Appetite 114 (2017) 306–312

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

The impact of video technology on learning: A cooking skills experiment

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ARTICLE INFO

Article history:
Received 30 November 2016
Received in revised form
21 March 2017
Accepted 22 March 2017
Available online 28 March 2017

Keywords:
Cooking skills
Cooking confidence
Motivation to cook
Learning
Video
Cooking demonstration

ABSTRACT

This study examines the role of video technology in the development of cooking skills. The study explored the views of 141 female participants on whether video technology can promote confidence in learning new cooking skills to assist in meal preparation. Prior to each focus group participants took part in a cooking experiment to assess the most effective method of learning for low-skilled cooks across four experimental conditions (recipe card only; recipe card plus video demonstration; recipe card plus video demonstration conducted in segmented stages; and recipe card plus video demonstration whereby participants freely accessed video demonstrations as and when needed). Focus group findings revealed that video technology was perceived to assist learning in the cooking process in the following ways: (1) improved comprehension of the cooking process; (2) real-time reassurance in the cooking process; (3) assisting the acquisition of new cooking skills; and (4) enhancing the enjoyment of the cooking process. These findings display the potential for video technology to promote motivation and confidence as well as enhancing cooking skills among low-skilled individuals wishing to cook from scratch using fresh ingredients.

1. Introduction

Convenience has emerged as a key factor in consumer food choice, as well as many social and environmental factors which have all contributed to a decline in the amount of time spent in the kitchen (Caraher & Lang, 1999; Jackson & Viehoff, 2016; Pula, Parks, & Ross, 2014). Industrialisation, urbanisation, commercialisation and social change have influenced the social and economic landscape globally and in the United Kingdom (UK) where financial and lifestyle changes have resulted in changing eating patterns (Utter, Fay, & Denny, 2016). There is evidence of changes in traditional eating habits, a greater availability of high energy, ready-made convenience foods, and eating outside the home more often, resulting in over consumption (Jackson & Viehoff, 2016; Lavelle et al., 2016a). Correspondingly there has been an escalation of consumer spending in the convenience food sector (Jabs & Devine, 2006; Mintel, 2010, 2013) where lower end-cost, pre-packaged convenience meals are generally energy-dense, high in fat and salt, and low in micronutrients and fibre which inevitably contribute to dietary inequalities and ill-health (Gately, Caraher, & Lang, 2014; Mc Gowan et al., 2015; Pettinger, Holdsworth, & Gerber, 2006).

Preparation of convenience meals require limited cooking skills ability; for example, following written instructions to reheat a meal using a microwave or oven (Reicks et al., 2014; Rees, Hinds, Dickson, O'Mara-Eves, & Thomas, 2012). Therefore, where meals can be prepared in minimal time without the requirement to practice more complex cooking skills and feel satiated, individuals are

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http://dx.doi.org/10.1016/j.appet.2017.03.037
0195-6663/

increasingly likely to lose their cooking skills ability (Caraher & Lang, 1999).

In recent decades, the focus of policy makers and health promotion professionals has been the conservation of domestic cooking skills, through health campaigns, to promote awareness and the facilitation of community cooking interventions, to develop knowledge and skills albeit without an adequate or robust evidence base to support such initiatives (Reicks et al., 2014; Rees et al., 2012). Cooking skills interventions have become a popular tactic used to improve diet quality among the general population. In addition, UK health policy has promoted the merits of cooking skills interventions to deliver wider public health policy solutions (Condrasky & Helger, 2010; Garcia et al., 2014). As a result, educationalists and policy makers are keen to identify the most effective methods of delivering cooking skills training to individuals and groups (Butt, Navarro, & Shorab, 2016), and with the acceleration in the use of technology to research ideas and learn, video technology has gained momentum as an effective tool to reach and increase learning amongst a larger audience (King, 2017).

To date there is no literature outside of this study on the effect of video technology on cooking skills development. However, research is available on the benefits of video to enhance skills development in general; for example, building design skills in architecture within the classroom environment (Comiskey, 2011). This study demonstrated that those who lacked practical experience were better equipped to grasp an understanding of relevant skills through watching video than through verbal explanation or text book reading. The positive results from the study emphasised the value students placed on repetition of the visual aspect of video as well as the flexibility and selectivity of viewing the information where and when required.

Laurillard (2014) however contends that learning technologies are hopelessly underexplored and that educationalists should explore the potential of learning technologies offering participatory and active learning experiences to deliver real improvements in learning. Prensky (2001) reinforces this contention, stating that digital natives, defined as those who possess sophisticated knowledge of, and skills in, using information technologies are used to receiving information at speed therefore the flexibility of video technology using portable devices may offer a more efficient method of learning (Lim, 2006). Indeed, there has been an increased emphasis on the use of digital technology to promote skills development through use of video technology across social media platforms and smart phone Apps (Comiskey, 2011; Whatley & Ahmad, 2007). Videoed cooking demonstrations and those presented on television have tended to visually illustrate the full process, step by step, and often with some spoken information on, for example, the sourcing of fresh local ingredients or nutritional facts concerning the dish being created. Current thinking however suggests that as educators, it is necessary not to simply replicate steps and stages of a process but to additionally consider the needs and learning requirements of the audience in order to fully engage and motivate them to further develop their skills. Therefore, it is necessary to consider what changes to the learning environment need to be introduced to best meet the needs of the intended target audience and motivate them to change/improve upon their current behaviour (Watson, 2006).

In addition, it is also necessary to consider what aspects of video technology promote learning. Wishart (2016) contends that visualisation is especially relevant in understanding key concepts and the visual nature and audible content of video serves as a substantial learning tool. Indeed, according to Mayer's (2001) cognitive theory of digital learning, an individual's information processing system is separated by cognitive channels to differentiate visual and auditory stimuli. Learning is accessed by integrating the information from these separate channels suggesting that learners can process only a limited amount of information at any given time. This is highlighted through empirical research, which found that if a large amount of visual and verbal stimuli is offered simultaneously, the learner will experience cognitive overload and cannot reach maximum understanding of the content (Mayer, 2001). However, because video technology offers the functions of repeated access and control of the speed and pace of the verbal and visual stimuli offered, cognitive overload may be decreased. This paper proposes that using video technology to teach cooking skills has the potential to improve learning, engage individuals in the cooking process and have a positive influence on diet quality. In addition, research indicates that the facility to listen repeatedly to information is likely to be a mediating factor in reinforcing learning through increased motivation and engagement (McKinney, Dyck, & Luber, 2009; Aldi et al., 2016).

Therefore, the aim of this study was to examine the role of video technology in the development of cooking skills. It was anticipated that further understanding on how video technology can promote confidence and motivation in domestic cooking would also arise through thematic analysis.

2. Methods

2.1. Design and sampling

The focus groups formed part of a wider study investigating the prevalence of food and cooking skills on the island of Ireland. The comprehensive programme of research included a review of domestic food and cooking skills (Mc Gowan et al., 2015), a survey to identify predictors of cooking and food skills (Lavelle et al., 2016a, 2016b), a cooking experiment and focus groups to qualitatively explore consumer perceptions and use of video technology to assist in the learning of cooking skills.

All focus groups were carried out post-experiment. The cooking experiment was a dual-site, randomised controlled study conducted in Sligo (Republic of Ireland [ROI]) and Coleraine (Northern Ireland [NI], UK). One hundred and sixty participants were recruited to take part in the cooking experiment [40 participants x four experimental conditions]. Participants were recruited according to the following criteria: (a) female; (b) cook for a family; and (c) consider themselves as low-ability cooks. The final sample consisted of 141 participants (64 facilitated at St Angela's College, Sligo, and 77 facilitated at Ulster University, Coleraine) across 16 focus groups. A total of 21 participants withdrew from the study for various reasons (e.g. unexpected commitments, non-attendance and illness). The sample size of each experimental condition is described as follows: condition one ($n = 34$); condition two ($n = 33$); condition 3 ($n = 35$) and; condition 4 ($n = 39$).

Ethical approval for this study was obtained from Queen's University Belfast Research Ethics Committee and research was conducted in accordance to the guidelines given in the Declaration of Helsinki. All participants consented to partake in the study and were aware that they could withdraw at any point in the experiment.

2.2. Experimental design

Participants were provided with cooking instructions on how to cook a lasagne from scratch based on one of the four conditions summarised in Table 1.

For Condition 1, (the control group) a recipe card with an image, similar to a traditional cookbook was used. Throughout all four conditions participants had access to the recipe card; however additional instruction was accessible throughout the other