



# Nutrición Hospitalaria



## A new educational tool to learn about hydration: taste workshops for children

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### Abstract

**Introduction:** Nutrition education contributes to children's understanding and practice of healthy lifestyles behaviors. Having a well hydration status is an essential topic, especially since children are a vulnerable population who are much more prone to dehydration than adults are. The approval of the Report on the European Gastronomic Heritage: Cultural and Educational Aspects in 2014 served as starting point to work on innovative audio-visual and multimedia materials for children. The Spanish Nutrition Foundation (FEN) and the Royal Academy of Gastronomy (RAG), in collaboration with the Ministry of Education, Culture and Sport in Spain (MECD), developed educational videos for schoolchildren to learn about food, nutrition and gastronomy, specially, the importance of being hydrated.

**Objectives:** To develop a serial of videos for children between 3 and 9 years old with nutrition and cooking lessons to be used as educational resources in the official curricula.

**Methods:** Fourteen chapters related to food, nutrition, gastronomy, physical activity and hydration to be used to record videos were designed and tested. A nutritionist, a chef and two puppets were the main characters acting in the videos.

**Results:** The chapters were assembled in nine videos that included five sections: *introduction, video lesson, recipes* –in case of hydration, recipes with different water content foods were recorded–, *what have you learnt and check your knowledge*.

A summary of the new educational material was officially presented at the Spain Pavilion during the Expo Milano 2015. Moreover, they are included as education tool for teachers in the new PANGEl Programme (Food, Nutrition and Gastronomy for Infantile Education) conjointly launched by FEN, RAG and MEDC.

**Conclusion:** Taste workshops are useful as innovative nutrition education tools to reinforce language, listening and motor skills as well as food and nutrition concepts, and specially, the importance of being well hydrated.

**Key words:** Beverages. Education. Children. Hydration.

### INTRODUCTION

A good nutrition education promotes health through learning, adaptation and acceptance of healthy eating habits based on prior food culture and scientific knowledge (1). The role of food in health and well-being status is very important in all age states, especially during children growth and development (2). Exposure to a varied diet in early childhood has been linked to children's willingness to try new foods and drinks at a later age (3).

Therefore, nutrition education is recognized as a key part of the education of young population, either with cross-curricular links between the various subjects that make up the curriculum of the Elementary and Secondary Education in Spain or treated as content on its own (4).

The Spanish Nutrition Foundation (FEN) and the Royal Academy of Gastronomy (RAG) were pioneers to present the idea of including gastronomy and healthy eating habits into the European Education System. They advised the different European governments to take into consideration the possibility of asking the education system to teach students about nutrition, dietary habits and gastronomy. The result was the approval of the European Parliament report *European gastronomy heritage: cultural and educational aspects* in 2014 (5). The report asks the Member States "to include in education programmes, from early childhood, the study and sensory experience of food, nutritional health and dietary habits, including historical, geographical, cultural and experiential aspects" (5). Since then, and using as baseline the *Taste workshops* carried out by the Foundation for Science, Health and Education (SHE) (6) in collaboration with RAG and FEN, these latter institutions have been working and testing on innovative audio-visual and multimedia material for schoolchildren.

Water requirements in children and adolescents are changeable and depend on age, sex, energy consumption and physical activity level (7). One essential topic consists of having a well hydration status, moreover since children are considered as vulnerable population much more prone to dehydration than adults (8). Beverages are important for children, both for hydration and nutrition, and we must as well encourage their intake as a potential strategy to improve the nutrient density of children's diet (9).

Organizations and institutions perform different programmes and strategies for education in nutritional, gastronomic and sensorial aspects using face to face workshops with schoolchildren (3,10-12), but the use of audio-visual materials is still lacking

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even though “new technologies” are recognized as key tools to improve education and cognitive performance.

Therefore, the main goal was to develop videos for teaching schoolchildren about food, nutrition, gastronomy, physical activity and hydration, using a chef and a nutritionist as leading role and puppets as supportive material.

With these validated *Taste workshops* videos we have created a new educational tool for teachers of Infantile and Primary Education, which will enrich the school curricula with theoretical and practical knowledge through audio-visual materials. It is already included within the new strategy on Education in Nutrition and Gastronomy from the Ministry of Education, Culture and Sport in Spain.

## OBJECTIVES

The objective of this study was to develop a series of videos for children aged 3 to 9 years old including lessons on cooking and nutrition and recipe demonstrations to be used as educational resources in the official Infantile and Primary curriculum of Spain.

## METHODS

### CONTENTS DEVELOPMENT

Due to the importance of including nutritional and gastronomic aspects in the school curriculum, FEN researcher team designed a list of topics related to this area. Members of RAG, FEN and teachers from the Nutrition Department of CEU San Pablo and Complutense University of Madrid wrote up 14 chapters related to food, nutrition, gastronomy, physical activity and hydration, thanks to the agreement with the Spanish Ministry of Education, Culture and Sport.

1. Why is learning how to eat important?
2. What is food? What do I eat?
3. What does food contain? Energy and nutrients.
4. How do I feed myself?
5. How much do I need to eat?
6. I feed myself for both: necessity and pleasure. Good habits in food.
7. Food as cultural aspect. Taste education.
8. The good use of food.
9. Food technology. Culinary techniques.
10. Food labelling.
11. School canteens.
12. Exercise and lifestyles.
13. Food related illnesses.
14. Myths, mistakes and realities.

These contents were adapted to language of targeted population (3 to 6 and 6 to 9 year old children) and used to record videos for nutrition and gastronomy education of schoolchildren.

## VIDEO RECORDINGS

FEN team made contact with a film producer to design video scripts, chose main characters and record videos. The recordings occurred between May and September 2014.

## RESULTS

### VIDEO LESSONS: TOPICS AND STRUCTURE

The chapters were assembled in nine videos: *How we cook food?*, *Temperature in food*, *How much food is there?*, *Nutrients world*, *Eating with culture*, *Let's move on!*, *Don't forget beverages* and *Why can't I eat it?* The “characters” were a chef, 5 nutritionists and 2 puppets.

Each video contains 4 sections: *Introduction*, where the nutritionist and a puppet (Nutriñeco) introduce the topic of the video; *Video lesson*, taught by the nutritionist; *Recipes*, where the cook, the nutritionist and the chef puppet (Martin) elaborate different recipes, and *What have you learnt*, where nutritionist ask Nutriñeco about the lesson.

The video structure for 6-9 year-old pupils differed from 3-6 year-old pupils in language difficulty and in the section *Check your knowledge*, where the nutritionist asks different questions to check Nutriñeco knowledge improvement (Table I).

The video *Don't forget beverages* included the following script: for the *introduction*, the nutritionist explained to Nutriñeco that staying well hydrated helps to be alert in class and play sports (Fig. 1). In the *video lesson*, we reinforced the importance of a good hydration status to be healthy and the different water content in foods (Fig. 2). *Recipes* included foods with different water content. From the least to the most water content recipe we had: cereal, sandwich, soya, anchovies and watermelon soup (Fig. 3). In the section called *What have you learnt*, Nutriñeco explains to the nutritionist everything he has learnt about hydration. Finally, in *Check your knowledge*, the nutritionist asked Nutriñeco if he knew the water content of different foods.

### VIDEO RECIPES

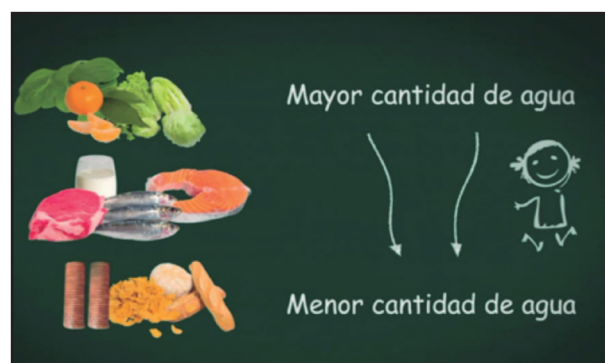
We included different recipes for each video/topic (Table II).

Table I. Video structure

Section number	3-6 year-old pupils	6-9 year-old pupils
1	Introduction	Introduction
2	Video lesson	Video lesson
3	Recipes	Recipes
4	What have you learnt	What have you learnt
5	-	Check your knowledge

**Figure 1.**

Nutritionist tells Nutriñeco the importance of drinking water (*Introduction*).

**Figure 2.**

Different water content in food (*Lesson* section).

**Table II. Video recipes**

Video number	Topic	Recipes
Video 1	How many flavours are there?	Orange and honey juice
		Fresh cheese and carrot sandwich
		Mango and pie cream
		Apple, cream and cookies compote
		Fresh tomato, oregano, black olives and artichoke pizza
Video 2	How we cook food?	Recipes with egg: boiled, poached, fried and omelette
		Tomato: salad, fried, breaded, microwave
		Ratatouille with poached egg
Video 3	Temperature in food	Creamy asparagus soup
		Andalusian <i>gazpacho</i>
		Roasted pineapple with coconut soup
Video 4	How much food is there?	Vegetables and tuna cannellone
		Rabbit with vegetables couscous
		Fried egg with rice and tomato
Video 5	Nutrients world	Breadcrumbs with meat slaughter
		Battered hake with potatoes
		Potatoes salad
Video 6	Eating with culture	3 delicious fried thai rice
		Cauliflower cream with egg and truffle
		Fresh sausage with mashed cinnamon potatoes
Video 7	Let's move on!	Pesto macaroni
		Pineapple, orange and banana juice
		Chicken sandwich
Video 8	Don't forget beverages	Watermelon soup
		Soya anchovies
		Cereal sandwich
Video 9	Why can't I eat it?	Soy crème caramel
		Fruits with mint soup
		Cornflour custard



**Figure 3.**

Martín speaks to the nutritionist and the chef about his favourite fruit (*Recipe* section).

## VIDEO DISSEMINATION

A summary of the developed educational videos was shown in the Spanish Pavilion of the Expo Milano in summer 2015. In addition, they are included as supplementary material in the PANGEL Programme (Food, Nutrition and Gastronomy Programme for Infantile Education) that will be used in Spanish schools in the next academic year (13).

## DISCUSSION

We found that *Taste workshops* development could easily serve as an education tool in schools. Teachers will use these audio-visual resources in class to educate through a new concept of nutrition, based on health and pleasure, gastronomy and sensorial education.

The last nutrition survey specifically targeted for children and adolescents (ENALIA survey) shows that liquid intake coming from beverages and milk is 876.9 g per day in children aged 3 to 9 years old (14). If we compare these data with the Scientific Opinion on Dietary Reference Values for water of EFSA Panel (15), they restate the necessity of working on education about the importance of being well hydrated.

Other institutions and food industries have recorded videos about hydration and focused in children and adolescents: The British Nutrition Foundation made an e-seminar about healthy hydration to students aged 8 to 14 year old in the frame of the Healthy Eating Week in 2013 (16). The Nestlé Healthy Kids Programme also includes four videos for Primary School students that highlight the importance of drinking water (17).

Future studies evaluating *Taste workshops* videos are needed to check the effectiveness of the use of audio-visual material in classroom teaching and the efficacy of improving the hydration concept and status in the youngest.

## CONCLUSIONS

*Taste workshops* can be used as an innovative nutrition education tool to reinforce language, listening and motor skills as well as food and nutrition concepts, specially, the importance of being hydrated.

## REFERENCES

- Ortega R, Aparicio A, López A. Educación Nutricional. Capítulo 19. In: Gil A ed. Tratado de Nutrición. Tomo III. Nutrición Humana en el Estado de Salud. 2ª ed. Madrid: Editorial Médica Panamericana; 2011. p. 463.
- Aranceta Bartrina J, Pérez Rodrigo C, Dalmau Serra J, Gil Hernández A, Lana More R, Martín Mateos M, et al. El comedor escolar: situación actual y guía de recomendaciones. *An Pediatr* 2008;69(1):72-88.
- Dazeley P, Houston-Price C, Hill C. Should healthy eating programmes incorporate interaction with foods in different sensory modalities? A review of the evidence. *Br J Nutr* 2012;108(05):769-77.
- Mateos-Padorno C, García-Soldán J, Polifrone M, Cachón-Zagalaz J, Zagalaz-Sánchez M, Martínez-Patiño M, et al. Descripción del nivel de conocimientos sobre los contenidos nutritivos y composición de los alimentos en una muestra del alumnado adolescente en la isla de Gran Canaria-España. *Journal of Sport and Health Research* 2010;2(3):241-52.
- Parlamento Europeo. Resolución del Parlamento Europeo, de 12 de marzo de 2014, sobre el patrimonio gastronómico europeo: aspectos culturales y educativos.
- Foundation SHE. Foundation for Science, Health and Education 2016. Accessed on July 19th 2016. Available at: <http://www.fundacionshe.org/es/>
- Perea Martínez A, Lara Campos A, López Navarrete G, Padrón Martínez M, Santamaría Arza C, Ynga Durand M. Importancia de la hidratación en la infancia y la adolescencia. In: Pfeffer K, Torres A, eds. Hidratación. Fundamentos en las diferentes etapas de la vida. 1ª ed. México D.F.: Alfil; 2015. pp. 85-109.
- Popkin BM, D'Anci KE, Rosenberg IH. Water, hydration, and health. *Nutr Rev* 2010;68(8):439-58.
- Sidnell A. The role of beverages in childhood nutrition. *Nutr Bull* 2014; 39(1):137-40.
- Fundación Alicia. Los Talleres de Alicia. Accessed on January 23rd 2016. Available at: <http://www.alicia.cat/es/talleres/talleres>
- Fernández GA, Molina JP, Escriba AS, Bernabeu AC, López AJ, Navarro JM, et al. Evaluación de un programa de valoración de menús escolares en el Departamento de Salud de Elda (Alicante). *Revista Española de Nutrición Comunitaria* 2012;18(1):6-11.
- Mustonen S, Rantanen R, Tuorila H. Effect of sensory education on schoolchildren's food perception: A 2-year follow-up study. *Food Quality and Preference* 2009;20(3):230-40.
- Achón y Tuñón M, Alonso Aperte E, Anson Oliart R, Ávila Torres J, Beltrán de Miguel B, Cuadrado Vives C, et al. El gusto es mío. Programa de Alimentación, Nutrición y Gastronomía para Educación Infantil (PANGEL). 1ª ed. Madrid: Proyectos Formativos y Servicios Editoriales, (Profor); 2015.
- Agencia Española de Consumo, Seguridad alimentaria y Nutrición. ENALIA: Encuesta Nacional de Alimentación en la población infantil y adolescente. Accessed on January 27th 2016. Available at: [http://www.aecosan.msssi.gob.es/AECOSAN/docs/documentos/seguridad\\_alimentaria/evaluacion\\_riesgos/Consumo\\_3\\_9\\_anios.pdf](http://www.aecosan.msssi.gob.es/AECOSAN/docs/documentos/seguridad_alimentaria/evaluacion_riesgos/Consumo_3_9_anios.pdf)
- EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA). Scientific opinion on dietary reference values for water. *EFSA Journal* 2010;8(3):1-48.
- British Nutrition Foundation. Drink up! 2013. Accessed on April 2nd 2016. Available at: <https://www.youtube.com/watch?v=6PVmslZ5lsc>
- Nestlé. HealthyKids 2016. Accessed on April 2nd 2016. Available at: <https://www.programaescolarhealthykids.nestle.es/es>