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Honing Emergent Literacy via Food: Edible Reading[1]

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This study explores the honing of children's emerging literacy skills through the use of food that is inspired by children's books. Besides digital and printed books, edible texts have the potential to aid language acquisition and literary appreciation. When edible materials and children's books are synthesised into a new form to facilitate edible readings, the combination may inspire more families to engage in everyday literacy activities with their children. Using historical examples of edible reading that support emergent literacy, this work investigates how children have fed on edible materialities that appeal to their senses on multiple levels. As well as traditional methods, this study looks at innovative methods of food printing and production such as 2D and 3D printing technologies and how these may be integrated into edible texts through prototypes presented by the author.

Keywords: edible, reading, children's books, emergent literacy, multisensory

The number of obstacles between children and their acquaintance with emergent literacy are as varied as the children themselves. For the purposes of this article, two obstacles will be discussed: first, the complexity of literacy acquisition and second, the effect of a disadvantaged home environment on literacy with the following questions. Would it be easier to learn a new word when coupled with an image that also had a taste? Would edible reading enhance children's emergent literacy skills if they were incorporated by parents as a natural extension of family routine? Besides digital or hybrid formats, most children's books are printed on paper, cardboard or fabric, giving them a durability so that they may be read any number of times. Typical children's

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books communicate the narrative in words and images printed on flat surfaces, but these materials often fail to facilitate active engagement. To deepen an embodied comprehension of the alphabet, new words or a story, new literacies increasingly equip children to extract meaning out of multimodal configurations of diverse stimuli, at times using tangible interfaces such as audio and kinaesthetic performances that enhance movement and hand gestures alongside words and images. Out of all the senses, taste is the one least employed during children's exposure to books and the most challenging one to reproduce in paper-based or digital technologies. While experimental books exist and transform literature into an edible form, edible children's books are uncommon, which prevents them from entering children's regular literary diet.

To give a comprehensive picture of a child's literary diet, the full potential of edible reading will be explored here in the introduction. Once current-day benefits of edible reading have been explored, examples of historical precursors will be discussed. This allows us to trace the evolution of literacy education with food taking the form of children's literature. Coming full circle, the article finishes by exploring how today's technology not only supports but facilitates the production of personal edible literature. This section presents prototypes for edible reading using either traditional methods or the new technologies—such as two-dimensional and three-dimensional printing—that are now being incorporated into food industry. Overall, this work seeks to promote edible reading and opt for making it available to a wide range of families to facilitate emergent literacy using food as a common denominator and edible books as an accessible consumption product.

Emergent literacy facilitated via exposure to print at home is critical to easing first-grade reading and a catalyst for lifelong reading habits (Cunningham and Stanovich 1997). The sooner preschoolers are exposed to reading, the better in the long run; Bettina Kümmerling-Meibauer (2011) notes that learning to read is challenging in general as it requires a certain level of abstract thinking. This is because relating the specific sound of a spoken word to the symbol represented by a written word is alien to children in the early stages of life, requiring identification and correlation. Thus, making sense of pictures on two-dimensional pages may not be automatic either. Those arguments aside, children's books generally initiate playful encounters with language to facilitate emergent literacy. These books may have minimal or no text and appear to be simple, yet the potential to develop reading skills starts there. Early concept books, toy books, ABC books and picturebooks foster an introduction to literacy by exposing children to the images and words that represent familiar as well as unknown objects. Thus, these books are adequate for stepping into the realm of literacy when facilitated by dialogic reading where an adult mediator and a child together look at the pages and exchange questions and answers (Kümmerling-Meibauer 2011, Nodelman 2001). The emergent literacy period often starts at home, but home learning environments may differ depending on economic background and the parents' education. Ying Wang (2017) notes that the home learning environment may create pleasurable interactions around reading in the early years, which is crucial in children's development.

Although they are mass produced, paper- and tablet-based children's books may not be accessible to children from families with limited resources, inadequate knowledge on emergent literacy or minimal literacy skills. Thus, the gap between children who are raised in a quality emergent literacy environment and those who are not remains considerable. According to 2013 statistics, "757 million adults (aged 15 and over), of whom two-thirds are women, were unable to read and write." Illiteracy is not simply a third world problem but found to exist even in first world countries (UNESCO 2016, 47). It is UNESCO's strategy to create a sustainable educational system through inclusive educational programs enriched by collaborations between the public and private sectors by 2030 to ensure children and adults have functional literacy skills.

One such educational program is the internationally recognised *Food for Thought*, which aims to support low-income families. This program promotes synthesizing food routines with literacy activities such as making a grocery list out of images or preparing the recipe for the child's favorite dish and explaining the process step-by-step. *Food for Thought,* the study targeting skills integral to family dynamics, such as cooking, improved literacy-related concepts and built on earlier studies that tracked an increase in parent–child dialogue when using food-related toys (Leyva and Skorb 2017: 81). By using something familiar to them, parents felt able to expand on literacy activities and engaged with their children in an enjoyable way during the process. As a result, children's vocabulary grew (Leyva and Skorb 2017), which hints at a promising methodology that edible reading may further enrich. Thus, edible reading can enhance curiosity and a sense of adventure regardless of a child's background since it may introduce novel ways to consume words and narratives with the additional experience of taste alongside elements of scent and descriptive textures.

When exposed exclusively to digital and printed media, children operate with their eyes, ears and hands, limiting their perception to three senses. Margaret Mackey (2016) notes that due to traditional text and book design, hands are ascribed a role that allows them to direct attention. She has even observed that handling household objects that have words printed on them impacts a child's daily exposure to literacy using the same three senses. In addition to these senses, I assert that taste and smell attain and synthesise information acquired before and during reading, eating thereby expanding the territory of literacy by adding a gastronomic aspect and facilitating multisensory engagement. Hence, Mackey (2016: 170) notes, "It is a common fallacy that literacy is very largely visual and cerebral." Thus, multisensory learning may be beneficial if presented effectively, considering that "the human brain has evolved to develop, learn and operate optimally in multisensory environments" (Shams and Seitz 2008: 411).

Karen Coats (2000) notes the disembodied nature of the written language, stating that its immaterial presence may have a distancing effect because it forces a child to mainly use her eyesight, but since children and infants are highly "multisensual" they could benefit from deeply sensorial engagements with written language. This situation reflects the challenge some children face when they switch from contextualised

language at home to decontextualised language in school. In order to contextualise decontextualised language for children, parents may relate book content to real-life situations or ask the child to identify letters in a storybook (Morgan and Goldstein 2004), or in a box of biscuits. Coats (2000) mentions that schools introduce letters to children by forming them from materials such as play dough. She tracks the increasing frequency of the representation of letters in alphabet books via material objects, highlighting notions of play which blur the line between language and real life. Coats believes that (2000: 96):

> Instead of moving the child from the concrete to abstract, from the body to the eye, they force language to bear the body as the condition of its coherence. Our children, more than any other children in human history, are surrounded by images that engage their senses, encourage synthesis, and invite participation […].

All of this, continues Coats, compels them to review their literacy tools as well. With edible reading, it is possible to introduce and demystify decontextualised language such as written symbols in the comfort of a child's home, making it a part of his contextualised language that has an added association with a tasty treat.

Taste is a sense that chemically fuses an experience into the body and provides intrinsic knowledge and memory as it imbues words with additional sensory and bodily meanings. By combining taste (sweet, sour, salty) and texture (creamy, crunchy) with words while reading can give concepts deeper meaning and resonate strongly in a child's mind. Mihaly Csikszentmihalyi (1991: 113) notes: "Eating, like sex, is one of the basic pleasures built into our nervous system" with the potential to facilitate subconscious absorption during a child's interaction with the book. Jay A. Seitz's study reveals that (2000: 23):

> […] the motor system, including related structures, is a self-organizing dynamical system contextualized among musculoskeletal, environmental (e.g. gravity), and social forces. We do not simply inhabit our bodies; we literally use them to think with.

The fact that the muscles and senses of our bodies think and learn substantiates the argument that the addition of edible texts to children's daily routines encourages reading practices.

Precursors of edible reading

Writing and printing in different eras have been closely related to the available technology of the period. Before the invention of paper as we know it, people applied text to myriad surfaces including rock, tortoise shell, birch bark and papyrus. Since it was a challenge to record text on these surfaces, people sought to preserve them, rendering the written text on a surface a valuable artefact. Much like these texts, the durable qualities of children's books facilitate multiple readings, with a result that the potential benefits of impermanent materials in manufacturing children's books are largely overlooked. Children's book author Margaret Wise Brown contemplated an edible book made of fruit leather to be read and consumed by children during flights to

ease the stress that they may feel on the plane (Marcus 2011). Her idea has remained an unfulfilled aspiration because the durability of the printed book and its value in facilitating children's acquisition of emergent literacy has held top spot as the most used means of learning to this day. Despite the stranglehold books have on emergent literacy, new strategies to give children an enjoyable experience while sharpening their literacy skills keep emerging, much as they have through history. Associating images with words in *A Method or Comfortable Beginning for All Unlearned* by John Hart (1570) was an attempt to make learning the alphabet easier. Litaudon states that "teaching through images" was first realised in 1658, when *Orbis Sensualium Pictus* by Jan A. Komenský (Commenius) was published (2018: 170). At that time, tastes could not be combined with text and images mainly due to the limitations of food and printing technology with the exception of gingerbread hornbooks.

The alphabet on the hornbook, a paddle usually made of wood, honed children's literacy skills and had a handle so it could be carried around by children as a playful educational object and as an extension of their daily routines. Bakers in England were known to make more transient edible versions called "book gingerbreads", making for a fun and a sensorial lesson while enjoying a treat. The spiced gingerbread in the shape of a hornbook was offered to children, inspiring them to read (Tuer 1896: 260):

> We know that gingerbread with raised devices was sold on stalls in the open market in the fourteenth century, and for anything that can be proved to the contrary, slabs of it, impregnated with spice and impressed with letters of the alphabet, were eaten by little people before ever the horn-book disturbed their peace of mind.

The manufacturing of gingerbread brings UNESCO's mission to encourage collaboration between sectors to mind. Synthesizing common staple-like bread with the letters of the alphabet provided a practical way to learn the symbols of the alphabet and facilitated a playful exchange between parents and children at the same time. While it is not easy to research data in relation to what the impact of these pieces of gingerbread had on children, it has been recorded that children's book publisher John Newbery was a child who consumed them daily. Cornelia Meigs explains how Newberry immersed himself in books from a young age, alluding to the potential impact daily consumption of edible gingerbread may have had on him "who acquired learning by a peculiar process, for, his father being a baker, he ate gingercake every day with the alphabet stamped upon it" (1953: 67).

Besides gingerbread hornbooks, Erasmus of Rotterdam (1466 – 1536) also suggested baking letter cookies to aid literacy acquisition (Crain 2000). Letter biscuits depicted in the 17th century still life paintings from the Netherlands indicated literacy was becoming more widespread. These biscuits were either handmade or baked in molds, which at those times made them a luxury. Gillian Riley studied the symbolism of these pastries and the fact that a letter biscuit shaped as a letter such as P was frequently painted alongside other objects. What these letter biscuits in paintings stood for is unknown, but they may have been signifiers of words, offered for consumption, but signaling symbolic meanings. Riley notes that the paintings *Still life with dainties,*

rosemary, wine, jewels and a burning candle (1607) by Clara Peeters and *Grocer's Shop in an Alcove* (1732) by Willem van Mieris suggest an eternal and transient aspect of knowledge using letter biscuits, and continues (Riley 2001: 56):

> Eating words is a strange thing to do. Could it have been a way of ingesting the knowledge and power associated with literacy? Of getting learning by mouth? The taking of sacramental wafers and wine was a familiar act. Small babies have always learned about the World by putting everything within reach into their greedy little mouths.

In the Netherlands, Sinterklaas[2] would present the children letter cookies like the ones depicted in the paintings. Eventually, the letter cookies became chocolate letters, and to this day children receive their initials in chocolate as an element of different celebrations and long-standing tradition. The packaging of the chocolate letters at times portrays the well-known children's book characters Jip and Janneke with Sinterklaas (St. Nicholas Center 2002–2019), which in effect ties the beloved storybook characters, the chocolate and the coming of Sinterklaas all together to combine a cherished tale, taste and tradition while enhancing literacy.

The use of physical letters may also be found in books such as *Little Goody Two Shoes*, first published in 1765 by John Newbery, in print until the mid-19th century (Hahn 2015). Goody Two Shoes or Margery teaches children how to spell using a set of letters that she carved from wood, often spelling out foodstuffs such as plum pudding. In one instance, she asked her students to spell out what they each ate for dinner: bread, apple pie, potatoes, beef and turnip (Goldsmith 1900: 18). In some versions of this book (Anonymous 1881–1882, Anonymous 1888), this scene illustrates children collaborating to spell out their favourite treat "Apple Pie" using wooden letters. Hence, multisensory teaching of the alphabet with numerous exercises such as presenting a foam letter in relief to five-year-olds with low skills is found to be effective due to "multiple codings in memory" in fostering the acquisition of knowledge (Labat, Ecalle, Baldy and Magnan 2014: 112).

In a study that tracks books in the Victorian Era by Tomoko Masaki (2006), points out that the ABC rhyme and the book *The History of A Apple Pie* was repeatedly illustrated and adapted into children's books by different publishers. The book, *A Apple Pie* illustrated by Gordon Browne and engraved by Edmund Evans in 1890 was cut into the shape of an apple pie. The title of the book was worked into the crust of the pie as if a real apple pie itself had turned into a book. In this case, the book and the apple pie are one, blurring the child's concept of the real object and the fictive book (Masaki 2006). In the rhyme, pat-a-cake, the integration of letters into cake was desired as well: "Pat-a-cake, pat-a-cake, baker's man, / Bake me a cake as fast as you can; / Pat it and prick it, and mark it with B, / Put it in the oven for baby and me." (as quoted in Opie 1997: 404) Among all the words starting with the letter *A*, the repetitive use of apple pie indicates a universal appreciation for its deliciousness. *A for Apple Pie* (Greenaway 1886) is a classic motivator for children who are ready to learn abstract symbols and letter sounds

[2] Sinterklaas is a renowned figure in Netherlands based on Saint Nicholas.

(Fig. 1). Based on this 17th century rhyme this book presents the apple pie as the object of desire since all actions happen around it, cutting, peeking, fighting over it, mourning it, until at the end of the story letters UVWXYZ share and consume it. The illustration of the pie is thus larger in relation to depicted children and this unusual size also makes it look more grandiose, physically and mentally. Patricia Crain states that the ultimate goal is to eat the pie as letters come to life (2000: 65):

> […] narrative makes manifest or brings into existence other elements of the alphabetical environment, among them hunger and strife, comedy and satire. Narrative thus permits the alphabet to express as well as to contain and regulate passions.

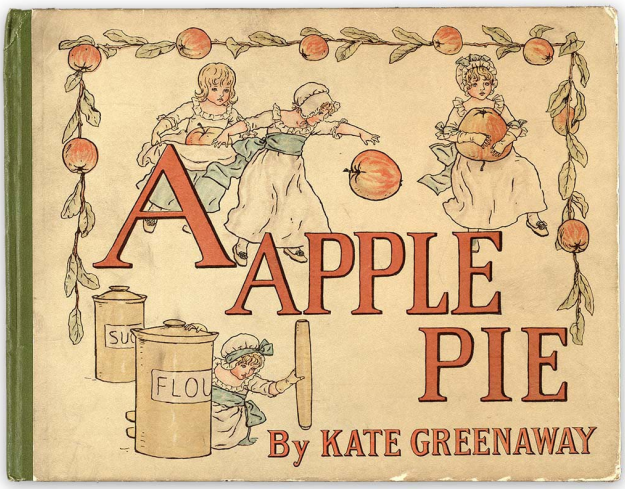

Fig. 1. *A Apple Pie*, front cover
Sl. 1. *A Apple Pie*, prednja strana korica

Crain considers *A Apple Pie* as "one model of the swallow alphabets" (2000: 85) facilitating internalization of letters via depictions of their consumption by children or animals as repeatedly seen in alphabet books before the 1800s. Referring to Mikhail Bakhtin, Crain explains that the enchantment of tasting these letters is almost as if tasting the world and making it a part of the body. Kümmerling-Meibauer states that baby books in the shape of cookies already invite biting and chewing (2015: 252):

> […] these newly launched books are characterized by an overarching book concept that connects synesthesia (books can be touched, looked at, heard, smelled, and tasted) and joyful play.

Unfortunately, the child cannot experience taste, image and text relationships and its correlations in most children's books. As exploring objects by mouth is intrinsic for infants, this study values the evanescent nature of edible letters facilitating this act. Infants can seize the moment while exploring letters and words if books are edible ephemeral objects rather than archival objects. Lian Beveridge (2017: 19) considers

chewing to be "literary appreciation", a typical act for infants when exposed to books. She proposes that book design would benefit if it could cater to this act rather than warning infants not to bite books.

Projections towards edible readings

Edible reading emerges through the field of children's literature and is supported by food media in the form of edible substrates, inks, traditional production processes as well as two-dimensional (2D) and three-dimensional (3D) printing technologies. Although astronauts and soldiers are currently the target recipients for 3D food printing, new products are emerging that focus on children (Liu, Zhang, Bhandari and Wang 2017). A recent study reveals that a custom-made 3D snack for children could support the nutritional intake for vitamin D, iron and calcium in 3- to 10-year-old children (Derossi, Caporizzi, Azzollini and Severini 2018). Besides sustaining life, food is also an extension of communication and socialization, having the capacity to impact the individual and fuel the imagination (Keeling and Pollard 2009). Food consumption is the revolving door to a child's life that allows constant new ideas to enter, making it ideal to promote literacy. Kex Biscuits, Bahlsen ABC, Haribo Spelly Jellies, Nestle Nesquik cereal and Pastavilla Junior alphabet pasta are among the food products that offer the alphabet. Unfortunately, these foods retain the sterile and abstract quality that Coats has mentioned. Bahlsen Zoo biscuits introduce different animals but without printing the names of the animals on these shapes. Although it is a good start, these companies could further develop their products to serve children's engagement with literacy and literature. Edible reading, partly food and nutrition, partly art and literature, can be advanced with the aid of print technology. By using 2D and 3D printing applications, conventional methods of food production and decoration are transformed through inkjet printing, laser marking and powder printing as well as hot-melt extrusion to name a few contemporary production methods (Pallotino, Hakola, Costa, Antonucci, Figorilli, Seisto and Menesatti 2016). There are many creative ways to print 2D products, including edible papers such as rice paper or sugar sheets and edible ink that can be manipulated digitally and utilised at home or school for personalised productions. Other than printing one-of-a-kind or multiple editions, edible and printable substrates can also be laser cut, making extras available to remove and eat before reading the book. Phyllo dough, flat bread and similar edible forms may also be viable options amid myriad surfaces suitable for 2D printing. The emergence of custom software such as *Edible Artist* is making food design easier and more accessible. Considering what 3D printing achieves through the layering of substrate, its potential is expanding each day, especially now that 3D food printers can be used at home (e.g. Foodini, Chef Jet, Candy, Bocusini). Fresh ingredients deposited into 3D printers' cartridges can create personalised novel edibles and could even produce a digitally designed and personalised set of edible texts akin to children's books. To have this capability at home harks back to the significance of the home environment to facilitate children's emergent literacy skills supported by their families.

In this section, the prototypes for three edible text sets, as conceptualised by the author, are presented and their potential production process is outlined. These are: *First Words Biscuits*, *Haiku Jam* and *What is it like?* The author has not physically produced the prototypes but aims to exemplify the concept presented in this paper by tapping into territory where food media and emergent literacy may cross-pollinate. Hence, these examples use existing knowledge to envision how edible materials may appear as children's reading in the future.

Fig. 2. *First Words Biscuits* (2017), concept and ideation © Ilgım Veryeri Alaca
Sl. 2. *First Words Biscuits* (2017), koncept i ideja © Ilgım Veryeri Alaca

First Words Biscuits (see Fig. 2) is a package of nine biscuits each stamped with a picture and the word for the picture. The child and the caregiver first divide the biscuits into three groups; in this example animals, the food they eat and where the food comes from are presented. The second task is to match the animal with the food it eats to build three pairs (bird/cherry/tree, seal/fish/sea, sheep/grass/meadow), which would encourage dialogue and questions between the child and the caregiver such as: "What would a bird eat?", "Who would like to eat grass?", and "Where would a bird find a cherry?" introducing verbs such as "like", "eat" and "find". These verbs in this context would bind the nouns introducing a narrative around eating preferences. A matching memory game could also be played by turning biscuits upside down so that the one who finds the most pairs would win and perhaps would collect more biscuits to eat. Thus, questions and answers around the child's thoughts on eating biscuits and reading at the same time would extend the interaction. The words and images of *First Words Biscuits* are akin to early-concept books, which have the capacity to contribute to "language acquisition" by enriching a child's vocabulary, grammar, "visual literacy and literary competence" by introducing objects, actions and simple relations between characters accompanied by simple text (Kümmerling-Meibauer and Meibauer 2011: 107).

These biscuits can be easily mass produced by companies that already manufacture biscuits and can offer different sets of words and package designs, exposing the child to a wider range of words in each set such as opposites, animals, vehicles, colors, numbers and shapes. They could also turn the biscuit into two puzzle pieces, with half the image on one biscuit that the child would need to complete with the other half of the image on another biscuit. *First Words Biscuits* could also be a set of objects, characters and actions that would require the child to organise the jumbled parts to form a sequential story line and make connections freely with the given content, encouraging play and storytelling. Considering that this work can be manufactured using conventional biscuit production, even everyday food products can aid emergent literacy if designed with that idea in mind.

Fig. 3. *Haiku Jam* (2017), concept and ideation © Ilgım Veryeri Alaca
Sl. 3. *Haiku Jam* (2017), koncept i ideja © Ilgım Veryeri Alaca

Food printing technologies can facilitate edible reading in numerous ways, such as printing a text or an image on the surface of existing food. If, for instance, a text and an image are applied onto a slice of bread, it may facilitate a dialogic reading experience during breakfast while fusing a contextualised product with decontextualised language. This recalls the "Poem on Bread" written by Vernon Scannell and presented by Anne Harvey (2014: 22): "This poet does not choose to write on paper. He takes a single slice of well-baked bread." In the prototype in Fig. 3, the intention is that 10 slices of a 20-slice loaf of bread will have a laser printed text, ten haikus of Basho in this case, leaving the other ten slices blank for edible inks based on nutritional choices or 3D printing, specifically hot-melt extrusion of jam, chocolate spread or cheese. Once images that match the poems are digitally downloaded, they can be applied to the surface. The family members choose a page to read and eat according to their preference. This

custom-made reading experience is specifically geared towards enriching mealtime routines in the family and for furthering interaction with the child via a correlation task among taste, text and image.

Fig. 4. *What is it like?* (2017), 1 – windy, 2 – happy, 3 – sad, 4 – calm, 5 – bored, 6 – angry, 7 – excited, 8 – thoughtful. Concept and ideation © Ilgım Veryeri Alaca
Sl. 4. *What is it like?* [Kakvo je to?] (2017), 1 – vjetrovito, 2 – sretno, 3 – žalosno, 4 – smireno, 5 – dosadno, 6 – ljutito, 7 – uzbuđeno, 8 – zamišljeno. Koncept i ideja © Ilgım Veryeri Alaca

What is it like? presented in Fig. 4 makes use of 3D printing food technology to create eight chocolates that come in different shapes and tastes to correlate with the adjectives (windy, happy, sad, calm, bored, angry, excited, thoughtful) in a poetic way. Using these 3D printed single-word chocolates, children are introduced to metaphors via abstract shapes and flavors. Since verbal and pictorial metaphors already exist in picturebooks (Rau 2011), *What is it like?* has the capacity to expand these via gustatory and spatial metaphors due to different shapes of chocolate representing the text. While a metaphor can be a challenging concept to grasp, edible texts can facilitate new approaches to introduce it to a young audience. It is considered that "preverbal mechanisms" already facilitate linguistic metaphors relating warmth to trust, sweet food to pleasure as an extension of our innate ability to make cross-modal associations through our senses. Concrete sensorimotor experiences affect abstract thought which aids the understanding of embodied metaphors (Gilead, Gal, Polak and Cholow 2015). This may be a starter for children to grasp more complex metaphors such as the ones

shaped by "linguistic and cultural practices" (Gilead, Gal, Polak and Cholow 2015: 167–168). For instance, the word "windy" written on mint chocolate and supported by a shape that could remind one of blowing wind can merge the taste of mint with breathing and attaining a subjective resonance of wind, uniting numerous things at once. Mint chocolate may have adjectives that define its taste explicitly—light, fresh, icy—or implicitly, new, blue, wings, windy. The metaphoric correlations between the rest of the selected words and tastes are as follows: happy with orange, sad with bitter chocolate, calm with white chocolate, bored with hazelnut, angry with chili pepper, excited with crunchy textures, and thoughtful with a cherry cream filling. While the child may not agree with some of these correlations, the subjective preferences may be debated during dialogic reading and consumption of these edibles. With so many options, a child can correlate tastes with words or images, exploring explicit or implicit associations according to the given narrative.

What is it like? is reminiscent of the 3D printed chocolates by Nendo that focus mainly on depicting diverse textures in the form of chocolate. When consumed, different shapes of these small abstract cubes trigger gustatory, textured, and spatial correlations with the represented word. Nendo names these chocolates after Japanese words for textures such as "tubu-tubu: chunks of smaller chocolate drops" and "sube-sube: smooth edges and corners", each word group descriptive of textures and shapes (Sweetapple and Warriner 2017: 17). Furthermore, the sound of these words can also correlate with the shape of the custom-printed chocolates. While these chocolates are not specifically designed for children, they are akin to *What is it like?* in that they introduce the chocolate shapes with a representative word. The triad of text, taste and shape builds a sequence bite by bite, building a continuity that suggests concept books for children.

Conclusion

This work considers the use of edible materials to facilitate the joy of reading by actively engaging the child and the caregiver in the multisensory reading experience. It also aims to turn a commonality like bread into a literary source for children using current technology, making it a natural and accessible extension of a child's as well as the family's daily routine. With the emergence of 2D and 3D printing technologies, edible texts can be tailored to specific situations or customised for specific individuals. Although there is an impermanence to these products – similar to the impermanence of screen media – the combination of stimulated senses gives the experience an intensity that may well sharpen a child's attentiveness to a given word, turning the image, taste and their overall correlations into a long-lasting memory. By increasing bodily engagement with the text through smell, taste and consumption, this work proposes that edible reading etch a memorable experience in the child's mind, facilitating emerging literacy skills with a view to exposing the child to decontextualised language. If the food industry were to take an educational turn to support basic literacy skills by

supplying a rich variety of content, wider exposure could result in increased numbers of literacy materials and ease issues like cost effectiveness, access and sustainability. With the advances in printing technologies, food media promises a prolific platform to support children's introduction to literacy in the near future. Edible reading opens up a multitude of possibilities in relation to triggering novel sensations such as synaesthesia while reading, immersing children in words, images and tastes. These texts support UNESCO's call for collaboration between sectors to support literacy in the early years of every child's life by unifying fields such as literacy, children's books, gastronomy, design and technology, and though yet unexplored would be a tremendous additional aid to vision-impaired children. Although it may be argued that linking food with literary texts and narratives could be separate from the essence of emergent literacy honed by typical children's literature texts, it could conversely inspire children and their families to acquire typical children's books and get acquainted with reading in general. Considering that literacy activities at home would be strategically incorporated into food routines, the discussed prototypes of edible reading would go a long way in furthering this combination of literacy and food. While this paper attempts to map the terrain for edible reading, it is only a prelude to a field that is sure to flourish.

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Brušenje rane pismenosti pomoću hrane: jestivo štivo

Istražuje se način brušenja, tj. uvježbavanja vještine dječje rane pismenosti uz pomoć namirnica inspiriranih dječjim knjigama. Osim digitalnih i tiskanih knjiga, i jestivi tekstovi imaju potencijal pomoći usvajanju jezika i upoznavanju književnosti. Kad se jestivi materijali i dječje knjige sintetiziraju u novi oblik kako bi se olakšalo jestivo čitanje, ta kombinacija može potaknuti veći broj obitelji na zajedničko sudjelovanje sa svojom djecom u svakodnevnim aktivnostima usmjerenima na razvoj pismenosti. U osloncu na povijesne primjere jestivoga čitanja koji podupiru ranu pismenost, istražuje se kako su se djeca hranila jestivim tekstovima koji su poticali njihove osjete na višestrukim razinama. Razmatraju se ne samo tradicionalne metode, nego i inovativne metode tiskanja na hrani i nove tehnologije kao što su dvodimenzionalni i trodimenzionalni tisak te se razmatra kako bi se one mogle uključiti u proizvodnju jestivih tekstova i to uz pomoć prototipa jestivih namirnica koje je osmislila i ovdje prikazala autorica rada.

Ključne riječi: jestiv, čitanje, dječje knjige, rana pismenost, višeosjetilni pristup