Health Education

Teachers' perspectives of a new food literacy curriculum in Australia

Janandani Nanayakkara, Claire Margerison, Anthony Worsley,

Teachers' perspectives of a new food literacy curriculum in Australia

Janandani Nanayakkara, Claire Margerison and Anthony Worsley
Institute for Physical Activity and Nutrition,
School of Exercise and Nutrition Sciences, Deakin University, Geelong, Australia

Received 9 May 2017
Revised 5 July 2017
19 July 2017
20 July 2017
Accepted 22 July 2017

Abstract

Purpose – Implementation of a new food literacy curriculum provides multiple health and social benefits to school students. The success of any new curriculum execution is partly determined by teachers' perceptions about the new curriculum contents, and barriers and challenges for its delivery. The purpose of this paper is to explore teachers' views of a new food literacy curriculum named Victorian Certificate of Education Food Studies for senior secondary school students in Victoria, Australia.

Design/methodology/approach – A qualitative study design was used in this study. In total, 14 teachers who were planning to teach the new curriculum were individually interviewed in October-December 2016. The interviews were transcribed and analysed using the template analysis technique.

Findings – The majority of teachers appreciated the inclusion of food literacy and nutrition concepts in the new curriculum. However, half of the teachers had doubts about their readiness to teach it. Most teachers mentioned that they needed more training and resources to increase their confidence in teaching the curriculum.

Practical implications – These findings reveal that teachers need more awareness, resources, and guidance to increase their confidence in delivering the new curriculum. Provision of more resources and opportunities for training in food literacy concepts and instructional methods could facilitate its implementation.

Originality/value – These findings serve as an important first step to gain the perspectives of secondary school teachers' opinions about the new curriculum. Moreover, these opinions and suggestions could inform the future design and implementation of similar food literacy curricula in Australia or elsewhere.

Keywords Curriculum, Schools, Teachers

Paper type Research paper

Introduction

Recently, food literacy has emerged as a framework for food education (Colatruglio and Slater, 2014; Vidgen and Gallegos, 2014). Although there is no universally accepted definition for food literacy, it includes at least four main domains: the food system from production to waste; the effect of food on health and well-being; the wider context of the food system including social, economic, cultural, environmental, and political factors; and development of skills and behaviours related to food (Bellotti, 2010; Cullen *et al.*, 2015; Fordyce-Voorham, 2015; Vidgen and Gallegos, 2014).

Many citizens of contemporary society have weak, unhealthy relationships with the food system (Colatruglio and Slater, 2014; Worsley, 2011). Loss of traditional food knowledge, skills, and cultures (Stuckler and Nestle, 2012), the adverse environmental effects of modern food production methods (Friel *et al.*, 2014; Tilman *et al.*, 2011), the nutrition transition and associated diet related non-communicable diseases (Popkin *et al.*, 2012), health and social inequity (Desmarais and Wittman, 2014) have all resulted from these unhealthy relationships. School food literacy education could play a valuable role to re-establish the relationship between citizens and the food system (Colatruglio and Slater, 2014; Lichtenstein and Ludwig, 2010).

Teachers are one vital group of stakeholders who are responsible for the success of school food literacy education (Gussow and Contento, 1984). Sumner (2013) emphasizes teachers' roles in exposing learners to the broader aspects of the food system. These include discussions about

Conflict of interest: the authors declare no conflict of interest.

Health Education
Vol. 118 No. 1, 2018
pp. 48-61

0965-4283
DOI 10.1108/HE-05-2017-0024

global food contexts, food-related social movements, environmental issues associated with food production, processing, and consumption, and the role of food in health and well-being.

According to the best of the authors' knowledge, few secondary school curricula focus on these broad aspects of food literacy. For example, in Canada the revised Ontario Family Studies learning area is focussed on some broad food literacy areas (Ontario Ministry of Education, 2013). One of the curriculum assessment authorities in Australia, the Victorian Curriculum and Assessment Authority (VCAA), designed a new curriculum named Victorian Certificate of Education (VCE) Food Studies for senior secondary school students (years 11 and 12) in Victoria in 2015 and it was introduced to the students in 2017. It can be considered as a first attempt to incorporate broad aspects of food literacy at the senior secondary school level in Australia. This new curriculum replaced the older VCE Food Technology curriculum. It differs remarkably from the previous curriculum in many ways including, the inclusion of an interdisciplinary approach to food, less emphasis on food design processes (food product development), inclusion of critical inquiry, and replacement of school assessed tasks (e.g. folio) with school assessed coursework such as practical reports and podcasts. The units and study areas of the new and old curricula are shown in Table I (Victorian Curriculum and Assessment Authority, 2016). For the purpose of this

Previous VCE Food Technology curriculum Units and study areas	New VCE Food Studies curriculum Units and study areas
Unit 1: Food safety and properties of food	Unit 1: Food origins
Area of study 1: Keeping food safe	Area of study 1: Food around the world (Origins and cultural roles of food) Food literacy domain[a,d]
Area of study 2: Food properties and preparation	Area of study 2: Food in Australia (History and culture of food in Australia) Food literacy domain[a,d]
Unit 2: Planning and preparation of food	Unit 2: Food makers
Area of study 1: Tools, equipment, preparation, and processing	Area of study 1: Food Industries (Primary food production, food processing and manufacturing, retail, and food service sectors) Food literacy domain[a,d]
Area of study 2: Planning and preparing meals	Area of study 2: Food in the home (Domestic and small-scale food production) Food literacy domain[b,d]
Unit 3: Food preparation, processing and food controls	Unit 3: Food in daily life
Area of study 1: maintaining food safety in Australia	Area of study 1: The science of food Food literacy domain[b,d]
Area of study 2: Food preparation and processing	Area of study 2: Food choice, health, and well-being (Patterns of eating in Australia, influences on the food consumption)
Area of study 3: Developing a design plan	Food literacy domain[b,d]
Unit 4: Food product development and emerging trends	Unit 4: Food issues, challenges and futures
Area of study 1: Implementing a design plan	Area of study 1: Environment and ethics (Australian and global food systems-related issues) Food literacy domain[c,d]
Area of study 2: Food product development	Area of study 2: Navigating food information (Food information and misinformation) Food literacy domain[b,d]

Notes: [a]The food system from production to waste; [b]the effect of food on health and well-being; [c]the wider context of the food system including social, economic, cultural, environmental, and political factors; [d]development of skills and behaviours related to food

Table I.
Units and study areas of VCE Food Technology and VCE Food Studies

paper the content of the VCE Food Studies curriculum has been mapped against the four food literacy domains (Table I).

Teachers play an overwhelmingly important role in any educational reform by designing the classroom instruction, delivering lessons, and assessing students (Altinyelken, 2010; Fullan and Pomfret, 1977; Guskey, 1988; Gussow and Contento, 1984). However, successful implementation of a new curriculum often relates to teachers' perceptions of the curriculum content, teaching materials, and training opportunities (Altinyelken, 2010; Bantwini, 2010; Perez-Rodrigo and Aranceta, 2003). Several previous school food-related curriculum reforms and interventions have acknowledged teachers' crucial role in implementation and explored their opinions on different aspects of implementation (Altinyelken, 2010; Bantwini, 2010; Beets *et al.*, 2008; Hall *et al.*, 2016; Jørgensen *et al.*, 2014).

Not all teachers favour educational reforms to the same degree, and it is quite common to hold certain uncertainties about any curriculum changes (Bantwini, 2010; Fullan and Miles, 1992). Many researchers have argued that in any curriculum reform teachers should be included from the onset, rather than prescribing to them what to deliver to their students at the end of reform (Berlach, 2010; Fullan, 2016; Fullan and Miles, 1992; Kirk and MacDonald, 2001). Teachers can provide solid input into their discipline-related curriculum based on their understanding of students, colleagues, school administration, and resources available to them. A reform that lacks contributions from teachers is unlikely to succeed (Kirk and MacDonald, 2001). When teachers are involved in any curriculum reform process from the beginning, they tend to take ownership of the change and are more likely to develop a strong desire to teach that new subject (Berlach, 2010).

In the present curriculum reform, some teachers were involved in the process as the members of curriculum review panel and focus group participants. However, most teachers did not get a chance to be involved in this process. Berlach (2010) noted that change resulting from external stimulus can be an unpleasant motivator and it can lead some teachers to engage with the change in the form of compliance rather than in the form of desire. Moreover, teachers' awareness about the new changes, their own perceptions about the value of the changes, their readiness to teach the new curriculum, and their expectations of resources for improvement of their teaching are likely to contribute to the successful implementation of the new curriculum.

Most often the teachers who taught the previous food technology curriculum were trained in home economics, hospitality, or food technology. This training facilitated their teaching of the previous food technology curriculum including food product development, food safety, and use of cooking equipment, etc. In the new Food Studies curriculum the previously mentioned aspects are presented as minor components and the focus is now on other aspects of food literacy including food origins, food supply chain, nutrition and food science principles, and other broader food system-related issues. This major change could be quite challenging for those teachers who have not learnt about these aspects of food studies in their own training or who have not taught these aspects before.

The novelty of the content of the new curriculum led us to carry out this qualitative study to explore teachers' views of the new VCE Food Studies curriculum, and the challenges, training, and resource needs with regards to its delivery. The VCAA has made the VCE Food Studies curriculum into a living online document with the aim of making improvements during its implementation. The online document is maintained by the VCAA. Findings from the present study can be incorporated into the online document to help teachers make the shift into this broad food literacy curriculum. Moreover, identification of challenges and resource needs at an early stage can help to structure the teachers' training (professional development) and resources as required. Furthermore, findings from this study will be of relevance to educators around the world who wish to teach broader aspects of food literacy.

Methods

Study design

This study used semi-structured qualitative interviews to obtain detailed understanding of teachers' perceptions of the new VCE Food Studies curriculum content and its delivery.

Participants and recruitment

A list of Victorian secondary school teachers (77 teachers) who were planning to teach the new VCE Food Studies curriculum and had given their written consent to be contacted for a research study was obtained from Home Economics Victoria (the main teacher training organization). This teacher list was used for recruiting participants. First, 40 teachers on the list were contacted and 7 agreed to schedule an interview. Following individual interviews, the teachers were asked to recommend other potential teachers for this study (snowball sampling), and a further 14 teachers were identified. Out of them, 10 teachers were contacted and seven agreed to participate. Altogether, 14 teachers (seven from the teacher list and seven from the snowball sampling) were recruited from October to December 2016. Data saturation was achieved at the 14th interview and therefore recruitment was stopped at this point. During this period the teachers were preparing to teach the new Food Studies curriculum.

The teachers were predominantly female (13), between 28 and 57 years of age with varying levels of educational qualifications and experience in teaching food, nutrition, and health-related subjects at senior secondary school (Table II). Moreover, the majority of them (10) were teaching at all levels of secondary school (junior secondary: 7-8 years, middle secondary: 9-10 years, and senior secondary: 11-12 years). The majority of the teachers (10) were from Government schools. These characteristics are consistent with previous Australian studies related to food teachers (Ronto *et al.*, 2017a, 2016).

Ethics approval for this study was obtained from Deakin University Health Ethics Advisory Group (HEAG-H 43_2016). Before the commencement of each interview, participants were asked to give written consent and permission to audio-record the interview.

Instrument

The present qualitative exploration was inspired by three philosophies. In accordance with Rogers' "diffusion of innovations theory", it was acknowledged that teachers' perceptions of

Characteristics	No of teachers
Gender	
Female	13
Male	1
Age range (years)	28-57
Experience in teaching food, nutrition, and health-related subjects at senior secondary school	
1-3 years	4
4-10 years	4
11-15 years	3
> 21 years	3
Type of school	
Government	10
Catholic	2
Independent	2
Highest education qualification	
Master degree	5
Bachelor degree	5
Diploma	4

Table II. Characteristics of the participants

the new curriculum influence its implementation (Rogers, 1995). Consistent with the "theory of curriculum implementation", it was recognized that there are factors that can facilitate or impede curriculum implementation (e.g. teachers' level of training and confidence), and schools may need support from outside organizations for curriculum implementation (e.g. for teacher training) (Rogan and Grayson, 2003). Lastly, according to the "cyclical integration model of change management", there should be a continuous dialog with teachers during the formation of any educational change (Berlach, 2010).These philosophies and literature related to the exploration of teachers' opinion of curriculum reforms (Altinyelken, 2010; Bantwini, 2010; Berlach, 2010; Jørgensen *et al.*, 2014; Rogan and Grayson, 2003; Rogers, 1995), informed the development of the interview guide. The first two teacher interviews were used to familiarize the interviewer with the interview guide and to establish the face-validity of the interview questions. No changes to the questions were required, therefore these interview transcripts were incorporated into the final analysis. The interview questions and their philosophical basis are shown in Table III.

Procedure

Semi-structured face-to-face individual interviews ($n = 12$) and phone interviews ($n = 2$) were conducted by the first author. Interview duration varied from 11 to 40 minutes with an average of 21 minutes. The interviews were transcribed verbatim using a professional transcription service. All the transcripts were re-checked for the accuracy by the first author. Transcripts were sent to all teachers for reviewing, two teachers returned the transcripts with minor modifications. These modified transcripts and the original transcripts of the remaining teachers were used for the final analysis.

Data analysis

The qualitative data analysis software; NVivo (QSR International Pty Ltd Version 11, 2015) was used for data coding, and examination of possible relationships among themes. Data analysis was started after the first two interviews were transcribed. The template analysis technique was employed for data analysis (King, 2004, 2014). An initial template, comprised of "a priori" codes (themes identified by the researchers as important for

Question	Purpose	Philosophical basis
1. Do Victorian senior secondary school students need food literacy education?	To obtain teachers' perceptions of school food literacy education and the new Food Studies curriculum contents	Diffusion of innovations theory Cyclical integration model of change management
2. How do you feel about the content of the proposed "Food Studies" curriculum? Probe: Do you suggest any changes for this curriculum such as inclusion/ deletion or modification of topics/ contents?		
3. Will there be any challenges in teaching this new curriculum? Probe: If yes, what are these challenges? If no; why do you think it is not a challenging task?	To examine factors that can facilitate or impede curriculum implementation	Theory of curriculum implementation Cyclical integration model of change management
4. If you were to undertake a training course on this new curriculum, what are the specific areas or topics you would like to see included? Probe: Which of the four units or areas of studies do you need more training or information?	To examine support teachers need to facilitate the delivery of the new curriculum	Theory of curriculum implementation Cyclical integration model of change management
5. Can you describe any classroom resources you might require to teach this new curriculum?		

Table III.
Interview questions

the research question being investigated) was developed and data were coded using the template (King, 2004, 2014). This helped to accelerate the initial phases of data coding (King, 2014). Subthemes were developed after exploration of the first three transcripts. Modifications were made to the "a priori codes" and subthemes during the remaining data coding process. At the 14th interview, coding of the interview data did not further enrich the template and data saturation was achieved (Marshall, 1996; Trotter, 2012). The final template comprising themes and subthemes is described in the results section below. Verbatim quotes are used to illustrate the major findings.

The authors discussed the major themes of this study with two researchers who were unrelated to the present study (peer-debriefing) to obtain an unbiased interpretation of results (Spall, 1998). Furthermore, the study findings were compared with other qualitative studies related to school curriculum reforms or interventions to enhance the credibility of the findings (Harris *et al.*, 2009).

Results

Teachers' perceptions about the new curriculum and its delivery are presented under five themes: need for food literacy education for senior secondary school students; good aspects of the new curriculum; concerns and challenges related to the new curriculum; teachers' training needs in relation to teaching the new curriculum; and resources required by the teachers to teach the new curriculum.

Theme 1: need for food literacy education for senior secondary school students

Food literacy education provides guidance for healthy eating. Many teachers (eight) pointed out that food literacy education is needed for senior secondary students to understand healthy food choices, develop food preparation skills, and make informed decisions about their food:

> It's most important because senior secondary students are most likely to move out of home, go into employment or university. Food and nutrition education provides knowledge which can help them make informed decisions to eat well, grow food and in turn this can help prevent future diet related illnesses and health concerns (P6/Government school teacher).

Food literacy education provides guidance for food-related careers and further education. Three teachers mentioned that food literacy education could provide awareness about food and nutrition-related career and education pathways.

Theme 2: good aspects of the new curriculum

Good curriculum. Many teachers (ten) appreciated the new curriculum and they used terms such as "exciting", "great", "rounded course", "good additions", "relevant topics", and "valid" to express their views. They picked certain areas of the new curriculum to justify their appreciation. Some (five) valued the inclusion of topics related to the food system and its issues. For example:

> There's more of an emphasis on actually getting their literacy up, understanding the sort of the paddock to plate mentality, rather than just what's happening in the kitchen. I think there's definitely some great things that are in there (P1/Government school teacher).

Furthermore, five teachers appreciated the inclusion of digestion and other nutrition-related topics such as nutrient requirements, food trends, and dietary guidelines.

Welcome changes. Three teachers pointed out that removal of the "folio" and design process was sensible as it may enhance the academic reputation of the new curriculum. The "folio" was a major assessment component of the previous Food Technology curriculum.

It was a large document compiled by the students which contained mainly food product design plans:

> I think it [removal of folio] makes the curriculum a broader curriculum with more interest areas or more focus within the academic side of food studies, moving away from that sort of design side (P14/Catholic school teacher).

Theme 3: concerns and challenges related to new curriculum

Despite many positive appraisals, the teachers had some concerns about the new curriculum content and its delivery.

Teachers' concerns about their awareness of the new curriculum. Seven teachers expressed concern over their awareness of the new curriculum and their readiness for teaching it. Three stated that they knew little about the new curriculum and they were not adequately informed about the changes made:

> We were given very little information initially about what was going to be taking place (P5/Independent school teacher).

Four teachers mentioned that they may need to change the way they used to teach the previous curriculum. Furthermore, they mentioned that they need to acquire some knowledge and skills for teaching the new curriculum and this could be a challenge for them:

> […] With food teachers having been teaching food in certain ways for *x* many years, a lot of them coming from the home economics background from 100 years ago and all of a sudden, alright you need to learn all of these and pass the information on for the year 12 s. So I think that's going to be a little bit challenge as well (P14/Catholic school teacher).

Teachers' concerns over the curriculum content. Five teachers believed that the "history of food" section (first section of the curriculum) would not appeal to students. Some of them assumed that if students found this section uninteresting, they might change to another subject. Several teachers questioned the importance of learning about the history of food. They suggested changing the order of the units and placing the food history-related topics later in the curriculum, as well as reducing the content related to history:

> I'm a bit disappointed really. I think that what we start with in year 11, which is where you either really engage the students or can lose them where they will swap out into a different subject, so you've lost them for the two years, I think the start's really not going to engage them. All that history of food and the hunter-gatherers (P7/ Catholic school teacher).

There were several other concerns. Three teachers expressed concern about the overlap of content related to digestion, food choices, and dietary guidelines with that of other senior secondary school subjects such as Health and Human development, and Biology. Three teachers expressed their concern about the lack of emphasis on food safety in the new curriculum. They believed that this curriculum should contain a food safety section, to be taught before cooking practicals, to refresh the food safety principles that students had learnt in earlier years. Two teachers doubted the possibility of delivering the intended knowledge and skills to students over the two year time frame. They pointed out that the curriculum is heavy in content.

Teachers' apprehension about student assessments. Although some teachers were happy about the removal of the folio, half the teachers had mixed feeling about it. Some of them stressed the benefits of the folio for students and said that it needed to be reincorporated. Others noted that teachers' experiences and students' responses to the removal of the folio should be observed over the first round of implementation of the new curriculum, and based on that, consideration should be given to reinstalling it:

> I personally feel that the folio was very beneficial for a lot of students, the students who are not good at doing exams, who are not good at doing anything under pressure, so sitting a test.

> They can work on the folio in their own time because, we include separately marks and I think that was good for a lot of students who weren't good at the other stuff and they could really excel in that and do a folio and do a really well done folio (P2/Government school teacher).

Three teachers mentioned that assessing students through podcasts, video productions, oral presentations, or cooking activities could be challenging compared to written assessment tasks. They referred to teachers' lack of information technology experience and lack of digital resources at school:

> I think the use of the IT, just I think some of us who have been around for a while are used to the written assessments and that, so just getting our heads around some of the newer ways of assessing with podcasts and things like that will be challenging […] (P11/Independent school teacher).

Theme 4: teachers' training needs in relation to teaching the new curriculum

Teachers need more training. Most teachers (11) mentioned that professional development opportunities would facilitate the delivery of the new curriculum. Some of them pointed out that they had not had sufficient training opportunities. Furthermore, three teachers were unimpressed with the training provided by the curriculum design organization indicating it lacked detailed information. The teachers hoped that more opportunities would be available in future:

> Even going to PDs [professional development opportunities] to offer us ideas and activities to deliver the material would be very helpful I think (P2/Government school teacher).

Many teachers (ten) revealed that they need to acquire knowledge and skills in certain topics and study areas of the new curriculum. These included training on the digestion, food consumption, and food choice sections (five teachers), food industries and food production in Australia and other countries (four teachers), history of food (four teachers), and development of podcasts and videos (three teachers).

Theme 5: resources required by teachers to teach the new curriculum

Some teachers (eight) planned to teach the new curriculum based on resources already available for them. All of them mentioned that they were going to use a recently published textbook related to the curriculum as the main guide in teaching the new curriculum. Some teachers mentioned their kitchen facilities as a resource available to them.

However, the majority of teachers (13) stated that they required more resources for teaching and assessing the students. They considered that these resources would facilitate the successful delivery of the new curriculum. Seven teachers mentioned that they were going to develop or search for some of these resources by themselves. These resources included commercially available teaching and assessment guides, Apps related to digestion, YouTube clips, and worksheets for students:

> […] I've been going on TES (teaching resource website) to get some materials and just looking for YouTube clips, and making up some sort of tables and stuff for the girls to fill in with information (P7/Catholic school teacher).

Half of the respondents (seven) said that they would like to have more textbooks based on the new curriculum:

> As far as I know, there's only one textbook out at the moment, so having a variety of texts would be nice (P11/Independent school teacher).

Seven teachers stressed that they required resources related to students' assessment tasks such as practice exams. The other resources they required were tips and ideas for students' practicals (mentioned by three), model group activities (mentioned by three), time lines and

lesson plans (mentioned by three), and information on school guest visits and excursions (mentioned by three).

Finally, five teachers mentioned the importance of sharing curriculum resources among teachers and they suggested establishing a mechanism for resource sharing and distribution.

Discussion

This study explored teachers' perceptions of the new VCE Food Studies curriculum and its delivery while they were preparing to teach the new curriculum for the first time. Perception studies focus on exploring what people think about a particular stimulus, which could be an object, incident, smell or memory, etc. In these studies researchers try to understand the minds of others through verbal or nonverbal approaches. These perceptions studies are used to explore opinions rather than generating facts (Bodenhausen and Hugenberg, 2009). Often teachers' opinions have been sought during or at the end of an education reform, whereas a unique feature of this study was the examination of teachers' opinions during the pre-implementation period. This provides new insights into curriculum modification, and teacher training and resources development during the implementation stage. As mentioned previously, the new curriculum is not a solid, closed curriculum rather it is an online living document and open to modification. Therefore, it is possible to incorporate teachers suggestions identified in this study in early rounds of curriculum modification.

In agreement with previous studies (Pendergast and Dewhurst, 2012; Ronto *et al.*, 2016), the majority of the interviewed teachers believed that food literacy helps senior secondary school students to establish healthy eating patterns. Food literacy education is a way of providing food knowledge and skills to adolescents which can help them to establish healthy food consumption patterns (Colatruglio and Slater, 2014; Larson *et al.*, 2006). The majority of the teachers appreciated the new Food Studies curriculum overall, and some appreciated the inclusion of topics related to food system and its issues, and nutrition-related topics such as digestion, nutrient requirements, food trends, and dietary guidelines. However, the teachers' opinions about the new Food Studies curriculum were complex. Several challenges and concerns about the new curriculum were voiced including the practicality of its delivery to students, and the assessment of the students.

Many of the interviewees had concerns about their poor awareness of the new curriculum and their readiness to teach it. As the new curriculum differs from the previous curriculum in many ways, many teachers will need to acquire new knowledge and skills, and they may have to change their teaching style. Therefore, it is not surprising that they had reservations about delivery of the new curriculum. People often have questions and uncertainties about new phenomena, which is common for educational changes as well (Bantwini, 2010). A number of factors such as the teachers' attitudes towards the previous curriculum, the perceived benefits of the curriculum change, school ethos, and value for the teacher determine the teachers' receptivity of any curriculum change (Waugh, 2000). Moreover, the paucity of teachers' voices in the curriculum design process and their lack of ownership of the education reform (Berlach, 2010) can affect their familiarity and confidence in curriculum change (Jørgensen *et al.*, 2014).

The teachers in the current study had several concerns about the content of the new curriculum. One concern was related to the "food history" related topics. Several teachers doubted that these topics would be interesting for students. In a previous study, the authors investigated food system professionals' views of the new Food Studies curriculum and found a similar concern (Nanayakkara *et al.*, 2017). However, another study which investigated home economics professionals' views of components for inclusion in a school food literacy curriculum, ranked food tradition, culture, and history as the sixth most important component out of 15 components (Pendergast and Dewhurst, 2012). These food history-related topics were included in the new curriculum with the aim of initiating a

discussion on food from historical and cultural perspectives (Victorian Curriculum and Assessment Authority, 2016). It had been acknowledged that the teaching of food history can be an important means of making students aware of the socio-cultural role of food (Cargill, 2005). Cargill (2005) mentioned that those who view food education mainly as cooking or educating about nutrients will not appreciate the food history topics in the first instance. Provision of more information and training to teachers about teaching food history is important. This may help convince teachers about the important role of food history and change their negative attitude towards this component.

The other major concern was related to the changes in student assessment methods. The new curriculum encourages the use of different tools, such as podcasts and videos, in assessing students. The use of these tools can be challenging for some teachers due to a lack of resources and expertise (Altinyelken, 2010). As teachers play a vital role in students' assessments (Looney *et al.*, 2017; Marksteiner *et al.*, 2015), it is important to get the opinions and the active involvement of a wide range of teachers (from different types of schools, age categories, education qualifications and teaching experiences) in designing assessment methods for a new curriculum. Furthermore, teachers need to be convinced of the importance of new assessment methods, and training could be provided to increase their confidence in using them in the classroom. It is crucial to investigate teachers' opinions about the assessment methods continuously during curriculum implementation (Bantwini, 2010; Dargusch, 2014). This helps assessment bodies and teachers adopt more successful methods (Hall *et al.*, 2016).

In agreement with previous studies that have investigated teachers' opinions about education reforms (Altinyelken, 2010; Bantwini, 2010; Carraway-Stage *et al.*, 2014; Ronto *et al.*, 2017b), this study revealed that teachers expect material support (teaching resources) and non-material support (training) from outside agencies to strengthen the teaching process. Such training and associated resources help increase teachers' confidence and facilitate teaching and learning processes. In contrast, teachers' willingness to use existing teaching resources or search for new resources shows their motivation (Altinyelken, 2010; Rogan and Grayson, 2003) and dedication (Jørgensen *et al.*, 2014; Probart *et al.*, 1997). Some teachers suggested establishing a network for sharing experiences and resources among teachers. Little (1990) has referred to this as a "subject discipline collaborative" which helps to reduce the isolation of teachers and assist with their acquisition of new knowledge, skills, and judgement.

This study's findings indicated that the teachers envisaged challenges associated with new curriculum reform and these conformed with the philosophical approaches that guided this study. In accordance with the first philosophy that guided this study – the diffusion of innovation theory – teachers held mix feelings about the new curriculum content and its delivery. These mixed feelings reflect their uncertainties in delivering the new curriculum. In agreement with the second philosophy – the theory of curriculum implementation – teachers perceived teaching resources and training as vital factors that will help them to deliver the new curriculum. Based on the last philosophy – the cyclical integration model of change management – the findings highlighted the importance of the involvement of teachers from the beginning in any future curriculum reform process to make their voices audible and provide them with feelings of control and possession of the change.

Limitations

Since this study explored teachers' perceptions of the new curriculum before its implementation, teachers could not express their views about actual classroom experiences in teaching the new curriculum. However, they identified several challenges that they anticipate they might experience during its implementation. These early

findings allows the curriculum design body (VCAA) to incorporate teachers' opinions into future revisions of the living curriculum document, classroom resource development, and teacher training opportunities.

Implications for research and practice

The teachers' perceived barriers need to be addressed during the new Food Studies curriculum's implementation. These detailed findings provide curriculum developers with further insights to adapt aspects of new curriculum implementation to teachers' needs.

Schools have been identified as ideal settings for the dissemination of food knowledge and skills (Perez-Rodrigo and Aranceta, 2003). As mentioned earlier, mounting food system-related problems warrant the need for broad school food literacy curricula. The findings of this preliminary study can help inform the development and implementation of food literacy curricula elsewhere in Australia and in other countries. A wide range of food teachers need to be involved in future secondary school food-related curriculum reforms. They should be invited to provide their opinions about what, when, why, and how food subjects should be revised or designed. Furthermore, during the curriculum implementation stage, teachers' opinions about the curriculum delivery and associated challenges and barriers to delivery need to be explored to tailor reforms to meet the expectations of both teachers and students. In addition, exploration of other stakeholders' (students, school administrations, principals) opinions, and students' performance including academic performance and food skills enhancement over the years will help to determine the success of the curriculum reforms.

Conclusions

The majority of teachers were generally happy with the content of the new curriculum, and appreciated the inclusion of nutrition and food system topics. However, they had many concerns and challenges in relation to the delivery of the curriculum including, their lack of awareness and readiness to teach it, their lack of confidence about the new assessment methods, and inadequate resources and training.

References

Altinyelken, H.K. (2010), "Curriculum change in Uganda: teacher perspectives on the new thematic curriculum", *International Journal of Educational Development*, Vol. 30 No. 2, pp. 151-161.

Bantwini, B.D. (2010), "How teachers perceive the new curriculum reform: lessons from a school district in the Eastern Cape Province, South Africa", *International Journal of Educational Development*, Vol. 30 No. 1, pp. 83-90.

Beets, M.W., Flay, B.R., Vuchinich, S., Acock, A.C., Li, K.-K. and Allred, C. (2008), "School climate and teachers' beliefs and attitudes associated with implementation of the positive action program: a diffusion of innovations model", *Prevention Science*, Vol. 9 No. 4, pp. 264-275.

Bellotti, B. (2010), "Food literacy: reconnecting the city with the country", *Agricultural Science*, Vol. 22 No. 3, pp. 29-34.

Berlach, R.G. (2010), "Managing major educational change: is the cyclical integration model the answer?", in Tchibozo, G. (Ed.), *2nd Paris International Conference on Education, Economy & Society*, Strasbourg.

Bodenhausen, G.V. and Hugenberg, K. (2009), "Attention, perception, and social cognition", in Strack, F. and Forster, J. (Eds), *Social Cognition: The Basis of Human Interaction*, Psychology Press, New York, NY, pp. 1-22.

Cargill, K. (2005), "Food studies in the curriculum", *Food, Culture & Society*, Vol. 8 No. 1, pp. 115-123.

Carraway-Stage, V., Henson, S.R., Dipper, A., Spangler, H., Ash, S.L. and Goodell, L.S. (2014), "Understanding the state of nutrition education in the head start classroom: a qualitative approach", *American Journal of Health Education*, Vol. 45 No. 1, pp. 52-62.

Colatruglio, S. and Slater, J. (2014), "Food literacy: bridging the gap between food, nutrition and wellbeing", in Deer, F., Falkenberg, T., McMillan, B. and Sims, L. (Eds), *Sustainable Well-Being: Concepts, Issues, and Educational Practices*, Education for Sustainable Well-Being Press (ESWB Press), Winnipeg, pp. 37-56.

Cullen, T., Hatch, J., Martin, W., Higgins, J.W. and Sheppard, R. (2015), "Food literacy: definition and framework for action", *Canadian Journal of Dietetic Practice and Research*, Vol. 76 No. 3, pp. 140-145.

Dargusch, J. (2014), "Teachers as mediators: formative practices with assessment criteria and standards", *Australian Journal of Language and Literacy*, Vol. 37 No. 3, pp. 192-204.

Desmarais, A.A. and Wittman, H. (2014), "Farmers, foodies and first nations: getting to food sovereignty in Canada", *The Journal of Peasant Studies*, Vol. 41 No. 6, pp. 1153-1173.

Fordyce-Voorham, S. (2015), "Preliminary findings of a food literacy program evaluation using a food literacy model", *Journal of the Home Economics Institute of Australia*, Vol. 22 No. 3, pp. 2-12.

Friel, S., Barosh, L.J. and Lawrence, M. (2014), "Towards healthy and sustainable food consumption: an Australian case study", *Public Health Nutrition*, Vol. 17 No. 5, pp. 1156-1166.

Fullan, M. (2016), "The elusive nature of whole system improvement in education", *Journal of Educational Change*, Vol. 17 No. 4, pp. 539-544.

Fullan, M. and Pomfret, A. (1977), "Research on curriculum and instruction implementation", *Review of Educational Research*, Vol. 47 No. 2, pp. 335-397.

Fullan, M.G. and Miles, M.B. (1992), "Getting reform right: what works and what doesn't", *Phi Delta Kappan*, Vol. 73 No. 10, pp. 745-752.

Guskey, T.R. (1988), "Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation", *Teaching and Teacher Education*, Vol. 4 No. 1, pp. 63-69.

Gussow, J.D. and Contento, I. (1984), "Nutrition education in a changing world: a conceptualization and selective review", *World Review of Nutrition and Diet*, Vol. 44, pp. 1-56.

Hall, E., Chai, W. and Albrecht, J.A. (2016), "A qualitative phenomenological exploration of teachers' experience with nutrition education", *American Journal of Health Education*, Vol. 47 No. 3, pp. 136-148.

Harris, J.E., Gleason, P.M., Sheean, P.M., Boushey, C., Beto, J.A. and Bruemmer, B. (2009), "An introduction to qualitative research for food and nutrition professionals", *Journal of the American Dietetic Association*, Vol. 109 No. 1, pp. 80-90.

Jørgensen, T.S., Krølner, R., Aarestrup, A.K., Tjørnhøj-Thomsen, T., Due, P. and Rasmussen, M. (2014), "Barriers and facilitators for teachers' implementation of the curricular component of the boost intervention targeting adolescents' fruit and vegetable intake", *Journal of Nutrition Education and Behavior*, Vol. 46 No. 5, pp. e1-e8.

King, N. (2004), "Using templates in the thematic analysis of text", in Cassell, C. and Symon, G. (Eds), *Essential Guide to Qualitative Methods in Organizational Research*, Sage Publications, London, pp. 256-268.

King, N. (2014), "Welcome to the template analysis website", The University of Huddersfield, available at: www.hud.ac.uk/hhs/research/template-analysis/ (accessed 6 July 2015).

Kirk, D. and MacDonald, D. (2001), "Teacher voice and ownership of curriculum change", *Journal of Curriculum Studies*, Vol. 33 No. 5, pp. 551-567.

Larson, N.I., Perry, C.L., Story, M. and Neumark-Sztainer, D. (2006), "Food preparation by young adults is associated with better diet quality", *Journal of the American Dietetic Association*, Vol. 106 No. 12, pp. 2001-2007.

Lichtenstein, A.H. and Ludwig, D.S. (2010), "Bring back home economics education", *Journal of the American Medical Association*, Vol. 303 No. 18, pp. 1857-1858.

Little, J.W. (1990), "The persistence of privacy: autonomy and initiative in teachers' professional relations", *Teachers College Record*, Vol. 91 No. 4, pp. 509-536.

Looney, A., Cumming, J., van Der Kleij, F. and Harris, K. (2017), "Reconceptualising the role of teachers as assessors: teacher assessment identity", *Assessment in Education: Principles, Policy & Practice*, doi: 10.1080/0969594X.2016.1268090.

Marksteiner, T., Ask, K., Reinhard, M.-A. and Dickhäuser, O. (2015), "Saving cognitive resources when possible: the role of judgment consequences and the judgment tendency of other teachers in teachers' assessment of students", *Social Psychology of Education*, Vol. 18 No. 4, pp. 735-747.

Marshall, M.N. (1996), "Sampling for qualitative research", *Family Practice*, Vol. 13 No. 6, pp. 522-526.

Nanayakkara, J., Margerison, C. and Worsley, A. (2017), "Food professionals' opinions of the food studies curriculum in Australia", *British Food Journal* (in press).

Ontario Ministry of Education (2013), "The Ontario curriculum grades 9 to 12: social sciences and humanities", Ontario Ministry of Education, available at: www.edu.gov.on.ca/eng/curriculum/secondary/subjects.html (accessed 17 January 2017).

Pendergast, D. and Dewhurst, Y. (2012), "Home economics and food literacy: an international investigation", *International Journal of Home Economics*, Vol. 5 No. 2, pp. 245-263.

Perez-Rodrigo, C. and Aranceta, J. (2003), "Nutrition education in schools: experiences and challenges", *European Journal of Clinical Nutrition*, Vol. 57 No. S1, pp. S82-S85.

Popkin, B.M., Adair, L.S. and Ng, S.W. (2012), "Global nutrition transition and the pandemic of obesity in developing countries", *Nutrition Reviews*, Vol. 70 No. 1, pp. 3-21.

Probart, C., McDonnell, E., Achterberg, C. and Anger, S. (1997), "Evaluation of implementation of an interdisciplinary nutrition curriculum in middle schools", *Journal of Nutrition Education*, Vol. 29 No. 4, pp. 203-209.

Rogan, J.M. and Grayson, D.J. (2003), "Towards a theory of curriculum implementation with particular reference to science education in developing countries", *International Journal of Science Education*, Vol. 25 No. 10, pp. 1171-1204.

Rogers, E.M. (1995), *Diffusion of Innovations*, 4th ed., Free Press, New York, NY.

Ronto, R., Ball, L., Pendergast, D. and Harris, N. (2017a), "Environmental factors of food literacy in Australian high schools: views of home economics teachers", *International Journal of Consumer Studies*, Vol. 41 No. 1, pp. 19-27.

Ronto, R., Ball, L., Pendergast, D. and Harris, N. (2017b), "What is the status of food literacy in Australian high schools? Perceptions of home economics teachers", *Appetite*, Vol. 108, pp. 326-334.

Ronto, R., Ball, L., Pendergast, D. and Harris, N.D. (2016), "Food literacy at secondary schools in Australia", *Journal of School Health*, Vol. 86 No. 11, pp. 823-831.

Spall, S. (1998), "Peer debriefing in qualitative research: emerging operational models", *Qualitative Inquiry*, Vol. 4 No. 2, pp. 280-292.

Stuckler, D. and Nestle, M. (2012), "Big food, food systems, and global health", *PLoS Medicine*, Vol. 9 No. 6, doi: 10.1371/journal.pmed.1001242.

Sumner, J. (2013), "Eating as if it really matters: teaching the pedagogy of food in the age of globalization", *Brock Education: A Journal of Educational Research and Practice*, Vol. 22 No. 2, pp. 41-55.

Tilman, D., Balzer, C., Hill, J. and Befort, B.L. (2011), "Global food demand and the sustainable intensification of agriculture", *Proceedings of the National Academy of Sciences*, Vol. 108 No. 50, pp. 20260-20264.

Trotter, R.T. (2012), "Qualitative research sample design and sample size: resolving and unresolved issues and inferential imperatives", *Preventive Medicine*, Vol. 55 No. 5, pp. 398-400.

Victorian Curriculum and Assessment Authority (2016), "Victorian certificate of education food studies: study design", Victorian Curriculum and Assessment Authority, available at: www.vcaa.vic.edu.au/Documents/vce/technology/FoodStudiesSD_2017.pdf (accessed 15 July 2016).

Vidgen, H.A. and Gallegos, D. (2014), "Defining food literacy and its components", *Appetite*, Vol. 76, pp. 50-59.

Waugh, R.F. (2000), "Towards a model of teacher receptivity to planned system-wide educational change in a centrally controlled system", *Journal of Educational Administration*, Vol. 38 No. 4, pp. 350-367.

Worsley, T. (2011), "Food knowledge survey 2011: preliminary report", Deakin University, Centre for Physical Activity and Nutrition Research (C-PAN), available at: www.deakin.edu.au/__data/assets/pdf_file/0020/307028/food-knowledge-survey-report.pdf (accessed 10 December 2016).

Corresponding author
Janandani Nanayakkara can be contacted at: gnanayak@deakin.edu.au