensory ateliers described below, with the aim of exposing the children to these particular foods in positively-connoted contexts and explorations.

Table 2. Questionnaire administered to the parents of the children involved in the study - Part 2.

Survey question	No. responses	Foods listed
What are 3 fruits that your child likes the least?	4	Pear
	3	Kiwi, mango
	2	Apple, orange, persimmon, pineapple,
	1	Banana
	5	No fruits mentioned
What are 3 vegetables that your child likes the least?	6	Artichoke
	3	Broccoli, peas, peppers, spinach, cucumber
	2	Asparagus, garlic
	1	Beets, chicory, eggplant, fava beans, fennel, onions, pumpkin, arugula, string beans, tomato
	1	No vegetables mentioned
What are 3 fruits that your child likes the most?	8	Apple, strawberry
	4	Banana, melon
	3	Blueberries, grapes
	2	Mandarins, mango, pear, raspberries
	1	Persimmon, platano, pineapple
	1	No fruits mentioned
What are 3 vegetables that your child likes the most?	6	Carrots
	4	Tomato
	3	Asparagus, broccoli, cucumbers, string beans, zucchini
	1	Beets, hops, peas ,potato
	1	No vegetables mentioned

In addition, during the study period, the least-liked in-season foods were included in the school lunch menu, prepared in different ways, either singly or with other ingredients:

- Pear: fresh and dried, spiced pear and apple compote, pear juice
- Kiwi: fresh and dried, kiwi and apple compote
- Peas: creamed peas, Russian salad
- Cucumbers: freshly sliced, *tzatziki*
- Peppers: freshly sliced, baked, in tomato sauce

Food ateliers

On "sensing of" versus "sensing with" and "perception" versus "experience"

In describing the ateliers, we use the term "Exploring (with) the sense of …" because this opens the possibility for both using the senses to explore something external (the food) and also inwardly exploring one's own senses. This shift from the dimension of *experience-of*, which connotes a more detached, abstract relationship to an object–food or, in this case, one's own sense–to the dimension of *experience-with*, opens up to a subjective, direct relationship with the object in question and specifically regards the relationship between the self and the object as well as the "self-in-the-world" (Matteucci 2018). Investigating and defining the relationship between the self and the world underlies children's inquiries in the Reggio Emilia approach. Hence, "exploring with" positions the sense as an action: "smell," for instance, becomes a verb as opposed to

objectivization of the sense, where "smell" is a noun. The sensory perceptions become esthetic or analytic acts, rather than something that is imposed on the individual (Fooladi 2020). We distinguish between "perception" and "experience" in that the former is related to the human sense in a narrower and more specific way; to smell something is the process whereby a substance activates receptors in the nose that send a signal to the brain, etc. "Experience," on the other hand, is conceptualized along with Dewey's notion of "*an* experience," of a more holistic character, including memories, associations, and metaphors (Fooladi 2020; Dewey [1934] 1980). An example could be Proust's much-cited madeleine-cake-with-tea experience. His perceptions could be the sweetness, softness and juiciness of the tea-soaked cake, perhaps the slight astringency of the tea, by nature physiological, but also psychological. The experience, on the other hand, is more holistic and complete, as Proust is transported back in time and space through memories of times with his aunt, including his perceptions but also much more.

Design of multisensory food ateliers

The design of the ateliers was informed by data from Phase 1. In line with the "pedagogy of listening" (Rinaldi 2021), the children's articulations of their ideas and perceptions as they described their sensory experiences during the ateliers were documented by the adults. Each atelier primarily explored one of the senses and included the posing of questions aimed at inspiring and provoking thought and attentiveness to the role of the respective sense when exploring different foods. Sample questions are listed in Table 3 together with relevant senses and sensory phenomena that could potentially be activated by the questions.

Exploring (with) the sense of smell

Researchers generally agree that olfaction is a dominant aspect of taste, since "as much as 80-90% of the taste of food comes from the nose" (Spence 2015, 25). A group of six children were presented with a range of fresh, blended and pulverized fruits and vegetables and were invited to explore these with their sense of smell in semi-darkness, reducing visual cues in order to encourage them to focus on the act of smelling (Figures 1 and 2). The underlying question for this context was: What is the relationship between smell, taste, flavor and the experience, or perception, of foods?

The children's explorations and talk led to discussions around three themes: (1) how our noses tell us if something is "good," (2) how exactly we are able to smell and taste, and (3) multisensory perception and cross-modal correspondences linking smell and color. Regarding their ideas about how we can tell whether something is "good" or "bad," the nose

Table 3. Questions posed for possible activation of sensory phenomena.

Examples of questions posed	Relevant senses and sensory phenomena
"Can we only taste foods with our mouth?" (Class discussion)	Taste, multiple senses, sensory integration
"What are the senses of taste?" (Class discussion)	Taste, multiple senses (sensory integration, crossmodal correspondences)
"Do fruits and vegetables make sounds?" "What sounds do fruits and vegetables make?" (Sound atelier)	Hearing (sensory integration, crossmodal correspondences)
Conversations about what color suggests about taste (Sight atelier)	Sight, multiple senses, sensory integration, crossmodal correspondences
"Is taste (flavor) the same as smell?" (Smell atelier)	Taste, smell, sensory integration
"How can your nose tell you if something is good or not?" (Smell atelier)	Smell
"How do we perceive smells and tastes/flavors?" (Smell atelier)	Taste, smell, multiple senses, sensory integration
"If fruit loses its juice, what does it taste like?" (How does taste/flavor change from fresh to dried foods?) (Taste atelier)	Taste, smell, multiple senses
"What do green things taste like?" (Taste atelier)	Sight, taste, multiple senses, sensory integration, crossmodal correspondences
"What textures do different foods have and what do they remind you of?" (Touch atelier)	Touch/somatosensation (texture and mouthfeel), multiple senses, sensory integration, crossmodal correspondences

became a sort of independent entity, capable of analysis and "communication," with anthropomorphic and/or zoomorphic traits:

> If my nose likes it, I taste it and if it doesn't like it, I don't eat it _S, 5.6[2]

> [This] looks like cucumber [salad puree] which I don't like, but my nose told me it was good _S, 5.6

> [Your nose] tells you because there's something it likes and you taste it. In my opinion, my nose likes something better, it tells a man inside your nose who tells me, maybe I like it or maybe I don't. When I taste something, there's another man telling me whether to go ahead or not, he's in my mouth, he tells us the things he doesn't like _M, 5.4

Other children mentioned feelings of pleasure and desire inspired by a smell in order to explain how something could be considered "good":

> Maybe if you feel like you really want to eat it a lot, it means it's good _A, 4.10

> Your nose doesn't open up, but breath comes in, if you like [the smell] it's good, if not it stinks _V, 5.3

Another theme that the children discussed was how the senses of smell and taste actually work, where their sensory perceptions were localized and where smells and tastes were elaborated in their physical bodies:

> You can smell and taste with your nose. I can smell when I breathe, when I feel it with my teeth it has different taste [from the smell]. I put something in my mouth but my nose feels it too! _M, 5.4



Figure 1. Sense of smell context. A semi-dark context was set up, so the children could focus on their sense of smell without being too conditioned by shapes and colors. Source: Pause Atelier Dei Sapori.



Figure 2. Sense of smell context. Source: Pause Atelier Dei Sapori.

> When I put something in my mouth, I feel it in my nose too, but it tastes better from my mouth _R, 4,11

> It has to go here [in your cheeks] then you have to chew, it goes to the back of the mouth and then to your nose _S, 5.6

> There are smells like tomato, orange, carrot, strawberries, apple, mint that you smell with your nose, with your mouth you smell salad, or potatoes, or eggs, you only smell these things with your mouth _B, 5.10

> I think it's all done by the nose. We have a smell, even the nose has a smell, the same for fruits or vegetables, but actually you smell the seeds, the seed becomes a plant and then little tiny strawberries and after some time bigger strawberries, and if you smell them it's the seed that made that effect, because the smell is inside _N, 5,9

> There has to be something to smell, if there's nothing, you can't smell or taste and you don't know if you like it or not _M, 5.4

One child alluded to a more cross-modal perception, likening a smell to a color:

> This pepper smells green _E, 5

The *atelierista* working with the children took this opportunity to ask the group: "What do green things smell like?" and the other children shared their ideas, shifting to a more abstract discussion about links between color and taste.

> They smell like leaves because they come from plants _B, 5,10

> They smell like bits of green, like nature _G, 5.10

> Green things are vegetables, not fruits, smell green, like minestrone _I, 5.8

> This [lettuce puree] doesn't taste like anything, it can't be salad because the color is different. [Tastes it] But it tastes like salad! _A, 4.10

The theme of color and taste was also part of the sense of sight, discussed below.

Exploring (with) the sense of hearing

Putting something in one's mouth is a highly multisensory experience, also subject to cross-modal correspondences/associations. For instance, Fooladi (2020) studied cross-modal correspondences between sound and taste among elementary school students, posing the question of where one sense ends and another begins. In the atelier dedicated to sound and hearing, the two questions explored were whether fruits and vegetables make sounds, and if so, which sounds can they make. Here, a group of four children investigated the auditory properties of fruits and vegetables (raw and cooked, fresh and dried) by manipulating them with their hands or other tools (Figures 3 and 4) while the sounds were captured by an omnidirectional microphone and recorded, as well as heard through earphones.

The children's descriptions can be divided into three main themes: onomatopoeia, anthropomorphism/zoomorphism and free associations based on their imagination. Examples of the first are:

> If you touch a soft fruit it makes a splash because there are drops of water _V. 5.3

> If you bite into a strawberry with your teeth you hear crac cronck _V, 5.6

Other children either anthropomorphized/zoomorphized the fruits and vegetables, or did the opposite, and established that foods are *not* bodies with the ability to make sound, thus bringing in the concept of body/embodiment and bodies' ability to make and perceive sounds:

> Vegetables don't make sounds because they don't have mouths, but a guitar has a mouth _G, 5.11

> Vegetables make sounds that are in their bodies _G, 5.11

> I feel/hear *(sento)* the strawberry seeds that come off the strawberry's body and go into our body _V, 5.3

One child commented about who can *hear*, rather than who can make sound:

> You need ears with eardrums to understand the noises you hear in your mouth _V, 5.6



Figure 3. Sense of hearing context. The food sounds were captured by an omnidirectional microphone. Source: Pause Atelier Dei Sapori.



Figure 4. Sense of hearing context. Children investigated the auditory properties of different fruits and vegetables by manipulating them with their hands or other tools. Source: Pause Atelier Dei Sapori.

Many of the children's comments were images and sensations that came to their minds inspired by the sounds they were making with the foods. Several images were inspired by nature:

I hear the sound of the fire burning _M, 5.4

I hear the sound of water _V, 5,6

Pear juice is like snail slime and the noise crawls in my hand _G, 5.11

If you crush a bell pepper with water in it, you hear bubbles rising and then falling _A, 4.10

Wet, crushed leaves make the sound of water dripping from the leaves after the rain _G, 5,11

Other images were more abstract, linked to other properties, like hardness/softness or cross-modal correspondences/associations between food properties and sounds or music:

Hard things make sounds because they're juicy inside _V, 5.3

I hear the softness of the vegetables _V, 5.3

When you make the sounds, the vegetables are like notes _M, 5.4

Things that ripen in the sun have the sound of dry leaves _M, 5.4

The children created a catalog of food noises related to actions (e.g. tapping, rubbing, mashing) and named the sounds they recorded:

- "Slamming noise" (bell pepper)
- "Opening noise" (bell pepper)
- "Splashing noise" or "finger-cracking noise" (spinach)
- "Flowing water noise" (pea pods)
- "Little strawberry noises" (strawberry)
- "Crunchy like squirrels' acorns" (dried fennel)
- "Purple crunchy noise/sound" (raw fennel)

Exploring (with) the sense of sight

The question underlying this atelier was: What does color suggest about taste? A group of three children explored jars of fruit and vegetable purees and pulps, vinegar, lemon juice, milk and baking soda. These could be mixed in small, transparent plastic containers using droppers to create other colors, as a number of colors found in plants (e.g. anthocyanins/anthocyanidins and chlorophyll) are pH dependent (Figures 5 and 6). The unrecognizable foods were identified by their tastes, smells and, especially, their colors.

The children commented on the chromatic properties of the foods that created a color palette:

> This is a rainbow of fruit. These are the colors you can eat _A, 5.2
>
> The yellow one looks like pasta _B, 4.9
>
> One is water and mint _V, 5.6
>
> One is leaf-colored and one is lemon-green _A, 5.3
>
> There are many greens, different ones, dark green and normal green _V, 5.6
>
> There are also two reds, but they're almost the same _A, 5.2

At one point, one of the children wanted to do a taste test. She chose a jar filled with a bright red puree:

> It's red pepper! I thought it was a strawberry _A, 5.2

Two other children decided to mix some colors- in this case, they chose a red puree and white powder (baking soda) to make pink:

> Wow it sizzles! _B, 4.9
>
> I want to taste it, it's making bubbles… yuck, it's salty! _A, 5.2
>
> I'll add some lemon–look, it changed color! _V, 5.6



Figure 5. Sense of sight context. Fruit and vegetable purees and pulps, vinegar, lemon juice, milk and baking soda could be mixed in small, transparent plastic containers using droppers to create other colors. Source: Pause Atelier Dei Sapori.



Figure 6. Sense of sight context. After creating a wide range of colors, the children created visual expressions using brushes and strips of paper. Source: Pause Atelier Dei Sapori.

These examples show how color was not necessarily an indicator of an expected or a pleasing taste. The children were interested in continuing to experiment and mix different colors and substances. This possibility to mix ingredients introduced an experimental aspect, allowing the children to explore in a laboratory-like manner. Also, using purees removed visual information about the origins of the respective foods, while at the same time focusing on other visual aspects (see the quote above by participant A, 5.2 perceiving red pepper when expecting strawberry).

> Take a fruit, cut it, take the taste from inside or you can dry it and then you have the color of fruit _B, 4,9

> Taste goes around the world and then comes back with lots of little pieces of colors. _V 5.3

After creating a wide range of colors, one of the children suggested using some brushes to create visual marks on strips of paper with the materials and colors. Distinctly from the other ateliers, here the children *produced* and *created* visual and tangible expressions, in addition to verbalizing their perceptions and experiences of what they sensed and how food, taste and color could be intertwined.

Exploring (with) the sense of touch

Different fresh and dried foods and fabrics were set up on a table, together with a scanner pen connected to a computer as the context to explore touch through texture. The scanner pen was used to magnify patterns and textures not easily seen with the naked eye. The three children involved in this atelier were invited to explore the tactile qualities of foods and textiles:

> You can feel the pepper's skin on your tongue, it's like a hand when it touches things _B, 4.9

The children compared the skins and peels of the vegetables to the fabrics, conjuring up tactile and visual textures and patterns (Figures 7 and 8):

> See this skin of the pepper is the same as this cloth, it looks like a turtle shell _C, 5.11

> The dried vegetables have wrinkles that I can feel on the fabrics too, sometimes they're smooth like cucumber skin, shiny like peppers and dotted like strawberries _C, 5.11

> Vegetables have veins, sometimes seeds and threads _B, 5.8

> The green is sparkled with light, the families of greens are different because it depends on their skin: striped, veined, lined and full of roads _B, 4.9



Figure 7. Sense of touch context. Fresh and dried foods and fabrics, to explore touch through texture. Source: Pause Atelier Dei Sapori.



Figure 8. Sense of touch context. The children compared the skins and peels to the fabrics, conjuring up tactile and visual textures and patterns. Source: Pause Atelier Dei Sapori.

> Vegetables' skin is the peel, there are smooth, soft, rough, scratchy, striped, and dotted skins _C, 5.11

> We can make families: the family of living vegetables, dry ones, with similar colors, with similar tastes, smooth, rough, that grow differently from plants. You take them and then see how you can join them together. Like [playing] memory _E, 5.7

The scanner pen and the children's observations of images allowed them to explore aspects of touch visually, in addition to feeling textures, providing a bridge between the visual and the tactile (Figure 9). One child, (B, 4.9), described them as "images from the inside of a world."

Exploring (with) the sense of taste

This atelier stands out compared to the other ateliers in that, rather than singling out one specific sense, it was designed in a more wide-ranging, multisensory way. In this respect, the atelier explored the notion of "flavor" more broadly, covering the senses of taste (in the mouth), smell, touch/texture/mouthfeel, color (expectation) and hearing (e.g. when biting or chewing). Thus, this atelier could be said to encompass and combine aspects from the other ateliers in multisensory perception and experience.

For a group of four children, vegetables and fruits–fresh and dried, whole and sliced–were arranged on a light table, enhancing the visual properties of the foods (Figure 10), while also allowing the children to taste, smell and touch them. The light table made visible the veins and translucencies of the leafy greens and sliced foods, usually not visible.



Figure 9. Sense of touch context. Images of fresh and dried foods and fabrics were explored with a scanner pen. The images show, according to the children: "potatoes cooking in eggplant sauce" (strawberry); "a piece of meteorite in space" (dried pepper); "chicken juice" (fresh pepper); "striped stones" (dried peas); "snail slime" (salad)"; "little seeds of light" (kiwi). Source: Pause Atelier Dei Sapori.

There are peppers full of little tubes, with different shapes but still peppers, I can recognize it by the smell _R 5.5

There is a cucumber with prickles, they look like seeds but they still need to grow _G, 5.11

The little holes in the cut cucumber tell you its years, this one without holes is zero years old _R, 5.5

The children's expressions suggest the possibility of recognizing and valorizing cross-modal associations through explorations where the senses are connected to one another through associations, in an attempt to grasp the sensory fullness of the foods encountered. As the children engaged in their explorations about the senses of taste, they expressed their theories about taste in general, stemming from the body outward into the environment and the world:

If you take a bite, you taste and smell the taste _F, 5.10

You can sniff taste, you can smell it and tell if you like it or don't like it _B, 4.11

Your nose makes you smell, your mouth makes you taste and they are connected by the brain _M, 5.3

Taste is made of flavor *(sapore),* it contains the whole world of taste _V, 4,5



Figure 10. Sense of taste context. Fresh and dried, whole and sliced vegetables and fruits were arranged on a light table to enhance the visual, olfactory and gustatory properties of the foods being explored. Source: Pause Atelier Dei Sapori.

Another theme the children discussed was the difference between the taste "living" foods and dried ones. Their word choice, using "living" rather than "fresh" to describe juicy or succulent fruits and vegetables, suggests a sort of anthropomorphism/zoomorphism of these foods that also emerged in their discussions regarding the other senses:

> There are dried vegetables and live vegetables _R, 5,5
>
> Dried pear tastes sweeter and stickier, the sugar went away and left its taste _R, 5.5
>
> A living strawberry is sweet and tart, dried it's crisp. There are fruits that are better dried _G, 5.3
>
> If you don't eat living fruit, you can eat the dried fruit _R, 5.5

In summary, these explorations–uni and multisensory at the same time–enabled the children to consider, explore and develop a new way of relating to foods in their everyday lives.

Post-atelier results

Summarizing the findings from the food atelier experiences, we identify two main outcomes. First, the children verbally expressed interest in novel food combinations with the least-liked foods they had explored. Thus, a least-liked food could be perceived as more agreeable when combined with a liked food. Second, during the subsequent full-class meta-reflection session, the group took time with the teachers and the *atelierista* to reflect on the experiences and talked about whether and how their attitudes toward new or least-liked foods had changed. In the first case, some of their suggested combinations were:

- Pear: in a smoothie with cookies and bananas; cooked with cinnamon and chocolate; with cheese.
- Kiwi: sliced with sugar, strawberries, pineapple, blueberries and banana; kiwi, strawberry and orange juice.
- Peas: pasta with meat sauce and peas; peas with rice and potatoes; a salad with tomatoes, peas, walnuts and goat cheese; split pea soup with bacon and breadcrumbs.
- Cucumbers: a salad with walnuts, raisins, onions and lettuce; with green salad and a small leaf on top.
- Peppers: with tomatoes, cucumber, salt and pepper; stuffed with ricotta and tuna; cooked with eggs and zucchini.

During the class discussion, the children expressed awareness of changes in attitude toward the foods in this study, mentioning physical sensations in their bodies and mental processes about growth and change. Regarding

physical sensations, one girl mentioned the pleasure of tasting something new, as well as the anatomy of her tongue in acquiring a new taste:

> There were vegetables that I didn't eat because they were far away, the taste went in my mouth and I liked it, you have to taste things close up _I, 5.4

> Before I didn't like carrots, now I do, baked ones. I grew up and I changed, my tongue changed, there's a small grid on the tongue that makes you like vegetables _I, 5.4

Other children talked about the importance of the brain/mind or other senses in the process of accepting or developing new tastes and new foods, and the importance of exposure:

> Your thoughts and your mind decide if you should eat it or not. Taste goes from your throat, mouth, nose, head to your mind _F, 5.6

> I didn't like zucchini, now I do. I tasted them 4,000 times, tasting tasting and then you change your mind _I, 5.4

> I didn't like avocados, artichokes or salad but then I ate some purple salad at school. Tasting with your mouth and nose makes the thoughts in your head change. You have to be brave and say "Come on" _G, 5.1

> Smell changes things. People change, they have to change, their tastes change _S, 5.8

> First people don't like things then they get used to eating them, and the more you eat them the more you get used to them _F, 5.6

These quotes highlight the children's (emerging) conceptualizations of multisensory perception (Auvray and Spence 2008) and their bodily and cognitive processing of food experiences and taste development (Vennerød et al. 2018). Some children mentioned a connection between the development of taste and natural phenomena (Earth, the seaside), memories and places:

> The brain turns and changes, it turns like the Earth around you but you can't feel it, your brain starts turning and sees new things _S, 5.8

> The first time my grandmother made baked sole I didn't like it but now I do, my tastes have changed. Taste changes starting from the mouth, and flavors change over time. In Trani there's the sea and the tide changes, you can taste the sea air _N, 5.8

Finally, of a more anecdotal nature, some of the parents informally reported changes in their children's attitudes and eating habits to the class teachers after the project ended. Some said that, at home, their children were more open, interested and curious about new foods or those different from the ones that they usually consumed. This was not collected as research data, but went into the body of documentation of the teachers and the *atelierista* as relevant for informing pedagogical practice, since it

was apparently considered noticeable and significant enough for the parents to mention it explicitly.

Discussion

The main research question for this paper is: *How do multisensory food explorations in a Reggio Emilia approach atelier affect young children's conceptions of their food experiences?* The present study does not intend to give clinically reliable or statistically significant information on taste development in children as result of, e.g. mere exposure effects in the contexts described. While taste development can be conceived as a form of bodily learning, subject to scrutiny from psychological or clinical perspectives using quantitative intervention vs. control group studies, the same can be approached from pedagogical angles. Our aim has been to explore Reggio Emilia approach food ateliers as contexts for pedagogical activities that are sensuous and experience-based and that may also promote taste development and convivial and positive experiences around food and taste. Inter/transdisciplinary approaches are also promoted: esthetic and scientific aspects of taste are naturally woven together because taste experiences are the starting point and context (Fooladi 2020; Fooladi, Tuomisto, and Haapaniemi 2023). The integration of taste development with other learning is thus important, as this is a dual, or multiple, goal in formal and non-formal learning contexts.

Although learning science and language was not presented as the goal in the activities *per se*, tasting fruits and vegetables was accompanied by open reflection and experience and dialogue-oriented pedagogical approaches with competent adults (teachers, *atelieristas*, cooks). During the ateliers, the children made and tested their hypotheses about how each sense worked, as documented through their words, expressing refined reflections where knowledge from various domains is made relevant. Multiple senses are highlighted as significant, including those seldom valorized as sources of refined insight at school specifically, and the Western tradition in general (Fooladi 2020; Korsmeyer 2004).

Furthermore, giving children's experience a central role in their explorations regarding food and taste highlights their thinking and learning processes and offers vantage points that might otherwise not be valued or documented. As builders of their own knowledge, children need to have occasions and contexts to explore the world around them and develop and test their own theories through practical experience and discussion with adults and peers.

Our study bears witness to an approach to taste education that focuses on direct personal and group experiences, starting from uni and multisensory exploration. The mixing of senses during the ateliers (e.g. sight

atelier also using smell and taste to identify otherwise unidentifiable foods, or sound atelier also using touch to create the sounds) meant in the end that none of them was truly only unisensory, which reflects how we sense the world around us. This is made clear in the children's descriptions and reflections when they bring in modalities other than the one in focus: the children's words gave us a complete experience in which all the senses participated. Thus, a relationship emerged between sensory perception and the processes of attributing meaning, which suggests the possibility of grasping—at least *in nuce*—a cross-modal unity of perception, avoiding fragmentation (Spence 2011).

The pleasurable and enjoyable atelier contexts seemed to support the development of positive feelings and experiences with different foods and vegetables, including those least-liked by the group. This optimistic attitude can be inferred in the meta-reflections about the changes the children recognized in themselves toward the foods they had investigated in-depth. During the ateliers, the emergence of cross-modal correspondences, for example between color and taste, seems to have promoted the development of creative, non-linear thinking, thanks to free associations that reveal the children's views and understandings of their own relationships to the world through food. It seems likely that seeing and experiencing everyday foods with new eyes, new sensations and new ideas enriches the identity building and growth process the children were naturally passing through. This in turn appears to have promoted positive feelings about and interest in food and experiences with it, even those usually avoided. Our results indicate that children aged 4-5 are able to conceptualize, articulate and (self-) reflect on phenomena such as multisensory perception, cross-modal correspondences and taste development if given the opportunity.

Hopefully the rich, open-ended food atelier contexts described will inspire educators, researchers from different fields and parents to consider multiple ways to explore foods together with children using a variety of sensory settings and that these experiences may, in turn, lead to a richer life. Food is a common denominator that everyone can relate to. As such, developing curricula and non-formal outreach activities that include multisensory experiences with food as described above is something to strive for. This paper contributes to the field of food studies by presenting an example of holistic sensory pedagogy and a model for taste education. Sharing this meaningful approach to food and taste can promote dialogue and awareness regarding the impact of our life-long involvement with food and eating, our sense of place which is essential in food culture, as well as the beauty of listening to and valorizing children's ideas, because adults can learn a lot from children, even very young ones.

Summary and further research directions

The results described above discuss how Reggio Emilia approach multi-sensory food ateliers can foster sensory awareness in young children by cultivating curiosity and taking time for in-depth explorations of the different properties and characteristics of new, familiar and usually avoided foods, as well as the providing the opportunity to reflect on their experiences. By offering children multiple occasions and settings to come into contact with new, unfamiliar or least-liked foods, this study shows that children express pleasure, curiosity and willingness to interact with these ingredients. In short, food is experience and exploration, not only bodily nourishment and a necessity for physical health.

Regarding the design of learning environments, the experiences described above may offer inspiration for finding ways to offer rich, open-ended sensory exploration contexts that promote a positive, pleasurable, curiosity-based approach to food in general and especially those that are "less liked." "In order to build up an esthetic childhood capital for later, children need to grow up surrounded by a wide variety of tastes (…) it is precisely these first experiences with new tastes that stick in the memory. …[Children] need to experiment (…) and discover that other senses also play a role in how something tastes" (Van Campen 2014, 84). Over time, these experiences may change attitudes and promote positive life-long habits.

Notes

1. Source: https://taste-for-life.org/mission.
2. The children are identified by first initial and age: *S*, 5.6 = *S* (initial of first name), 5(years).6(months).

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Multisensory experiences with and of food: representing taste visually and verbally during food ateliers in a Reggio Emilia perspective

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ABSTRACT

This paper offers an example of what a sensuous approach to food and taste education can look like by investigating the role of learners' senses when taste experiences are translated into words and drawings. The context of the Reggio Emilia approach – and specifically the food atelier setting – creates a space to explore food and taste based on the pedagogy of listening and reflective taste pedagogy, where each participant's individual taste experience is central. The authors describe a non-formal, online food atelier gathering data from 92 participants (78 children/adolescents and 14 adults) from 15 countries, focusing on learners' articulated taste experiences of freely chosen foods through their descriptions and depictions of their taste experience. The findings offer insight into learners' multimodal articulations of their experiences of tasting foods, starting from each individual's visual/verbal interpretation, thus building bridges between (abstract) concepts and language on the one side, and sensuous bodily experiences on the other.

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Introduction

Food and taste education, including research about it, has traditionally focused on health-related topics, eating-disorder prevention, the honing of practical skills or aspects of food production and technology (Smith et al., 2022), while the sensory aspects of food and taste have often not been valorised or considered as significant in teaching/learning environments. This study aims to investigate these aspects of experiences of and with food in their sensory richness, thus promoting new awareness and sensitivity about our relationship to food by verbalising, representing and sharing perceptions in a perspective that valorises all our senses.

In Reggio thinking, children possess

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> a hundred ways of thinking, expressing, understanding, of encountering otherness through a way of thinking that weaves together and does not separate the various dimensions of experience. The 100 languages are a metaphor for the extraordinary potentials of children, their knowledge-building and creative processes. (Indications Preschools and Infant-toddler Centres of the Municipality of Reggio Emilia, 2010)

We describe how multisensory experiences in the context of conscious tasting, when explored through expressiveness linked to the concept of 'the 100 languages', promotes sensory education that bridges the sensuous and bodily with language and visual expression: 'Learning processes take place in which several languages . . . interact together . . . encouraging relations between processes and the flow of one into the other . . . giving greater richness and completeness to thought' (Vecchi, 2010, p. 18). This study is focused on an aspect of Reggio philosophy which has not been described in scholarly literature, specifically its approach to food and taste education, thus filling a gap in the existing literature.

The Reggio Emilia approach: a brief overview

The city of Reggio Emilia, Italy, is known for its progressive schools for children aged 0–6, contributing with an innovative constructivist educational approach that has in time developed into a world-wide network. It stems from the vision of Loris Malaguzzi, founder of and guide to the educational experience of the municipal schools in Reggio Emilia. Over the years its educational philosophy has been part of the dialogue in innovating teaching and learning (Krechevsky & Stork, 2000), offering examples of alternative ways of 'doing' school. Among the core values are: the image of the child as a citizen with rights; the role of the teacher as facilitator and co-inquirer; family participation; the environment as the third educator; pedagogical documentation; and group work (Edwards et al., 1998; Giudici et al., 2001; Rinaldi, 2021).

Although particular attention and interest is found in Reggio philosophy on the role of food and eating, the scholarly literature is surprisingly scarce on this aspect of the Reggio Emilia Approach (REA). Thus the present work aims to fill a gap in the existing literature on approaches to food and taste education in this context. REA schools all have on-site kitchens and lunchtime has always been a significant moment, considered part of the school day (Carta dei Servizi dei nidi e delle scuole dell'infanzia comunali a gestione diretta, 2014). This interest in food is not only limited to mealtimes, but also promoted by sense-based education related to food (Coe et al., 2024). Paola Cavazzoni, *pedagogista* and director of Pause Atelier dei Sapori – a permanent food lab focused on topics linked to food and taste in a life-long learning perspective and part of Fondazione Reggio Children – maintains that 'eating involves the whole body, and does not just happen in the mouth'.[1] For young children, food is much more than nutrition: it is one way they explore, experience and discover the world around them, creating relationships with others and building their knowledge in the process. Thus, the values and ideas of REA are not only put into practice at schools, but its educational experience shapes and informs activities that take place in other contexts with people of all ages. The work described herein explored non-formal food ateliers with older children and adults, based on the Reggio educational philosophy.

Before proceeding, it is necessary to define some fundamental Reggio-specific terms. An *atelier* is a learning context/environment dedicated to the exploration of a specific topic (e.g. visual arts, nature, digital tools, single materials, etc. (Carta dei Servizi dei nidi e delle scuole dell'infanzia comunali a gestione diretta, 2014, p. 38; Giudici et al., 2001), or, in our case, food. It can be located in a dedicated physical space or set up temporarily. According to Vea Vecchi (2010, p. 2), an atelier 'is associated with things taking shape through action; places where brains, hands, sensibilities, rationality, emotion and imagination all work together in close cooperation' starting from the everyday, which then take on new value and meaning. The *atelierista*, often a person with an arts background, can be anyone with specific non-pedagogical training and works to develop projects and document learning processes. Cooks are referred to as 'cook-atelieristas' due to their culinary expertise. The atelier described in the study was developed and conducted by the Pause team, composed of two cook-atelieristas, three atelieristas (including one of the researchers) and a *pedagogista* with formal pedagogical qualifications.

In REA settings, inquiry and knowledge-building start from the learners: they *build their own knowledge* through the 100 languages, which recognises the plethora of ways learners 'are encouraged to explore … and express themselves through all of their available "expressive, communicative, and cognitive languages", whether they be words, movement, drawing, painting, building, sculpture, shadow play, collage, dramatic play, or music, to name a few' (Edwards et al., 1998, p. 4), as well as food. We hypothesise great richness in the simple act of putting food into one's mouth for both educators and learners, an act often considered mundane and accorded little importance in academic and learning contexts. In our case study, graphic mark-making and verbal descriptions of the participants' representations of taste informed their processes of communicating bodily experiences of flavour. The materials analysed – written/drawn accounts of taste experiences – can be considered an example of the 100 languages, another fundamental REA concept that posits that learning is 'multi-leveled and multimodal' (Edwards et al., 1998, p. 7). This may, in turn, invite educators, curriculum designers and researchers to reflect on relations between learners' bodily experiences and articulations of the 100 languages.

Sensibility to listen to and valorise children's ideas and perceptions refers to the pedagogy of listening (Rinaldi, 2021), a pillar of REA, which in our study means keeping participants at the centre of their learning processes resulting from sensory experiences and explorations with food. By engaging in such reflective taste pedagogy (Leer & Wistoft, 2018), the development of the participants' critical awareness and reflection may be promoted (Christensen & Wistoft, 2016). The work herein offers an example of what inquiry informed by the 100 languages can look like, showing how knowledge can be built in sense-based, learner-centred ways. The open-ended process of building knowledge is a fundamental characteristic of REA, and the 100 languages are the means.

Multisensory (food) experiences

Eating is a multisensory experience and describing experiences with and of food both requires languages and builds languages, broadly understood (and in the plural). Promoting bodily and sensuous learning experiences dialogues with the notion of the hierarchy of the senses (Korsmeyer, 2004, p. 87) that historically considers sight and

hearing as 'higher senses (worthy of attention) . . . intellectual senses . . . allied with the mind, leaving touch, taste, and smell in the realm of the body and its physical sensations', positioning these as 'lower senses'. This paper promotes awareness of taste, smell and touch and the democratisation of all aspects of the sensuous and sensory awareness within an educational framework.[2] Some other recent efforts in sense-based food education that valorise the perceptions of participants and promote the sharing and expression of their experiences of and with food include *Classes du goût*/Sapere Network (Institute du goût, n.d.) formal taste sessions, which originated in France and are currently active in Asia, Europe and Scandinavian countries, where the focus is on the sensory and sensuous pleasure of eating and of children of discovering themselves. In the Danish 'Taste for Life' project (Taste for Life, n.d.) food is considered a way to know and understand the world, giving value and meaning to 'mundane' aspects of everyday life, starting from mealtimes and eating, which is also in line with REA thinking (Vecchi, 2010).

By 'multisensory', we herein refer to how the five senses intersect and influence each other. The associations that people make between one sensory modality – for example, colour, shape, sound, texture and basic tastes – with a different sensory modality can be expressed visually, verbally (as described herein) or through sound (Fooladi, 2020, p. 372). This article attempts to bridge the gap between educational research in food and taste education, which has often traditionally focused on health-related topics (promoting a healthy diet, preventing eating disorders, etc.) and not necessarily valorising the sensory dimension in food and taste education. When it comes to sensory interactions and crossmodal correspondences related to food and taste, these have mostly been discussed in neuroscientific literature (Lee & Spence, 2022; Spence, 2019), with only a few exceptions discussing such in relation to education (e.g. Coe et al., 2024; Fooladi, 2020). Crossmodal correspondences are associative connections made between perceptions across senses, such as red being associated with sweetness, yellow with sourness, etc. Although the two terms are often confused, they are fundamentally different from synaesthesia, which is an idiosyncratic and involuntary condition where one sense stimulus activates a sense perception in another sense (e.g. literally perceiving a specific taste when seeing a certain colour, see Deroy & Spence, 2013). Previous studies have documented crossmodal correspondences between basic tastes and visual features where participants were asked to match pre-made colour patches or shapes with tastants (Spence et al., 2015; Velasco et al., 2015), or to choose from a list of descriptors (adjectives) to describe the taste of foods (Shields-Argelès, 2019). Since the aim of the atelier described herein is education rather than neuroscience, referring to Reggio thinking regarding learners' agency, the design of our study allowed learners the freedom of conceptualising *ab initio* their own associations between sensory perceptions and the graphic and/or verbal rendering of the experiences. This also allowed us to maintain the ecological validity of the atelier activities as an educational context.

Rationale of the study and research questions

Our study investigates learners' multisensory experiences of and with food and presents the food atelier setting as a context for learning based on the participants' lived experiences. Their articulations of sense experiences, as documented by their drawings and comments, constitute the object of the case study, connecting REA and the 100

languages, multisensory perception and food experiences. The present case study was guided by the research questions:

> How are learners' multisensory experiences with/of food represented visually and verbally in non-formal Reggio Emilia approach food ateliers?
>
> What insights about connections between learners' multisensory experiences with/of food related to language and visual expressions are generated from their explorations of it?

Research design and methods

This food atelier was specifically designed for a large international group of participants to be conducted online during the Covid pandemic. This transition from the usual in-person atelier to an online one presented both challenges and opportunities. Some of the challenges were ensuring that the participants remained active and engaged, that they felt part of a learning group in which they could work together to explore and articulate. Strategies to create this collaborative atmosphere are described below in the description of the atelier. Collecting the artefacts (drawings) was also difficult because of the physical distance and the quality of the images. There were also a few instances of technical problems with internet connections. Opportunities created by being online meant that people from all over the world could participate and they chose a wide variety of foods to explore during the atelier, based on the seasonality of their location. The selection of foods would have been more limited in an in-person setting (i.e. participants would have chosen among a range of foods in a physical atelier). Another benefit of being online is that all of the ateliers conducted were recorded, resulting in the possibility for this analysis. Thanks to the small number of participants in the groups (an average of eight participants per group) and the presence of atelieristas and cook-atelieristas conducting the atelier sessions and the interpreters who knew Italian, English and the mother tongue of the participants, interactions between group members were facilitated and supported both from educational and linguistic perspectives. There are multiple expressive modalities according to the theory of the 100 languages and this atelier included primarily verbal language and drawing. The intertwining of verbal and graphic languages was part of building knowledge through the '100 languages', similarly to physical, in-person atelier settings.

The online atelier, 'The Grammar of Taste'

In line with Reggio thinking, the non-formal online food atelier aimed to involve the participants as co-inquirers and contributors to the development of the experience. Initially, participants received an invitation to gather a series of foods in their homes based on various qualities – colour, size, taste, sound – and to offer their personal interpretations, thus prompting the participants to start thinking before the actual event:

> What comes to mind when you think of food and taste?
>
> How many colours, scents, flavours, sizes, shapes, sensations, textures?

> Together we'll try to discover the qualities of some foods, experimenting and exploring them from new points of view.
>
> To participate in the atelier, you'll need to look for ten ingredients in your kitchen:
>
> (1) a green food
> (2) the smallest fruit
> (3) the crunchiest vegetable
> (4) something that grows underground
> (5) a juicy food
> (6) a slippery food
> (7) a sweet vegetable
> (8) a salty fruit
> (9) the funniest food
> (10) a food that you really don't like the taste of
>
> When you've gathered them, prepare the foods you chose on your table before the atelier begins. This will be your own personal, unique setting!
>
> You'll also need some paper and something to write with (a pencil, a pen, a marker).
>
> Together we'll discover how food, taste, words, sounds, the voice, the body and mark-making intertwine.

During the atelier, each participant presented their favourite ingredient and introduced themselves by talking about it, tasting it and describing its taste. In a second phase, the participants were asked to translate these taste experiences into non-figurative graphic marks subsequently describing their drawings. Questions posed by the teams leading the ateliers were aligned to the participants' individual sensations and descriptions of the flavours. During the last phase of the atelier, the drawings were collected to create a digital group manifesto about taste. Each group also gave a title to their collection of images. This final phase of the atelier, not discussed herein, is mentioned to give readers a sense of the entire design of the food atelier.

Data collection and analysis

The data, collected during an ongoing educational project rather than specifically with this research design in mind, focuses on 10 sessions of an online food atelier with an international group of children and adolescents, utilising a convenience sampling approach (Cohen et al., 2007). The 113 participants from 15 different countries[3] were divided into 10 groups, based on age and geography/time zone, and the *lingua franca* was English. There were 92 participants (78 students and 14 adults) in the food atelier sessions. For our analysis, 58 drawings were collected. Since participating in the atelier was not mandatory, fewer drawings were produced either because of absences or non-participation during the activity. In addition, since the drawings were not physically collected after the atelier, the images included in the paper are screenshots taken from the video recordings and some drawings were not able to be included as they were not sufficiently visually legible and could not be analysed.

Herein, we focus on the graphic/verbal representation of each participant's taste experience, thus neither gender nor age were used as a criterion. Each group was led by a team of a cook-atelierista and an atelierista together with an interpreter who knew the languages the children spoke, English and Italian. The ateliers took place during parallel sessions conducted by different teams. In some groups, additional atelieristas and/or the interpreters participated as co-inquirers and this data is included in the study, as both the children's and the adults' experiences were of interest. Each atelier lasted two hours and followed the same structure, alternating questions with reflections and actions, both individually (in their homes) and as a group. The ateliers were recorded and transcribed verbatim, and parts in Italian were translated into English by one of the researchers who is a bilingual Italian/native English speaker and also one of the atelieristas.

The 15 countries involved were defined by the project and not the research study, thus, most participants were not native English speakers. Thus, translation was important, keeping in mind that the participants might not have expressed the nuances of their thinking due to language difficulties. The age range was set by the scope of the development project.

The data was analysed using an analytical tool devised for the study, inspired in part by Deguara (2019) on drawing analysis methodology. For our analysis, the 58 drawings collected were numbered D1–D58, with the suffix 'CH' if by a child/adolescent and 'AD' if by an adult. Descriptive theme codes were inductively generated using the constant comparative approach (Cohen et al., 2007) by surveying the material for visual and verbal traits that could represent various renderings of the multisensory experiences, producing the following themes:

- **NA (narrative)**: A figurative image telling a story, depicting a place, a scene, a situation, with characters, actions or environments (mountains, seaside, etc.) This code is also characterised by memory, associations, metaphors or emotions found in the verbal data.
- **PR (process/**transformation/change/temporal aspect/literal description of perception): On a visual and/or verbal level, there is something actively going on and the 'end' is different from the 'starting point' – thus introducing a temporal dimension. For example, a single line that modifies over its course or a series of images that express different 'states' during the taste experience. It can also include a literal description of taste perceptions.
- **ST (static/**geometric/random pattern): The drawing can be very simple/gestural (like a random scribble) or more detailed and carefully drawn. The visual pattern created by the element(s) does not represent a change or a process.
- **LD (literal depiction)**: Drawings of the food in question rather than the taste experience of it.
- **OT (other)**: Drawings that do not fit any other code or are ambiguous.

Except for PR and ST, the theme codes are not mutually exclusive, thus drawings could be coded with more than one code. The material then underwent a deductive analysis to quantify the presence of theme codes, giving a (semi-)quantitative picture.

In a second step, the coded material was analysed deductively to map the mentioning of the five senses. The criterion for coding was the presence of a given sense perception and not its absence. For 'sight', the defining criterion was a visual *experience/perception* of the food (e.g. colour, shape). 'Touch' included mouthfeel, weight, bodily sensations, physical movement and texture. 'Taste' referred to basic tastes in the mouth (e.g. sweet, salty, sour, bitter and umami). We are aware of the ambiguity of the word 'taste', often taken as equivalent to 'flavour', which encapsulates a broader set of sensuous perceptions than 'taste'.[4] 'Sound' was coded when participants clearly mentioned an auditory perception of the food they tasted. Finally, 'smell' was coded only when it was specifically mentioned.

The coding was initially done individually by two researchers, then compared and negotiated to consensus. Finally, a qualitative survey of the material was carried out, followed by further discussion to identify traits in the material that might not have been captured in the inductive and deductive steps. (See supplementary material for overview).

Ethical considerations, generalisability and limitations

Participation was voluntary and the families of the children who participated in the study and the adults who took part were asked for their consent, in line with the ethical principles for qualitative research (Santiago-Delefosse et al., 2016). All participants (or parents in the case of minors) received a statement of informed consent and they signed release forms approved by the Fondazione Reggio Children ethics committee. All quotes are anonymised, only indicating whether the respondent was a child or an adult.

The specific results have limited generalisability, since the taste experiences analysed are individual and subjective, but may still add to our knowledge of multisensory perception and literacy. The educational approach, however, has broad transferability as a model for promoting sensuous teaching and learning and developing taste awareness and literacy in formal and non-formal learning environments, focused on learners' experiences and insights about foods seen and eaten every day. The list of food prompts sent to the participants to prepare for the atelier included visual, auditory, tactile (texture) and taste characteristics, but smell was not as strongly present. Still, as seen in the results, olfaction appeared in several descriptions. This is discussed further below.

Mother-tongue and second languages played roles on several levels. Firstly, most of the original data and material in the study were in English. While we cannot be certain that experiences and what the participants wished to convey was not lost from one language to another, care was taken in transcribing and/or translating the sessions verbatim. Extra attention was paid when working with content translated from Italian to seek highest possible equivalence between original description and translation (for example, regarding the words flavour/'sapore' and taste/'gusto', which are often used interchangeably in both languages).

Limitations regarding the fact that the atelier was conducted online have been discussed in the Methods section. These included keeping the participants active and engaged, collecting the artefacts (drawings) from the atelier sessions and occasional technical problems with internet connections.

Results and discussion

In this case study, the food atelier setting aimed to create conditions for thinking about and representing the taste of familiar foods in a presumably new, different way: the 100 languages were activated both by the participants, who chose their own foods to explore, and the teams leading the ateliers, who asked participants to represent their taste experience through mark-making and verbal description. The teams that designed and led the ateliers did not know what would come out of the atelier or how the participants would represent their experiences.

Before turning to the analysis, we will exemplify the coding criteria/process to provide the reader with notions about the drawings and descriptions and how they were subsequently coded. Two drawings that were coded only NA, linked to narration, memory, associations, metaphor and emotions, are shown in Figure 1.

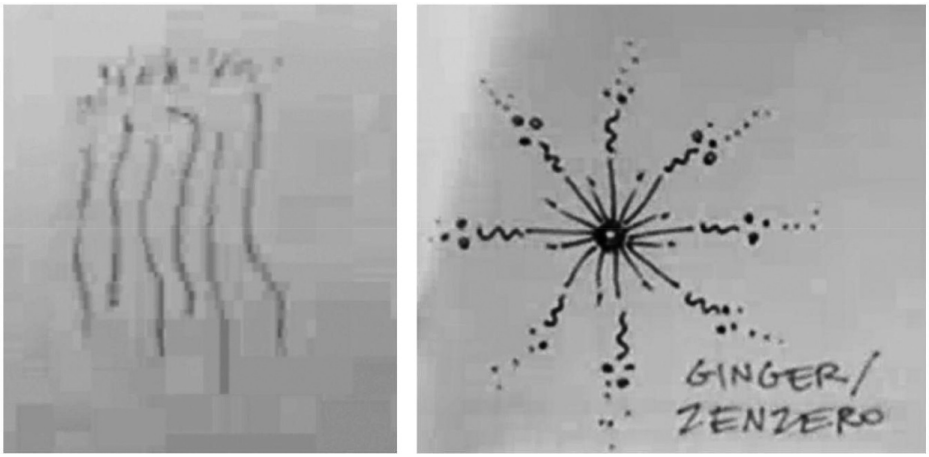


Figure 1. Drawings coded NA. Left, D7CH (broccoli): 'Broccoli has a spine that develops and I tried to do these little brushes on. This is how I feel in my mouth when I eat it. It looks like a firework that explodes in your mouth.' Right, D39AD (ginger): 'Ginger has a strong and spicy taste and it adds a lot and you can also drink it. I tasted a tiny piece – it's very spicy, then the flavour and smell arrive in my mouth – it's fresh and I feel clean, like I just brushed my teeth.'

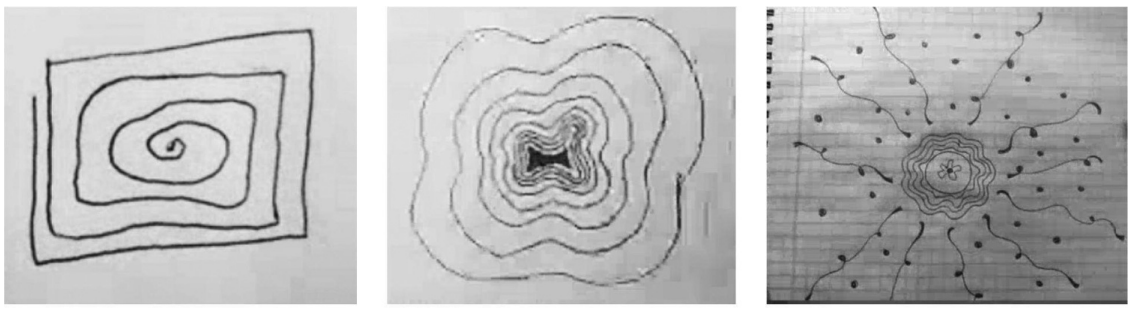


Figure 2. Drawings coded PR. Left, D28CH (chocolate): 'Chocolate, when I bite it is hard so it's more square, then it melts and becomes more circular, soft and tasty.' Centre, D35CH (sugar): 'White sugar is hard at first and then it disappears. You can't swallow it, it turns sweet, it's not very strong.' Right, D55CH (watermelon): 'The middle represents the first bite and the watery feeling when you bite watermelon and how the feeling expands when you keep biting.'

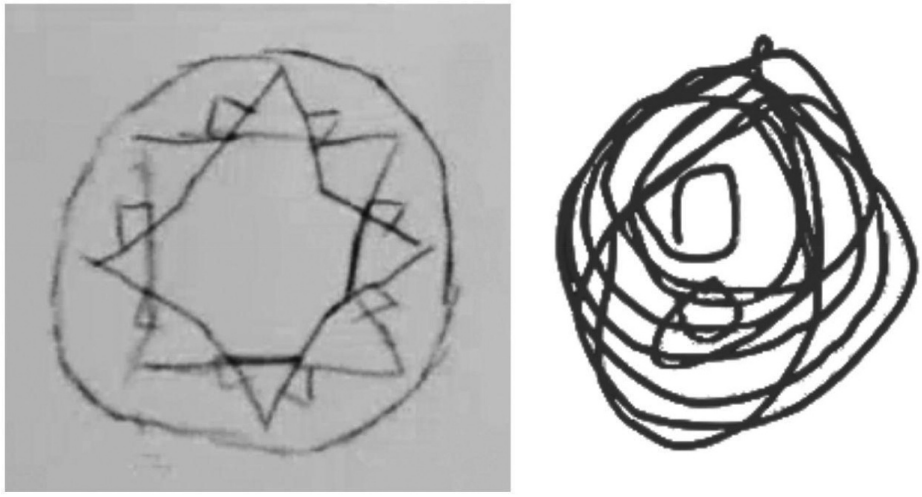


Figure 3. Drawings coded ST. Left, D33CH (tomato): 'The peel is tougher than the inside is softer, juicy, watery and sour. I don't like tomatoes!' Right, D22CH (sugar): 'I tried closing my eyes to do it- both scent and flavour. I imagined a cube of sugar.'

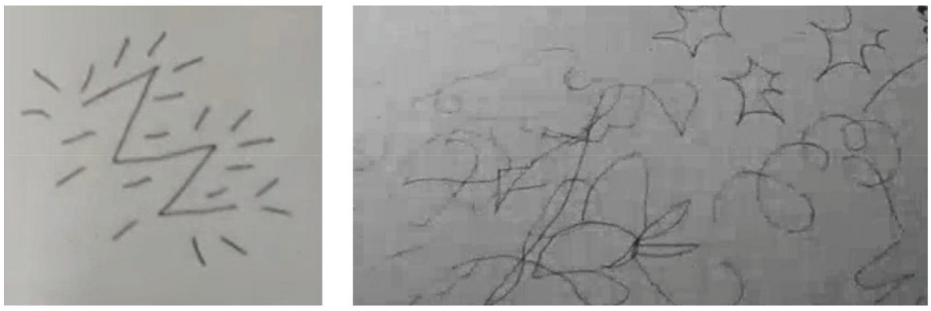


Figure 4. Drawings coded OT. Left, D12AD (candied ginger): 'I love candied ginger, there is so much going on in my mouth when I taste it – sweet, spicy, chewy, soft, crunchy.' Right, D54CH (orange): 'First I just closed my eyes, and tried to think what comes to mind when I think of an orange, I just drew some lines and then I thought of explosions and finally smiley faces which represents my face when I eat an orange.'

Examples of drawings coded only PR are shown in Figure 2, highlighting process, transformation, change, temporal aspect or literal descriptions of taste perception.

Drawings coded only ST are shown in Figure 3, interpreted as showing no temporal change, development or process (cf. methods section).

Drawings coded OT (Figure 4) did not fit any of the other categories as identified by the keyword descriptors for the other codes nor did the sensory data in the descriptions resolve this. (No drawing was coded OT plus another code).

Drawings only coded LD (Figure 5) were literal, figurative depictions of the foods tasted.

In some cases, the participants' comments shifted or clarified the choice of theme code(s): Figure 6 shows two drawings that might *look* similar but which take on different significance based on the participants' comments.

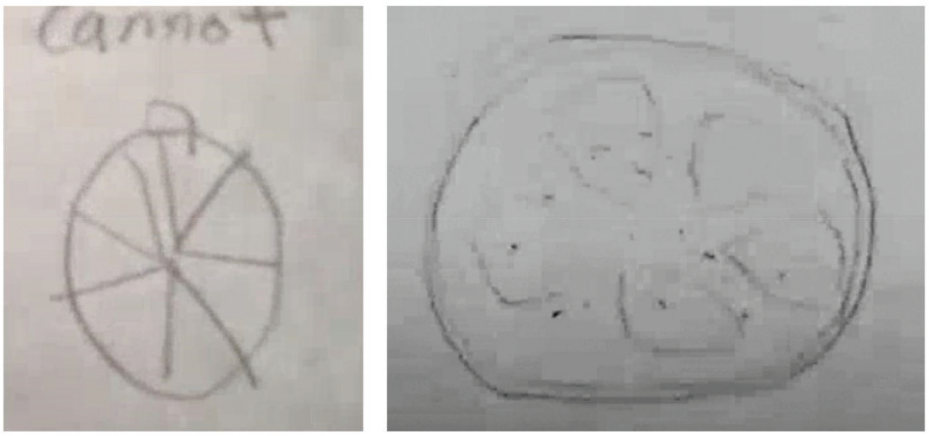


Figure 5. Drawings coded LD. Left, D45CH (carrot): 'I drew a carrot, it's sour.' Right, D8CH (tomato): 'The tomato is salty a little bit, it's red and round . . . the crunchiness of the seeds, the juiciness of the pulp. The peel is harder than the pulp . . . I like to eat tomatoes in different forms, I can eat it raw like it is, I can make a sauce.'

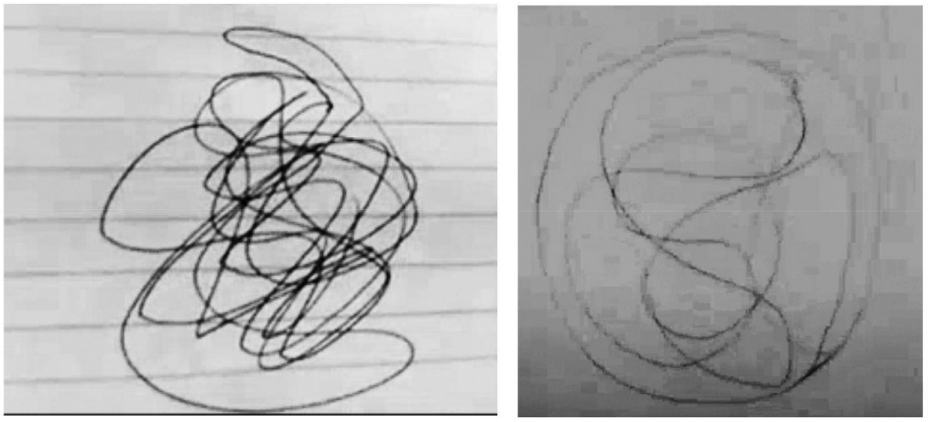


Figure 6. Example of theme coding interpretation. Left, D1CH (cauliflower): 'It's like a storm in my mouth', coded NA-ST. Right, D9CH (tomato): 'It's still a circle – Chaos – it has the same taste whenever I eat it – so when I bite into it, it's the same taste until I finish it', coded NA-PR.

Drawing D1CH refers to cauliflower being like 'a storm in my mouth', describing the taste in a metaphorical sense (thus the code NA) and the drawing itself is visually a sort of scribble, without beginning or end. It does not seem to relate to a change or a temporal dimension, so it was coded ST. Drawing D9CH might look similar at first glance, but here the participant wrote about chaos, which was interpreted as a metaphorical/associative reference to the act of eating a tomato (so again, NA). She also mentioned the tomato having the same taste *every time*, and in this case during *the time spent finishing eating it*, thus adding a temporal dimension and a change taking place, identifying the image as PR.

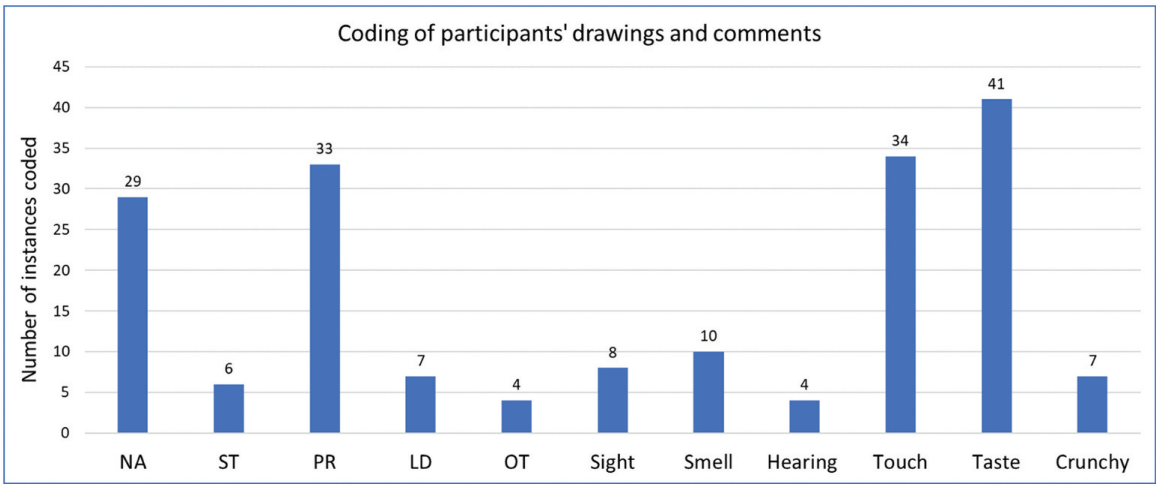


Figure 7. Counts of instances of coding of participants' drawings and comments.

(Semi-)quantitative findings

As seen in Figure 7, the most frequent codes are NA (narrative) and PR (process). With respect to the senses, touch and taste were much more frequent than smell, sight and hearing. Notably, both taste and touch occur in the mouth, while the other three are predominantly perceived by other body parts (Korsmeyer, 2004) supporting the (mis) conception that 'eating just happens in the mouth'.

Since the codes are not mutually exclusive, descriptions could be coded with more than one theme and/or sense.

Awareness that eating or putting something into one's mouth in general are highly multisensory experiences is not necessarily self-evident if one is not conscious of the experience of eating. Hence our interest in exploring the presence of the multisensory in the participants' drawings/descriptions by looking at number and co-occurrences of senses. Table 1 displays the number of sensory modalities coded for each drawing based on the comments, giving a picture of the participants' responses with respect to their multisensory perception. Interestingly, although the participants were asked to represent their taste experience, eight people did not offer any insight into the sensory experience of tasting their food. Nineteen participants reported one sense modality, while 31 reported two or more senses, meaning that over half described multisensory engagement during their taste experience. Only one person mentioned all five senses (D34CH, chocolate, Figure 8).

Table 1. Count drawings with number of sensory modalities coded.

0 senses	1 sense	2 senses	3 senses	4 senses	5 senses	Sum
8	19	19	9	2	1	58

Table 2. Count drawings with number of theme codes.

0 codes	1 code	2 codes	3 codes	4 codes	Sum
4	34	19	1	0	58

Table 2 shows that almost two-thirds (34) of the drawings were coded with just one theme. The theme codes did not specifically regard sensory modalities but were linked to other concepts which mainly regarded the visual characteristics of the drawings. The two coding steps were combined in contingency tables to show the co-presence of sensory modalities with the theme codings. Since the number of themes and sensory codes vary greatly (Figure 5), the absolute number counts do not necessarily give a balanced picture of correlation when comparing codes and themes. Tables 3 and 4 show coding results when theme codes were seen in light of the five senses (e.g. half of the drawings coded with sight are coded NA, and the co-occurrence with sensory modalities is generally higher for NA than for ST).

Tables 3 and 4 show a low number of codings for smell compared with taste and touch, perhaps due to the lack of words for 'basic smells', thus making it more difficult to put smell experiences into words (Drobnick, 2006). The tables also show the low number of codings for hearing. Perhaps this sense is not perceived as relevant for taste? Also, hearing is mostly connected to NA and PR, not with ST at all. Since hearing is a specifically temporal phenomenon, this correlates with these general notions. LD correlates more with sight than the other senses, which may be expected. In all four tables, NA and PR are the predominant theme codes overall, regardless of sense. Thus we see a pattern that taste experiences are perceived as processes, temporal and associative by nature, often linked to story-telling; they are seldom static.

Regarding co-occurrences between the sensory modalities (not shown), all drawings coded with smell also mentioned taste. Out of 10 coded for smell, eight were coded with three or more senses, and for sight, all were coded with three or more senses. Thus, when citing vision or olfaction, there appears to be a broader description of sensory modalities in general. The four coded with

Table 3. Theme codes vs. sense modalities – counts.

	Sight	Smell	Hearing	Touch	Taste
NA	4	6	2	15	19
ST	1	2	0	1	4
PR	4	6	3	23	27
LD	3	2	1	4	5
OT	0	1	1	2	2

Table 4. Theme codes vs. sense modalities – proportional.

	Sight	Smell	Hearing	Touch	Taste
NA (%)	50 %	60 %	50 %	44 %	46 %
ST (%)	13 %	20 %	0 %	3 %	10 %
PR (%)	50 %	60 %	75 %	68 %	66 %
LD (%)	38 %	20 %	25 %	12 %	12 %
OT (%)	0 %	10 %	25 %	6 %	5 %

hearing are too infrequent to imply any pattern. The by far greatest co-occurrence was between touch and taste, adding up to 26. Interestingly, 18 out of the 19 coded with only one sense were either touch or taste (8 touch, 10 taste, 1 sight). It is not surprising that taste is strongly present in general, since the atelier is literally 'about taste', but it is worth noting that the formal definition of taste (used in our coding) and the everyday use of the term are often different, depending on how it is contextually, culturally and experientially situated. While this distinction is used in our analysis, it was not made explicit in the atelier. We presume that the word 'taste' was used frequently in everyday language, although this does not signify the participants all intended the same meaning. The high prevalence of touch, however, is not as obvious. Lee and Spence (2022, p. 7) mention comments by Marks (1978) on the similarity between tasting and touching, since 'certain adjectives (e.g. "sharp") had shifted over time from first describing touch to later taste and now visual shapes'. This is an interesting angle from which to consider the taste–touch connection, given the focus in visual mark-making in our study. The fact that all participants mentioning smell also mentioned taste supports the fundamental role of olfaction in tasting, since aromas are the predominant sensory stimuli in our experience of flavour, in layperson's terms often referred to as 'taste' (Wilson 2015). Still, it is worth noting the low presence of smell, however not emphasised in the pre-atelier invitation the participants received.

We saw the most prevalent themes were PR and NA (Figure 7). The high frequency of NA should not come as a surprise, since the participants were actively encouraged to describe their sensory experience for which associations are important. Also, tasting is an action, meaning *to taste* is a verb as opposed to *the sense of taste* or *the tastants* of a food being nouns (Fooladi, 2020). Hence, the act of tasting is all about undergoing an active sensuous experiential process. This suggests that the food atelier described succeeded in its aims. The temporal dimension of taste experiences was also mentioned by participants ('here and now' perceptions during tasting, or memories linked to the foods). We find the link between NA codes to aspects like memory, time, temporality mentioned by participants particularly interesting. The stretching of time with regard to a taste experience is embedded in the design of the food atelier, since participants chose (and likely anticipated) the tastes of the foods before the atelier began, and then described their taste experience, often with reference to past experiences of eating that food. It is likely that depicting their taste perception through mark-making was an unusual experience that allowed learners to build new knowledge about familiar foods, thanks to intertwining sensuous experiences and two expressive languages (words and images) in a novel way, in line with the notion of 100 languages.

Qualitative findings from the perspective of sensory modalities

Regarding the senses, most – but not all – modalities have 'basic elements'. Generalising for each sense:

Taste – Widely accepted basic tastes: sweet, sour, salty, bitter and umami.

Vision – Basic 2D or 3D shapes: square/cube, triangular/pyramid, round/spherical, linear, flat, thick, thin, etc. – and colours: red, yellow, green, blue, etc.

Hearing – Basic words about volume: loud, soft, silent; pitch: high-pitched, low-pitched; rhythm: staccato, legato, fast, slow, etc.

Touch/Somatosensation – Basic textures/tactile qualities including: smooth, rough, juicy, dry, hard, soft, sticky, slippery, grainy, etc.; or dimension: big, small, etc.

Olfaction – There are no basic concepts, except perhaps regarding intensity (a strong/not strong smell). Talking about smell is often based on associations: 'smells like an apple', 'lemony', 'grassy', etc.

Thus, smell requires a qualitatively different language and concept-use, as basic descriptors are simply lacking. Yet smells (and tastes, which are in large part olfactory experiences) go beyond words and conjure up memories (cf. Marcel Proust's well-known madeline and tea reverie in his 'In Search of Lost Time'), narratives and emotions (Van Campen, 2014; Wilson, 2015). Turning to the data collected, a qualitative survey of drawings coded with olfaction revealed that the occurrence of NA is linked to comments related to memories, as in D14CH, and time, as in D34CH (Figure 8).

These findings are in line with research that has shown that smell is particularly closely linked to memory and time (Korsmeyer & Sutton, 2011; Low, 2013).

For drawings coded with touch and taste, describing taste experience in the 'here and now' and associations with nature were prominent features. The temporal ('here and now') characterised the majority of these drawings (25 coded taste and 19 coded touch), as the descriptions were linked to the moment of eating/tasting and not to recalling past experiences. Associations with nature included references to flowers, the sea, water, the breeze and fresh air, clouds, waves and sand.

All four drawings coded with hearing – D34CH (chocolate, Figure 8), D10AD (coffee and biscuits, Figure 10), D32CH (coffee beans) and D47AD (potato chips) in Figure 12 – included temporal aspects. This could stem from the fact that audition is highly reliant on the temporal dimension of perception, aligning with the fact that none of the drawings coded with hearing were coded as static (ST).

Drawings coded with sight were more frequently found to co-occur with literal descriptions (LD) than other modalities. Colour as part of the experience was present in half of the descriptions (not shown). The low number of LD is most likely due to the fact that participants were asked not to draw the actual food they tasted, but explicitly to express their taste experience/perception. Interestingly, some participants drew a literal

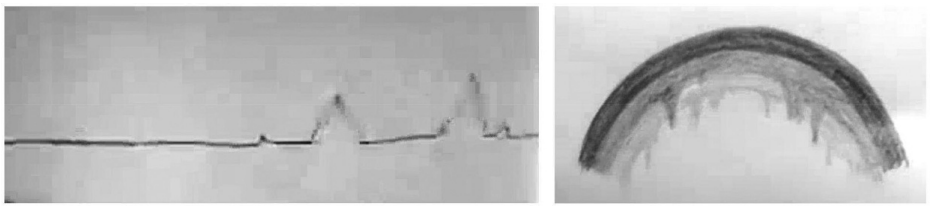


Figure 8. Motifs mentioned in relation to drawings coded olfaction. Left, D14CH (lemon): '(Lemons) make me think of my best friend because she had a lemon tree. I won't see her anymore because I'm going to middle school', coded NA+PR. Right, D34CH (chocolate): '(Chocolate) . . . smells really good, and when you have it in your mouth, it melts, it's sweet and at the beginning it is hard to chew but after a few seconds it starts to melt', Coded: NA+PR+LD.

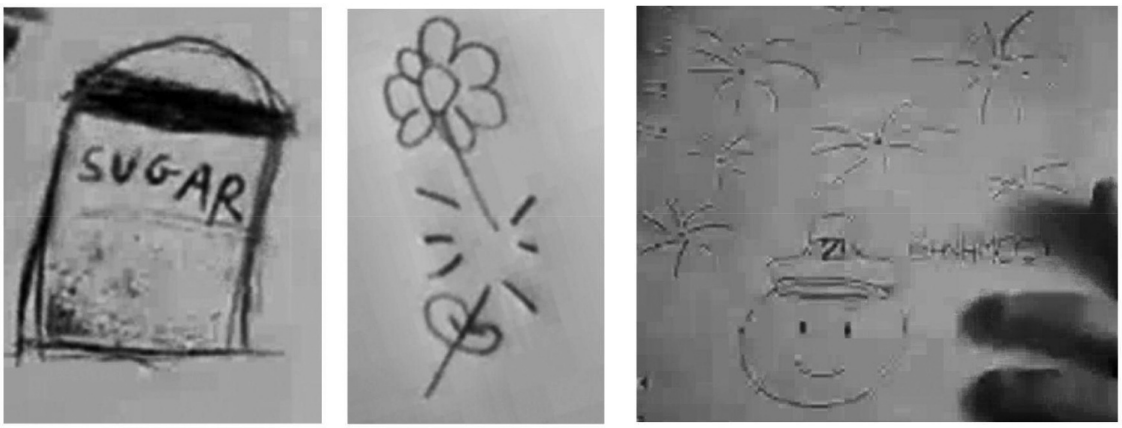


Figure 9. Figurative drawings not coded LD. Left, D17CH (apricot): 'Apricots have a particular taste, it is sort of grainy and you eat the peel which is fuzzy and it is very sweet. I drew sugar to show a grainy taste', coded NA (because of the association to sugar), PR (description of perception). Centre, D19CH (carrot): 'I tried a carrot – it was crunchy and hard. I drew a broken flower for a crunchy flavour', coded NS (obviously a metaphor). Right, D52CH (pomegranate): 'I have a simple drawing for a complex idea. I drew fireworks and a person who wants war because "granar" (pomegranate) reminds me of war – it's a feeling. I made a story with the taste of something. Pomegranate, my grandma used to bring me them and it is the most colourful', Coded: NA.

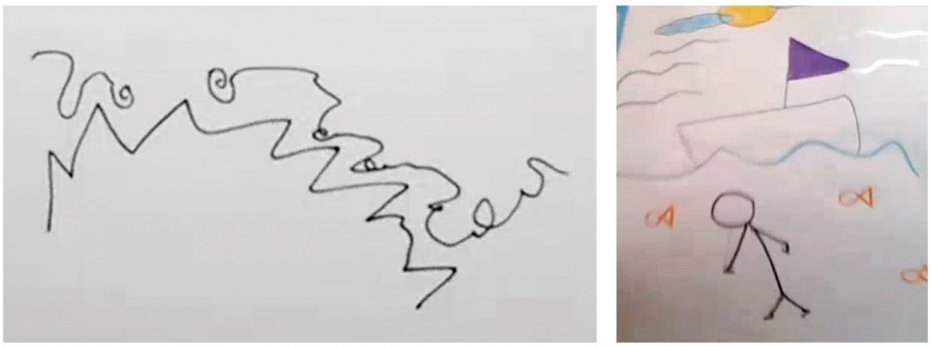


Figure 10. Drawings not mentioning olfaction where it would have been expected. Left, D10AD (coffee and biscuits): 'I drew coffee and biscuits. I felt a sort of conflict in my mouth between the strong coffee that was interrupted by the sweet taste of the biscuits – sort of like a sound in my mouth', coded: NA and PR. Right, D50CH (tangerine): 'When I eat a tangerine it melts in my mouth and I feel it is fresh, not too sweet and not sour and it's hard to swallow, it is like I am drinking juice. I drew the breeze, it's like fresh, when I feel the juice of the tangerine in my mouth and then I feel like I am swimming in the tangerine juice', Coded: NA.

depiction of a *different* food, object or scene to represent their taste experience (Figure 9) rather than using more abstract marks. These drawings, depicting concrete objects or situations rather than the foods tasted, were not coded as LD, despite the fact that they were figurative, as they represent a 'leap of association' rather than a literal representations of the foods tasted.

Absences and ambiguities

The coding method only included the presence of a type of description, theme or sensory modality, although sometimes the absence might be equally relevant and represented an opportunity for dialogue about bodily experiences and concepts/language. A qualitative survey of the data, while not as systematic as the previously mentioned coding, revealed that some sensory data stand out due to the absence or omission of a sense, either regarding the specific food or in the participant's comments. Examples are D54CH (orange) in Figures 4 and 10, which omitted mentioning smell when the coders might expect olfaction to play a prominent role.

Coffee and citrus fruits are particularly aromatic foods, and it is notable that the participants did not mention this explicitly. Perhaps in these cases, olfaction is not so clearly a conceptualised part of the food experience compared to taste and texture (cf. Methods section).

Three participants explicitly mentioned closing their eyes: the experience of orange (D54CH, Figure 4), watermelon (D16CH, Figure 11) and sugar (D22CH, Figure 4), thus forcing the absence of sight. Another mentioned colour in a metaphorical sense, incidentally also describing sugar (D21CH, Figure 11). These four were not coded for sight.

Also regarding D21CH (sugar), it was surprising that sweetness was not explicitly mentioned since the participant was describing sugar. Thus, the tool does not automatically capture the possibility that some things are considered so self-evident that they are perceived as redundant or 'too basic' to mention explicitly, and qualitative considerations are therefore of value for the researcher or educator.

Analysing the word 'crunch(y)' represented an interesting borderline case. Is this perception to be interpreted as hearing, touch or both? Nine participants used this word in their descriptions. In two cases, it was very clear that 'crunch' was related to sound (Figure 12).

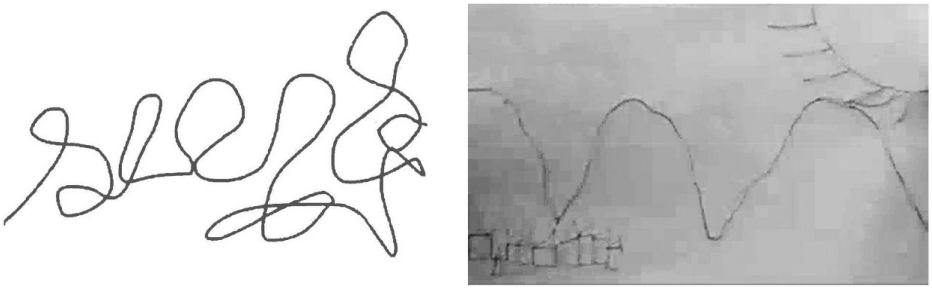


Figure 11. Drawings/comments including visual aspects but not coded for sight. Left, D16CH (watermelon): 'Watermelon tastes sweet, juicy and fresh and the smell makes me think of fresh air. I closed my eyes while tasting the watermelon. In my opinion because it is sweet juicy fresh and then sweet when I sent it down, there is always sweet water left in my mouth', coded PR. Right, D21CH (sugar): 'The taste of sugar makes me think of happiness, to a happy thing – like going to the mountains, tasting sugar brings you back to happiness, the opposite of lemon which is sour, although they go well together – they're two opposite things. I drew the happiness – the mountain with the little village, I wanted to colour everything yellow. It took a lot of thinking, drawing takes little but thinking takes time,' coded: NA.

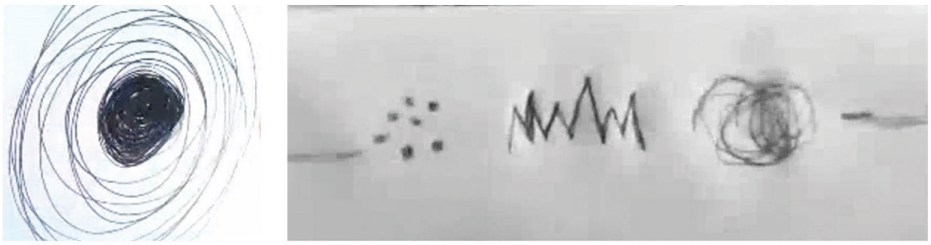


Figure 12. Drawings mentioning 'crunch(y)' coded for hearing. Left, D32CH (coffee beans): 'Coffee beans: strong and intense and it smells nice. I hear it crunch when I chew it', coded OT. Right, D47CH (potato chips): 'I had a potato chip, and when I put it on my tongue, it was flat and smooth but then immediately I began to taste the salt on my tongue. Then I started to chew and it was crunchy and noisy in my mouth, then it became all mixed, like a paste and then when I finished chewing it became a smooth paste, a line', coded: PR.

In the other seven cases, the coding was ambiguous. Some examples are D19CH (carrot, Figure 9) and D12AD (candied ginger, Figure 5). Since the coders did not reach a consensus for these drawings and the participants could not give clarification, 'crunch-(y)' was not coded related to a specific sense but given a separate code. The composite perception of 'crunch(y)' could be an interesting concept to discuss for educators. Spence (2015b) found that not only is sound an under-considered aspect of the multisensory experience of eating, but audition is the most underestimated sense regarding taste perceptions and experiences, both by researchers and the general public. This finding has been mirrored in our results, where sound was the least reported sense.

Shape and taste

Prior neuroscience-oriented studies have investigated crossmodal correspondences between shape and taste (e.g. Spence & Deroy, 2014), finding that sweet tastes are often associated with rounded shapes, while salty, sour and bitter flavours are linked to more angular, spiky shapes. In our study it was interesting to consider how shape came into play when foods and drawings were chosen freely rather than predefined by the researchers as is the rule in many neuroscience studies. Figures 13 and 14 show drawings where basic tastes were mentioned, and thus contribute to bridging the gap between neuroscientific and educational approaches regarding multimodal expressions of experiences of and with food.

Figure 13 shows the drawings where 'sweet' was explicitly mentioned in the comments:

Most of these drawings – 16 of the 19 – are indeed characterised by curvilinear, rounded shapes. A peculiar case is D43CH which describes lemon together with the apparently paradoxical comment 'It's a lemon with drops that are sweet.' Here, one might speculate whether the shape is more closely related to the word description than the usual taste of lemons.

Figure 14 gives a visual overview of drawings with comments mentioning sour, salty and bitter.

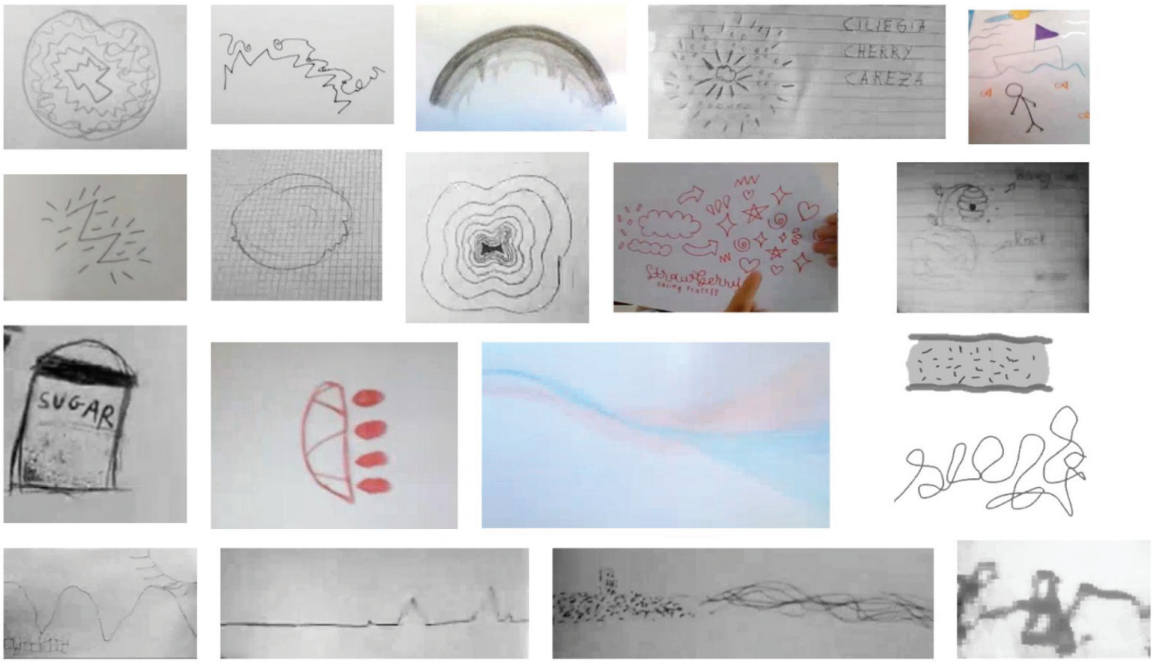


Figure 13. Drawings whose comments mention sweet taste. Top row: D4CH (carrot), D10AD (coffee and biscuits), D36CH (chocolate), D37CH (cherry), D50CH (tangerine). Second row: D12AD (ginger), D27CH (plum), D35CH (sugar), D48CH (strawberry), D56CH (carrot). Third row: D17CH (apricot), D43CH (lemon), D49CH (banana), D51CH (grape), D16CH (watermelon). Bottom row: D21CH (sugar), D14CH (lemon), D18CH (apricot), D15CH (unspecified food).

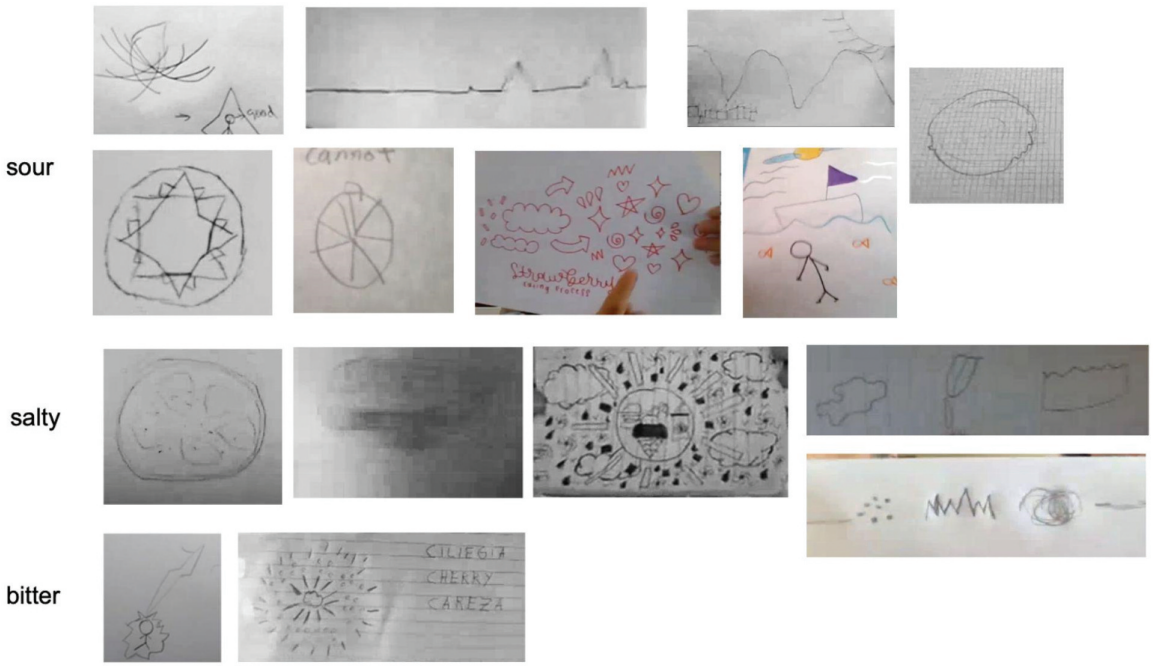


Figure 14. Drawings whose comments mention sour, salty and bitter taste. Sour: 1st row – D2CH (unspecified food), D14CH (lemon), D21CH (sugar), D27CH (plum); 2nd row – D33CH (tomato), D45CH (carrot), D48CH (strawberry), D50CH (tangerine). Salty: D8CH (tomato), D38CH (scrambled eggs), D58CH (salty mango), D44CH (tomato), D47AD (potato chip). Bitter: D3CH (unspecified food), D37CH (cherry).

Since a few of the drawings mentioning sour, salty and bitter tastes also mentioned sweet taste, some of the same drawings, as in Figure 13, also appear here. Ten of the 15 drawings feature spiky, angular or linear elements. Our findings are thus broadly in line with already established shape–taste correspondences (Spence, 2015a), although verifying this was not the focus of our study.

Summary and conclusion

In the material studied, we see a broad, rich use of languages (plural), which supports our notion that taste experiences, when placed centre stage, are contexts for and may promote rich conceptual and language use and development. Eating is an act of 'here and now', and food, after being consumed, 'disappears' or becomes part of the body. Thus, it represents a transient experience that cannot be brought back and experienced later, relegated to memory, when compared to some other aesthetic experiences (music being a case of its own).

We see that when coding for themes visual descriptions (drawings) are more prominent, while sense coding was informed more by the verbal accounts. Our research indicates that educational design may be able to capture and render – on paper – the multisensory nature of food experiences. We do not claim that such experiences are encapsulated in their wholeness, but the five sensory modalities and complex experiences (described by the theme codes) can be identified, even in an online atelier context. We show one way of addressing and exploring senses that are not commonly activated in teaching in general. In this way the atelier may contribute to democratising the senses (cf. Korsmeyer, 2004) through an innovative learning context. In analysing graphic mark-making and comments, we investigated the role of the senses when taste experiences are translated into drawings, focused on learners' lived experiences and the consequent learning processes activated during the food ateliers that exemplify what implementing the 100 languages can look like.

The educational context of REA – and in particular the food atelier – created a playful setting to explore food and taste, despite the physical and linguistic distances between the participants in our study. Each participant's individual taste experience is at the centre of their explorations, in line with the pedagogy of listening (Rinaldi, 2021) and reflective taste pedagogy (Leer & Wistoft, 2018), which give importance to learners' direct experiences with/of food and thus their knowledge-building process. Investigating learners' individual taste experiences and visual/verbal interpretations might also generate new awareness and insights, as well as build bridges between (abstract) concepts and language on the one side, and sensuous bodily experiences on the other.

Our findings show that other themes – like memory, time, temporality – can be approached via multisensory experiences of taste (Coe et al., 2024; Coe, 2024). According to Spence (2015b, p. 11) 'our enjoyment of eating and drinking often extends over a much longer time period', including anticipation and subsequent memories of food (Figure 15). While current neuroscientific studies on taste perception focus on the moment of tasting, by investigating learners' experiences of/with food from a (taste) education perspective, the timeframe of a tasting experience is extended, including both before the tasting takes place and afterwards, through memories or associations the experience brings up. This broad timeframe is embedded in the design of the REA food atelier described herein.

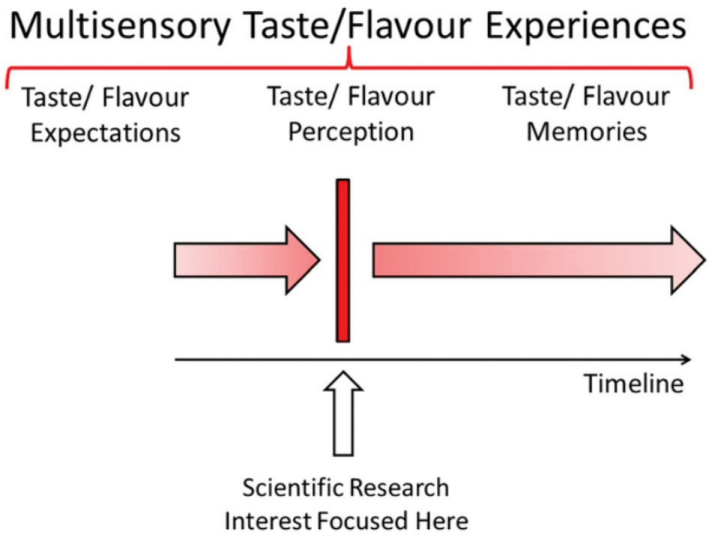


Figure 15. Multisensory taste/flavour experiences in relation to time (from Spence 2015b), with permission from the publisher, BMC).

Our study thus offers an educational model and context for promoting a more holistic experience in food and taste education. Gaining insight into learners' representations of their taste experiences by considering both visual characteristics of their drawings and their verbal descriptions fosters sensory consciousness and awareness about foods seen and eaten every day. The choice of foods, guided by the invitation sent before the atelier, appeared to have an impact on the research findings. This invitation could be revised in a future iteration to support various foci of the atelier as a pedagogical context, but also to align the atelier to other research questions. The REA food atelier allowed learners to explore food by juxtaposing two expressive languages, words and images in a novel way, activating knowledge-building processes in line with REA philosophy and in particular the 100 languages, thus filling the latter concept, often broadly and vaguely conceptualised, with concrete content.

Notes

1. 'La cucina come luogo che crea saperi e cultura: per una nuova educazione', presentation delivered on 26 May 2021 at a conference at Centro Internazionale Loris Malaguzzi (Reggio Emilia).
2. The mind/body split- which has characterised education to the detriment of the body- is a rift that REA has always aimed to bridge. See the famous poem by Loris Malaguzzi, a sort of REA manifesto: https://www.reggiochildren.it/en/reggio-emilia-approach/100-linguaggi-en/.
3. Romania, Russia, Italy, Chile, USA, Canada, India, Brazil, Colombia, Spain, Argentina, Mexico, Perú, Guatemala, Panama.
4. For instance, vanilla is not a taste *per se* since it is perceived by the nose and not in the mouth. Thus, vanilla can be described as a flavour but not a taste. In everyday language these are often conflated, and some languages (e.g. Scandinavian) do not have a separate word for 'flavour' and use 'taste' for both. Further discussion below.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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The states of taste: primary and secondary school students' and teachers' ideas on food ateliers from a Reggio Emilia perspective

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ABSTRACT

Educational food ateliers can offer a model for promoting food and taste education in both formal and non-formal environments. This study focuses on the food atelier as a setting to investigate students' and teachers' ideas about multisensory food and taste ateliers and how sense-based inquiries of food impacted their thinking. The study was carried out within the educational context of the Reggio Emilia approach. Data analysis of interviews with 12 participants before and after participating in five different non-formal food ateliers drew on the guidelines for reflective thematic analysis. The results suggest that the sense-based inquiry of food can shift the thinking of participants toward greater self-reflection and self-awareness, which point toward the importance and impact of experiential aspects that the role of food can have in education.

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Reggio Emilia; food and taste education; food atelier; non-formal learning context; multisensory perception

Introduction

In the field of food and taste education, attention has traditionally been placed on health-related topics or practical skills development, while the emotional, social, and sensory aspects of food and taste have often not been considered among the main aims of teaching/learning. This study aims to investigate the importance and impact of experiential aspects that the role of food can have in education. Multisensory food and taste ateliers are settings for sense-based food and taste education pathways. Some recent and current educational experiences with food and taste (see Table 1) include formal taste education sessions like *Classes du goût*/Sapere Network (Institute du goût, 2011), non-formal educational pathways set out in the Slow Food Education Manifesto (Slow Food Education Manifesto n.d.), the "Taste for Life" project (Taste for life n.d.), all broadly connected to slow pedagogy which gives value and meaning to "mundane" aspects of everyday life, starting from mealtimes and eating (Clark 2023), focused on the depth and fullness of engagement to promote and support multisensory engagement with one's surroundings (Carlsen and Clark 2022).

The basic premises of these movements and approaches share common traits with the values and aims of the Reggio Emilia perspective regarding food and taste education: they

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Table 1. A few recent and current educational experiences with food and taste.

Year	Name	Main ideas
1986	Slow Food (Petrini)	Everyone has a right to good, clean and fair food; food education starting from childhood in a lifelong learning perspective is essential in shaping people's experience of and relationship to food
(1974)/ 1999	Les Classes du Goùt/Sapere network (Puisais/Politzer)	Primary importance on the sensory and sensuous pleasure of eating and children of discovering themselves; open questions, ad hoc trained figure to conduct tasting sessions
2014	Taste for Life (Leer, Wistoft)	Promote settings for positive taste experiences based on sensory awareness; food as a way to know and understand the world

all strive to create positive attitudes toward food and eating, taking time to savor the sensory richness of food, out-of-the-box thinking and developing new awareness and sensitivity about our relationship to food through direct experience, not centered simply on eating and tasting, but on verbalizing and sharing lived experiences. Some similarities between Reggio Emilia's thinking and these recent perspectives and efforts are as follows: the focus on direct multisensory experience (Sapere, Taste for Life), bringing food education out of classrooms into non-formal settings also from a lifelong learning perspective (Slow Food) as well as the involvement of non-pedagogical figures with expertise related to food who work with children (Sapere). While these aspects are actuated in different ways, they are all ideas in line with the Reggio Emilia perspective regarding food and taste education. These approaches and ideas all seem to be in dialog with the "pedagogy of listening" (Rinaldi 2021), the basis of Reggio Emilia educational philosophy,[1] which keeps learners at the center of their learning processes as expressed through their ideas, perceptions, and actions. As Carla Rinaldi wrote: "Essential elements are trust in the child and in the human being, listening and learning, as construction of knowledge in the group and of relationship to others' learning; the possibility of expressing oneself and learning through one hundred and more languages, one hundred ways of relating to reality" (Rinaldi 2021, 164). Thus, according to a Reggio Emilia perspective, knowledge is actively co-constructed in a variety of ways.

From the recent literature in the field of food and taste education comes the concept of "reflective taste pedagogy" (Leer and Wistoft 2016; Leer and Wistoft 2018), based on a holistic mind-set linking body and mind which connects individual people's perception of and experience with food and taste in social settings that foster empathy, social skills, critical thinking, and creative connections between different disciplinary and sensory domains. These ideas have much in common with the food education efforts mentioned above and the food ateliers studied herein: for example, importance is given to starting from people's prior knowledge, experience, and perceptions of their own experiences. The food ateliers described herein suggest what implementing reflective taste pedagogy might look like. Developing knowledge of the self and others as part of the knowledge construction process are characteristics of both food ateliers and reflective taste pedagogy.

In this exploratory case study, small groups of students and teachers who participated in five 2-hour food atelier sessions were interviewed twice: first to find out what their expectations and ideas were before participating in the ateliers, and then afterward, reflecting on their experiences and realizations. The present

contribution thus aims to understand and analyze students' and teachers' lived experiences in order to gain insight about food ateliers and how these impact their thinking. Prior research on food and taste education from a Reggio Emilia perspective is virtually non-existent (Coe and Fooladi submitted; Coe, Manera, and Fooladi 2024); thus, the present contribution fills a gap in the knowledge base.

The Reggio Emilia approach – basic concepts

The Reggio Emilia approach was initially developed as an educational approach for children aged 0–6 after WWII and has since spread and developed. This constructivist approach is based on several core values, including: the image of the child as a citizen with rights; the role of the adult (teacher, atelierista, parent) as a co-researcher together with children in the knowledge construction process; the concept of the 100 languages; the practice of pedagogical documentation in making learning processes visible; the environment as the third educator. Much has been written about Reggio Emilia's educational philosophy (Edwards, Gandini, and Forman 1998; Giudici, Kreschevsky, and Rinaldi 2011; Rinaldi 2021), so herein only some main aspects which have particularly shaped the Reggio Emilia perspective regarding food and taste education and specifically food ateliers will be discussed. These are as follows: the atelier context, the figure of the atelierista and group work as the basis for the social construction of knowledge.

Ateliers and atelieristas

The atelier is a fundamental concept in Reggio Emilia philosophy, a setting that encourages thinking and learning with the body and seeks to promote the construction of knowledge. It is an environment where questions are posed, explored, and shared, focusing on process rather than product (Vecchi 2010, 38). An atelier can be dedicated to different fields of inquiry – nature, light, digital tools, sound, expressive/manual arts, etc. – or materials – paper, natural materials, recycled materials, etc., or, as in this case, food. In the words of the atelierista Vea Vecchi, an atelier "is associated with things taking shape through action; places where brains, hands, sensibilities, rationality, emotion and imagination all work together in close cooperation" starting from the everyday, which then takes on new value and meaning (2). She also wrote that "(learning) from a constructivist and socio-constructivist (viewpoint) takes place in a multidisciplinary and multisensory way, and the atelier setting highlights this" (56), as in the case for the food ateliers discussed below.

Physically, an atelier can be located in a dedicated space or set up temporarily, indoors or outdoors. The food ateliers described herein (Figure 1) were set up each morning for 5 days in a space that also served other purposes.

The atelierista, often a person with an arts background, can be anyone with specific non-pedagogical training (cook, musician, biologist, dancer, architect/designer, actor, etc.) who works both with the participants and the teachers/adults to foster and document the learning processes that take shape, bringing their specific expertise and knowledge to the group. The ensuing dialogue between people with different backgrounds and knowledge is central to the Reggio Emilia approach.



Figure 1. Food atelier contexts for "The states of taste" pathway. Source: Pause Atelier dei Sapori.

Group work

An atelier is a place where project work done in groups takes place, where each person contributes to building the group's knowledge, " . . . extending beyond individual learning to create a collective body of knowledge" (Giudici et al. 2011, 18). According to Carla Rinaldi, "the construction of knowledge is a group process. Each individual is nurtured by the hypotheses and theories of others, and by conflicts with others, and advances by co-constructing pieces of knowledge with others through a process of confirmation and disagreement" (Rinaldi 2021, 96). Thus, collective knowledge construction is an ongoing process that keeps everyone informed and involved, since it is activated in relation to other people's learning (Rinaldi 2021).

Context of the study

Reggio Emilia philosophy has always considered everyday routines, including eating and mealtimes, to be educationally significant moments that are a meaningful part of the school-day (Rinaldi 2021). While Reggio Emilia is best known for its educational experience with children aged 0–6, a lifelong learning perspective characterizes the work of Pause Atelier dei Sapori, a lab located at the International Center and part of Fondazione Reggio Children, which carries out informal research in formal and non-

formal contexts related to food and taste education, offering food ateliers to a broad range of people (older children, adults) and groups (school groups, visiting study groups, families). The food ateliers described in this study were designed and conducted by the Pause team, which is comprised of several different roles: a pedagogista, cook-atelieristas, and atelieristas. The pedagogista is specialized in educational and learning processes and is involved in the professional development of school staff. The atelierista often has an arts background and, with other colleagues, develops and documents ateliers and projects. The author is an atelierista who has worked with the Pause team for several years. The cook who participated in designing and conducting the ateliers described herein is also considered an atelierista and is referred to as a cook-atelierista. Placing focus on the multisensory dimension of food ateliers, thus going beyond eating/tasting food or honing practical skills, represents an effort to highlight the significance and effect that food can have in educational activities (also see Table 1).

Research questions

For the students and teachers involved in this study, the concept of the atelier, and specifically a food atelier, might have been unfamiliar. The food ateliers were contexts for gaining insight into the participants' expectations, followed by reflections based on their subsequent experiences. This article contributes empirical research on food and taste education (Leer and Wistoft 2018) and offers an example of what sensuous taste education can look like. The study aims to answer the following research questions:

RQ: What are students' and teachers' ideas about what a food atelier could be (before and after participating in them)?

RQ: How might sense-based inquiries of food impact the thinking of participants in non-formal food education activities?

Research design and methods

This case study focuses on a series of food ateliers held with three classes involving 73 students aged 10–13, led by a cook-atelierista. The presence of the cook-atelierista added significance to the ateliers thanks to his professional role, not limited to merely preparing food. The participation of the cook-atelierista in the design, implementation, and reflection phases of the food ateliers recognizes his specific expertise as an important contribution to the atelier itself and his active presence, knowledge, and experience inform the whole experience and innovate the educational approach. He had a different contribution to make with respect to someone with a pedagogical background. This dialogue between people with different backgrounds and knowledge is central in Reggio Emilia educational philosophy.

Three classes participated in five 2-hour food ateliers every morning for a week, part of a municipal project where several primary and secondary school classes participated in week-long atelier pathways at the International Center. Distribution of classes to the various ateliers was done by the organizers of the

Table 2. Interview questions.

	Interviews with students	Interviews with teachers
Pre- atelier questions	What is an atelier? Can a kitchen be an atelier? What do you think a food atelier is? What explorations do you think can be done in a food atelier? What foods do you think can be used? What do you expect to learn about in these ateliers?	Did you do anything to prepare for this week of ateliers? What will this food atelier experience bring for your class?
Post- atelier questions	After experiencing food ateliers every morning for a week, do you have suggestions about how a food atelier can be? What did you learn? What new questions do you have after these experiences with respect to food? What name would you give to these ateliers?	What new questions do you have after these experiences with respect to food? What did this experience bring for your class? What do you as a teacher take with you from these ateliers?

municipal project, thus the participants did not explicitly choose to attend the food atelier over other ateliers. For each class, the author separately interviewed both a small group of three students and one teacher twice: before the ateliers started on the first day and again on the last day after they ended (Table 2). The teachers were not present during the interviews with the students, and vice-versa. Each semi-structured interview session lasted 20 min in total and was recorded, transcribed verbatim (resulting in about 13 pages of text) and translated by the author. There were no follow-up questions.

For the majority of the participants, the atelier was a new setting, although no specific data was gathered regarding their prior experiences with ateliers. On the first morning, each class toured the International Center where they saw several permanent ateliers (see Reggio Children - Ateliers, n.d.) and the pre-atelier interviews about their expectations took place subsequently to this, before the first food atelier session. Thus, all of the students involved had briefly seen several types of ateliers and the pre-interview questions gathered their impressions and ideas both about ateliers in general as learning environments as well as their prefigurations of what a *food* atelier could be.

The interviews were recorded, transcribed, and then translated into English by the author. Some words were ambiguous or did not easily translate, and care was taken to express the meaning in translation. For example, the word "*elaborato*" hints at development or modification, rendered as "transformed/processed." The words "*ricavare*" and "*ottenere*" (obtain/get) were translated as "make," since the idea of creating something was underlying. The Italian students also talked about *laboratori* (science labs or workshops), comparing them to ateliers, as settings with different connotations and purposes.

The data was analyzed using inductive reflective thematic analysis (Braun and Clarke 2006), a flexible and open-ended methodology used to identify themes in qualitative research, based on the active, decision-making role of the researcher in generating and selecting these themes. It "can be a method that works both to reflect reality and to unpick or unravel the surface of 'reality'" (Braun and Clarke 2006, 81). The analysis was carried out by looking for keywords in the words of the participants (Figures 2 and 3) which were then used to generate underlying themes to reveal the deeper, hidden patterns in the material (Figures 4 and 5). Among the keywords identified in Figures 2 and 3, only those most frequently

mentioned (Figures 4 and 5) are discussed, supported by selected excerpts from the interviews.

Interview questions

Separate interview questions (Table 1) were developed for the students and the teachers. The questions were aimed at gathering information about the participants' prefigurations before the first food atelier began and their reflections on their experiences after participating in all of the food ateliers on the last day, to study how the food atelier experiences might have impacted their thinking. The questions posed to the teachers were primarily centered on their view of and ideas about their class groups, while the questions posed to the students were focused on their individual thoughts and ideas, reflecting the difference in their roles.

Ethical issues and generalizability

The families of the children who participated in the study and the adults who took part were asked for their consent, since participation was voluntary, in line with the ethical parameters for qualitative research (Santiago-Delefosse et al. 2016). All participants (or parents in the case of minors) received a statement of informed consent and they signed release forms approved by the Fondazione Reggio Children ethics committee. All quotes are anonymous, only indicating whether the speaker was a student or a teacher, to protect the privacy of the individual participants. Due to the small number of interviews – with nine students and three teachers in total – the data does not provide broadly generalizable insights, but the themes addressed can offer insight into the expectations and experiences of the students and teachers who participated in the experiences and also bear witness to the evolution of their thinking.

Results and discussion

The ateliers were a context for gaining insight into the participants' expectations of what a food atelier could be, followed by reflections based on lived experiences. The teachers and students often brought up the same themes, so these were not separated in the analysis. Those themes that only the students or only the teachers mentioned, however, are specified as such. The findings show that there was a shift in the students' and the teachers' thinking: from focusing on actions toward greater self-reflection and self-awareness, revealing some intrinsic forces that may have influenced and given shape to the atelier experiences and their possible aftermath. The keywords drawn from the statements given during the pre-atelier and post-atelier interviews are shown in Figures 2 and 3 respectively.

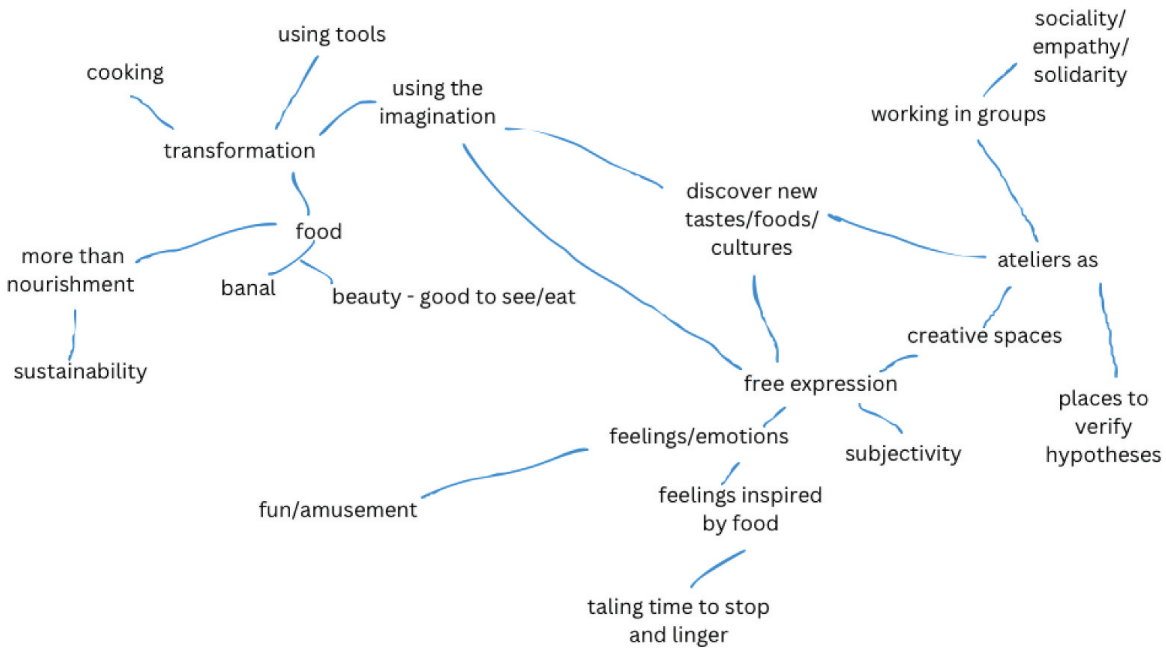


Figure 2. Map of keywords drawn from the pre-atelier interviews.

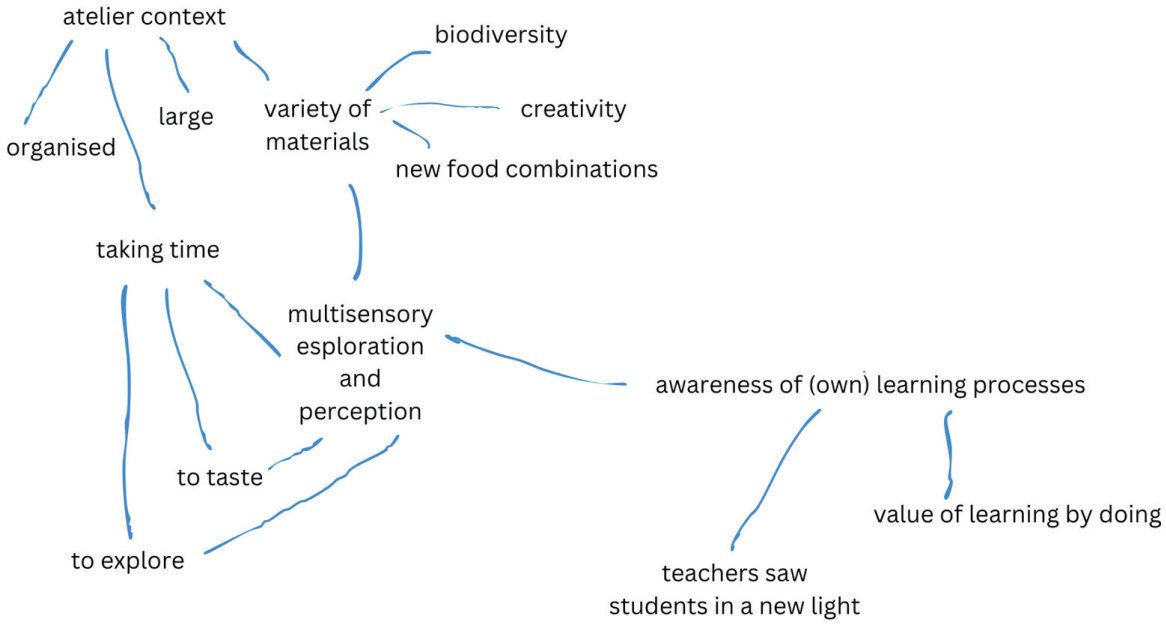


Figure 3. Map of keywords drawn from the post-atelier interviews.

Pre-atelier interviews

Transformation was mentioned most often (Table 3) – whether this concept was related to an atelier setting in general or a food atelier in particular:

Above, transformation is linked to complexity, as something simple is turned into something more elaborate, as well as the freedom to do and create according to one's thoughts or desires.

Another main theme is creativity (Table 4):

Table 3. Participants' comments about transformation.

- *I think that an atelier is a place, a space where we can find raw materials, which have not been processed/ transformed yet… with our imagination, we can make amazing and more artistic things_ Student*
- *Maybe in the kitchen you can do the same things you do in the atelier. In the kitchen you have materials that haven't been transformed yet, which you can then transform as you wish, and it's the same in the atelier_ Student*
- *In a food atelier we can start from a simple thing – a vegetable, a carrot, a tomato – and experience the various ways it can be transformed into more elaborate food_ Student*
- *Vegetables, foods that are not already prepared and transformed, for example… you see a tomato, you pick it, and the tomato is a tomato, and then you can do many things with it, you can transform it as you like, even salad, the leaves aren't already transformed_ Student*
- *…Food not only nourishes you, feeds you and gives you sustenance to live, but food is thought of in other terms, therefore the transformations of food_ Teacher*

Table 4. Students' comments about creativity.

- *(An atelier) is a place where you go to express your creativity, building what you have in mind, designing something_ Student*
- *In the kitchen, you can create foods according to your creativity, trying new tastes and new things_ Student*
- *In a food atelier you can discover new characteristics of fruits or vegetables, you can find new dishes to taste or new creations that haven't been made yet_ Student*
- *You can use all foods because there isn't a criterion to follow, like you have to do this or you have to eat that, you can invent and create what you want based on what you want. For example, if a person likes spicy food, they'll go eat spicy things, if they don't like it, they won't eat spicy things _ Student*

The students suggest that creativity not only regards building or designing something new – whether it is an object or a new combination of flavors – but can also be useful for some invention *ex-novo*, in a free way. The teachers did not comment on this.

Part of the creative process in food ateliers mentioned by the students seems to involve trying and tasting new foods linked to expressing feelings, likes, dislikes, etc. (Table 5):

This idea of free expression of tastes, actions, and feelings was commented on in a more somber way by one of the teachers, as something lacking in daily life:

> I think this experience can serve to open the horizons of children with respect to food … and also the feelings that food gives you, that probably in daily life we can't always linger over and pay attention to and stop for a moment to smell the smells, trying to hear the noises that food makes. We can't in everyday life and especially in our school. The food arrives ready-made, already cooked, and on a plate_ Teacher

Table 5. Students' comments about expressing feelings, likes, and dislikes.

- *A food atelier is a place where it's very subjective because each person has his or her tastes for food that he may like and dislike, and also as combinations, for example there are people who like meat with ketchup and other people who don't_ Student*
- *An atelier is a space where you can feel free, where you can express yourself, to do whatever you want with the objects or materials you find there_ Student*
- *I associate the atelier with "I can express what I want without necessarily having to do any one (specific) thing"_ Student*
- *In the kitchen you express your feelings through food_ Student*
- *In my opinion, you can also discover yourself a little more, because opinions can be expressed through cooking, for example a person who makes a much more colorful dish is has a sunnier disposition, a person who looks on the positive side – if instead I make a sad dish, black rice with squid ink, with a side of spinach and broccoli, it's not very happy, so emotions can be expressed a lot. _ Student*

It seems that the students are living the experience in the moment, while the teacher is reflecting on what is not part of everyday school life. Except for this teacher's reflection, there was no other explicit mention of the senses regarding food in the pre-atelier interviews. The teacher's comment recalls Leer and Wistoft's (2018, 329) finding that senses in food education, or the role of the senses in daily life and the school lunch, are not part of the daily routine and thus taste "is not recognized as an important sense, a source of pleasure, or a central way of sensually understanding and approaching the world." The teacher underlines the "impossibility" of sensuous awareness, even during lunchtime at school, due to the lack of time and opportunity, and also to the setting (the food arrives already portioned on the plates).

Table 6. Students' comments about foods they expected to find in a food atelier.

- *In an atelier you can find things that are also very beautiful to look at, but also things that perhaps seem banal/ insignificant, which maybe by putting together with paper, then maybe you put them in front of the lamp and the shadow is something beautiful_ Student*
- *In a food atelier they'll let us start from something that may seem a bit trivial, for example an apple, but then with a little fun we can make it more beautiful_ Student*
- *In a food atelier, they'll make us observe insignificant things like a lettuce leaf or carrots, and make us think about what we can do with it, not only cooking but also inventing shapes, something fun, geometric shapes, always with tools_ Student*
- *In a food atelier we can start from a simple thing - a vegetable, a carrot, a tomato - and experience the various ways it can be transformed into more elaborate food_ Student*

The types of foods the students expected to find were often qualified as "trivial," "insignificant," and "simple" (Table 6):

The students also mention that perhaps they will be able to do something "fun" with these basic foodstuffs. Thus, "trivial," "insignificant," and "simple" foods are materials to have fun/create/transform with, implying that while they know these are not trivial and harbor complexity, these things are often positioned as trivial. Other students mentioned that they expected the atelier to be more informal, a place where they could enjoy themselves (Table 7):

Table 7. Students' comments about having fun.

- *An atelier is a slightly more relaxed place than the (science) lab, you do things that are a little more fun but also less conventional_ Student*
- *A food atelier is subjective place that is more fun than other workshops (laboratori) because many people like to cook and it's a very different activity from what is usually done_ Student*

The students here refer to a science lab or a workshop, settings for structured activities, compared to the open-ended atelier setting, where the goal is not predetermined beforehand. Abrahams (2009) discusses both the potential and the limited impact of affective (regarding emotions and feelings) practical work in school settings with regard to generating or maintaining genuine, long-term interest in topics studied at school, specifically in science education in the UK. Although these food atelier pathways do not focus on specific disciplines, they strive to valorize knowledge from different domains and offer people meaningful and thought-provoking experiences that might

challenge or awaken their awareness of what Fooladi and Barth (2022, 3) report that Bateson called "the small things, namely our relationship to everyday sensory experiences, and how these can be given room in our attention." It seems that the focus on fostering and valorizing awareness of one's own personal experiences makes the atelier setting noticeably different – "more relaxed," "subjective" for the students. Thus, the participants' experiences are the starting point for their reflections about food and taste, rather than following predefined learning goals, and often their reflections display knowledge from many different disciplinary domains.

It therefore seems that students' and teachers' expectations before the ateliers were that food ateliers would involve concrete actions, like transforming, creating, and having fun.

Post-atelier interviews

Some ideas, like creativity and having fun, were briefly mentioned again in the post-atelier interviews (Table 8):

Table 8. Participants' comments about creativity and having fun, post atelier.

- *Every day we used creativity to work with food, new experiences, new discoveries. The atelier was a bit like I expected and a bit like I didn't expect. I expected to work with food but I didn't expect to do such creative things_ Student*
- *Learning in this way has an exceptional educational value because they have fun, these traces remain more impressed than reading the same characteristics of vegetables in a book_ Teacher*

Table 9. Participants' comments about time.

- *We learned what time means, it's a word we say often but we didn't know what it meant. We gave ourselves time to think, smell, use our senses . . . like putting our hand inside a box and we had to give ourselves time to understand, using touch, which fruit or vegetable was inside, or sniffing the diffusers and understanding what was inside_ Student*
- *Everything we did was connected to time. We experienced new things, we tasted new things. As a child I was sometimes afraid to taste, I was afraid I wouldn't like it so I didn't taste, but I learned to taste and I understood that by tasting I can do new things or invent other things_ Student*
- *They've gotten a lot from this experience in thinking of food in a different way from how they have always considered it . . . There's really a different conception of food, that of slowness, of time, a theme that children faced these days, which escapes us in our daily lives_ Teacher*

Time came up most frequently (Table 9), as compared to everyday school which is known to be pressed for time (see teacher's comment after Table 4). Taking time to explore using the senses, to savor a flavor, to observe, to think, to share thoughts and ideas, also to connect the present and the past, through memories, allowed each person to take their own time to investigate and process their experience emotionally and intellectually.

Their experience of dilated, slower time that allowed them to linger, savor, reflect, reminisce, and make connections, which Carlsen and Clark (2022) suggest may indicate a state of deep or full engagement that characterizes Csikszentmihalyi's construct of flow (Csikszentmihalyi 2000) and can create the conditions for multisensory engagement. There was also mention of sensory and sensuous experiences in their explorations of food. A few students elaborated on this regarding each of the five senses (Table 10):

Table 10. Students' comments about multisensory exploration of food.

- *I learned that working with food takes time to use all of our senses except hearing because hearing isn't used in cooking. For example, with touch we saw that, in the boxes where we couldn't see into, we had to recognize and give ourselves time to recognize only by touching. With the sense of smell, you always have to give yourself time to find out what the scent is, the spices. For taste you have to give yourself time to savor well to recognize the taste. Then with sight, because you have to take the time to see it, because if you look at it quickly, you can't recognize which fruit or vegetable it is_ Student*
- *The relationship between our 5 senses and vegetables – what it's like inside, what it's like on the outside, what it tastes like, what it smells like, how crunchy is it_ Student*

Table 11. Students' comments about multisensory analysis of food.

- *We experimented with new tastes, new vegetables, new fruits, through the 5 senses and even if you don't know vegetables, you have to formulate hypotheses, and check if they are correct, like Chef Alessandro did with us, and then draw conclusions. For example, whether the carrot is a root or not_ Student*
- *We didn't know many vegetables until a few days ago, we believed that there was only one type of carrot, but now we know that there are also yellow carrots, purple carrots, many types of carrots. You have to make hypotheses and then go and verify them, for example when there was a strange fruit, we tasted it, then we saw its shape and then we discovered that it was a celeriac_ Student*
- *We did mini-experiments to understand, even with taste, which families vegetables belonged to_ Student*

Table 12. Students' reflections on their learning processes.

- *I learned some things by doing others. . . I learned one thing by touching that fruit and I understood that it had this shape. Always touching with my hands, perhaps I learn by doing_ Student*
- *I learned the difference between cabbages, there was kale and normal cabbage, what are the different families, fruits and vegetables that have something in common, we learned to taste food, because some of us didn't like tasting food, but after this atelier they started to eat it_ Student*
- *I have more desire to learn in this way, it's faster, more practical and educational_ Student*

Other students explained more "scientific methods" for exploring and analyzing the biodiverse foods encountered during the atelier (Table 11):

Both students and teachers reflected on what and how they learned from the week participating in daily food ateliers. In Table 8, a teacher commented that since the students were having fun that she expected they would retain more than just from studying a textbook. The students also talked about their own learning processes (Table 12):

Non-linear thinking, sensuous learning, and pleasure seem to be qualities that the students recognized in these learning processes. While the students, as "insiders," were wrapped up in the learning experience in a holistic way, the teachers, as "outsiders," observed and reflected on the atelier context related to what they learned (Table 13), linked to practical knowledge, perhaps because of their lower level of direct involvement:

Table 13. Teachers' reflections on what they learned.

- *I discovered new foods that we don't usually find in the supermarket, now I'll look for them – strange varieties of cauliflower or carrots, which perhaps I had never contemplated_ Teacher*
- *I learned, like my students, that I can put peppers in a fruit salad which was a discovery for everyone, and I discovered that you can make special combinations that I've never thought of, perhaps out of habit, due to family traditions, I've always distinguished fruits and vegetables in one way, by keeping them separate. . . instead I realized that they can be combined, you can do some very interesting experiments_ Teacher*

Table 14. Teachers' comments on group work during the ateliers.

- *I really liked having them work in groups, very useful. The few times we were able to do it at school, they liked it and they got on well, they were available to each other for mutual help. This past week I saw the realization of this, that they really helped each other, there was no competition between one group and another, but they were ready to meet and help each other, and from a social relational point of view I find it very positive_ Teacher*
- *It seems very positive that they worked in groups, we also do this in class from time to time, I hope that here they can deepen their knowledge through other experiences that we don't have at school such as ateliers, their skills and also their social relationships_ Teacher*

The teachers did not actively participate in the ateliers and remained observers. They brought up different aspects they had observed during the week, not necessarily related to food ateliers *per se*, but linked other aspects of the setting. For example, they were all enthusiastic about the students working in groups (Table 14):

Group work, commonplace in many countries and educational approaches, is a fundamental characteristic of Reggio Emilia thinking and the educational strategy implemented during the food ateliers. Based on what the teachers reported, group work does not seem to be widely adopted in daily life in mainstream Italian primary and secondary classrooms, although there are undoubtedly exceptions. While the teachers mentioned group work as an important aspect of the atelier experience, none of the students mentioned it.

The teachers reported seeing their classes in a new way, thanks to being in a different context (Table 15):

The teachers mention the value of simply being somewhere else other than school, which leads to wondering what they got from the atelier design specifically, and what can be attributed to being somewhere other than school. Research in learning contexts has shown that any change from the daily routine – whether of place or of activities – has a positive effect (Munger 2005). Participation in the food ateliers differed from other out-of-school experiences because the continuity of the five atelier sessions allowed for some novelty to wear off and created time and space to broaden and deepen the atelier experiences over a period of time. In addition, the physical atelier setting itself also had educational importance, since in Reggio Emilia philosophy the environment is considered a third educator

Table 15. Teachers' observations about their class groups in other contexts.

- *When my students find themselves in an environment outside of school, they show absolutely different aspects of themselves. Some, when outside the classroom are well-behaved, interested and always participated, when they're sitting behind a desk, they're more apathetic and less interested_ Teacher*
- *I was able to see my students in a new context. I've always seen them in class, also because due to covid, it hasn't been possible for us to do many labs, take them on trips, so I've only ever seen them in the classroom. Here, where there was freedom to act, I discovered that some had skills I had never noticed, it was a revelation. For example, a boy who was always very shy, taciturn in class, here he was outgoing, he wanted to participate, raised his hand, it was very useful_ Teacher*

(Edwards, Gandini, and Forman 1998), "a key source of educational provocation and insight" (Strong-Wilson and Ellis 2007, 40). Perhaps, the personal insights that each participant developed over the week had particular personal meaning and significance that would remain and develop over time? This might be inferred from the shift in the participants' words, which were more introspective and less action-oriented. Thus, "trivial," "insignificant," and "simple" foods led to deep discussions.

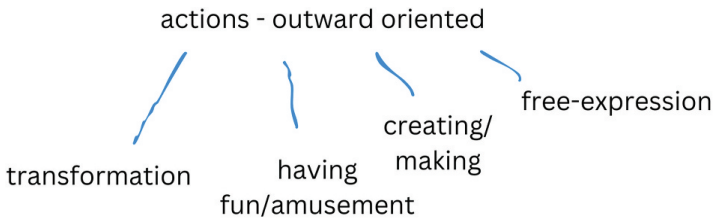


Figure 4. Map of themes generated from the pre-atelier keywords.

Synthesis of themes

Based on the frequencies of the keywords in Figures 2 and 3, themes were generated as shown in Figures 4 and 5, respectively.

The pre-atelier themes in Figure 4 suggest the outward-oriented directionality and concreteness of the underlying themes because they refer explicitly to action/manipulation. This implies that the participants' expectations were linked to *concrete action* on their part. Many excerpts in Tables 3, 4, 5 and 6 describe manipulating tangible objects (foods) with verbs like process, transform, make/do, build, design, create, invent, discover, put together, and express.

Analysis of the post-atelier keywords in Figure 3 resulted in Figure 5:

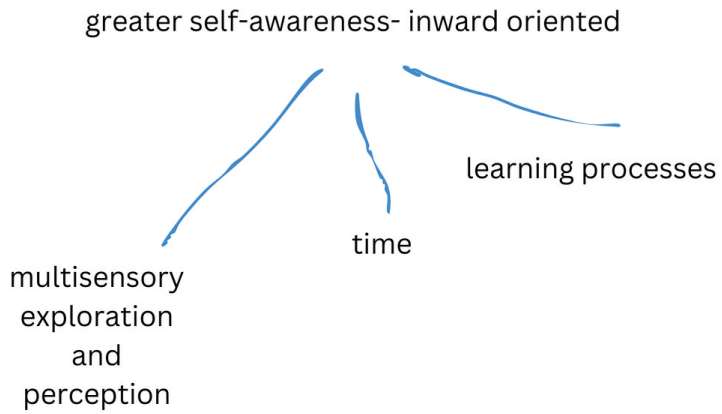


Figure 5. Map of themes generated from the post-atelier keywords.

Compared to Figure 4, the post-atelier themes are more introspective and not linked to action. This underlying, inward-oriented direction underlines the shift in thinking toward contemplation with mention of slowness, time, sensory perception, and self-awareness in Tables 9, 10 and 12.

Thus, the main themes generated from the pre-atelier interviews – transformation, creativity, expressiveness, and fun – and the post-atelier interviews – time/temporality, multisensory perception, and awareness of one's own learning strategies/processes- suggest a significant shift in thinking, from action to contemplation, with food as a medium and a vehicle for self-reflection and group work.

Conclusions and implications

The above approach to food and taste education "can be seen as a driver for learning processes and as supporting individual and collective learning processes" (Leer and Wistoft 2018, 20). The experiences described suggest one way that Leer and Wistoft's "reflective taste pedagogy" (2018) can take shape. Food and taste as educational contexts can also promote the development of critical awareness and reflection (J. H. Christensen 2019; J. Christensen and Wistoft 2016) as well as highlight students' and teachers' thinking and learning processes as they inquire into and make meaning about their worlds (Hedges 2014), actively constructing their knowledge. Leer and Wistoft mention that

> Reflective taste pedagogy … focuses on value clarification and how taste education can develop critical awareness and reflection in specific contexts about food and a variety of other subjects in school, (and) help develop children's mental ownership and social competencies. (Leer and Wistoft, 2016)

Thus, the main aim of taste education, according to the researchers, is to engage students in reflective work thanks to which each person becomes aware of their own sense of taste and consequently how this becomes a tool for understanding and navigating the world (Leer & Wistoft, 2016). The Reggio perspective supports this view, but places greater emphasis on collective learning and knowledge-building processes within the dimensions of self-awareness and self-knowledge.

The food ateliers aimed at creating awareness of sensory perceptions regarding food and taste and making time and space for the participants to share ideas and reflect on something that is part of everyday life (Clark 2023), creating bridges between apparently "trivial issues" and "the large questions" (Bateson 2010), at the heart of inquiry processes as conceptualized within a Reggio Emilia perspective. The participants' experiences are the starting point for their reflections about food and taste, guiding their explorations rather than moving toward predefined learning goals while embracing diverse fields of knowledge – also a guiding principle in other approaches to teaching/learning,[2] such as context-based education, project-based learning, and problem-based learning.

These sensory experiences with food may have influenced eating habits, which Leer and Wistoft (2018) found was often the primary aim of food education. One student commented (Table 12):

> We learned to taste food, because some of us didn't like tasting food, but after this atelier they started to eat it_ Student

While the ateliers offered participants opportunities to experience familiar and unfamiliar foods in a new way, the aim was not explicitly to change or improve eating habits. Participants could manipulate, observe, and reflect on their relationship to different foods, starting from what they knew about them to what they discovered – the curiosity that was triggered might lead to greater openness to foods that might otherwise be rejected.

This study highlights multisensory food ateliers as a food and taste education pathway that starts from the participants' ideas and experiences of what food and taste are, for them, aimed at engaging students and teachers in active knowledge-building processes. These food ateliers offer an example of what sensuous taste education can look like. Our results suggest that sense-based inquiry of food can shift students' and teachers' thinking

toward greater self-reflection and self-awareness on both individual and group levels. Placing attention on the multisensory dimension of knowledge building in food ateliers supports a shift in the aims of food and taste education toward recognizing the importance and impact of experiential aspects of the role of food in education.

Notes

1. I will not discuss the Reggio Emilia approach in-depth as it is beyond the scope of this paper, but there are many publications about it including: (Edwards, Gandini, and Forman 1998; Giudici, Kreschevsky, and Rinaldi 2011; Rinaldi 2021).
2. These other models are not discussed herein but mentioned in order to situate Reggio Emilia educational philosophy among other learner-centered educational approaches.

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