Introducing Edible Insects into Welsh School Canteens

Insects as food is not a new idea. In the Old Testament's book of Leviticus a list of permissible foods is given; insects including, locusts, crickets, and grasshoppers are included. Earlier still, the Romans and Greeks were known to dine on beetle larvae and Aristotle wrote about the best ways of harvesting cicadas to eat. While in some countries the tradition has continued, with the large scale agricultural revolution of the West, insects have transformed from food to foe. What was seen as a tasty morsel has metamorphosed in many a society's imagination into something that is dirty and disease carrying; an unwanted pest.

However, with a focus on a more sustainable future, many people are now rethinking their relationship with insects. It has been suggested that global meat consumption will have to increase by 76% by 2050 (WRAP, 2015) if we are to feed our growing global population. This will demand an estimated 42% more crop land with associated intensification of farming practices (UNFAO, 2013). Wang & Beydoun (1999) consider the societal impacts of this while Springmann *et al*. (2018) note a number of negative implications for the environment including increased deforestation, pressure on limited water supplies and increased greenhouse gas emissions.

In response to the current global climate and ecological emergency, many organisations including the Food and Agriculture Organisation of the United Nations (UNFAO) have recognised the benefits of entomophagy (eating insects). People in the West, where the practice of entomophagy is more uncommon, have been urged to adopt this dietary change (van Huis *et al*., 2013): however, this brings with it a number of challenges. How can we begin to encourage people to make the shift? While some work has begun with researching behaviour change in adults REF young people have, until recently, been largely neglected in this discussion.

Young people of school age number around 10 million in the UK and are becoming increasingly more visible and vocal in their desire to see more sustainable action. With regular climate protests and the work of young activists, such as Sweden's

Greta Thunberg and India's Licypriya Kangujam, being communicated through social media, this group are showing their desire for change.

The purpose of the study reported here was to begin to establish how young people negotiate new, sustainable foods in school and develop a better understanding of how they view entomophagy. It was anticipated that this approach would support informed directions for future enquiry and contextualise the complexity of sustainable food in school.

The Welsh Context

Wales is home to Grub Kitchen, the only restaurant in the UK with edible insects as the daily focus on the menu. Sited at The Bug Farm visitor and research centre, these award-winning and popular ventures in Pembrokeshire, West Wales, have a mission to educate people on the importance of insects in modern society. Founders chef Andy Holcroft and entomologist Dr Sarah Beynon have also developed a range of edible insect products through their company Bug Farm Foods, a food manufacturing, wholesale and retail business based onsite. Of relevance to this research is their development of a product called VEXo^{TM}; an insect and plant protein mince specifically designed to reduce saturated fat in food for young people as a way to help tackle childhood obesity in Wales. Welsh Government and Innovate UK provided support for this development through their Small Business Research Initiative and VEXo was taken into three Welsh schools in 2018 as a pilot project.

The research focussed on the experiences of *c.*200 pupils from years 2, 4, 6, 7 and 9 (respondents ranging in age from 7 to 14 years old). Pre- and post-workshop questionnaires, observations of workshops and focus groups were undertaken with pupils. Having the opportunity to try the food was considered essential and supports House's (2016) call for research to shift away from that which only theoretically forecasts acceptance.

To date, studies focusing on actually tasting edible insects has been restricted, with just a few notable exceptions with adults (e.g. Looy and Wood, 2006 and Megido *et al.*, 2014).

Thematic analysis exposed three issues to consider when supporting young people in shifting their attitudes towards an acceptance of edible insects: (1) uncertainties surrounding the possible health impact of consuming insects; (2) questions regarding the source of the insects and how they are farmed; and (3) concerns about what the food products they were going to be asked to try might look like.

Rozin and Fallon (1980) note that the new consumer can be repelled by a food they assume to be ‘dirty’ or ‘nasty’ - in this case an insect’s perceived habitat and /or behaviour could be off-putting. This repulsion can take a physical form with people feeling unwell at the thought of eating the product: results from this study echo this. Initially, young people reported feeling sick at the thought of eating insects and were relieved when the products looked, smelled and tasted familiar. VEXo has been purposefully designed to look like, in the case of the pilot study, a burger and Bolognese.

Results of the project showed that, before tasting VEXo, only 27% of young people reported that they would consider choosing edible insects for a lunchtime option at school. After tasting the product, 74% of young people were positive about its Taste, with 100% of comments relating to the taste of VEXo Bolognese being positive.

School dinner take-up is around 50% for those schools taking part in the pilot project and, when VEXo Bolognese was put on the menu, 60% of young people eating hot meals chose VEXo. This provides an initial indication that the introduction of such food may have the ability to increase school dinner take-up when compared to current take-up. Interestingly, after the workshops, 80% of young people noted that they wished to learn more about sustainability suggesting that an intervention like ours could have wider sustainability benefits. As one pupil commented: “We all know that looking after the planet is important – right. But we don’t learn about what we can actually do to make a difference [at school]. This [VEXo] is real. We can actually make changes to what we eat and that might actually make a difference”.

As a result, we would argue that the normalisation of edible insects into acceptable forms is essential for the acceptance of them as a food source by young people. Our

findings echo other studies undertaken with adults (Megido *et al.,* 2016; Menozzi, *et al*., 2017; Pascucci & de-Magistris, 2013; Sogari, Menozzi, & Mora, 2017) as well as observations at Grub Kitchen and Bug Farm Foods. This work provides initial evidence to assist with sustainable food policy design, improve acceptance of sustainable food systems in schools and increase the accessibility to healthier and more sustainable consumer options in a context where young people have not previously been the focus.

For a more detailed insight into the analysis of this project and discussion of its intersection with environmental education more widely, please see Jones & Beynon (2020) 'Edible insects: applying Bakhtin's carnivalesque to understand how education practices can help transform young people's eating habits'.

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