

## Food literacy education in Manitoba, Canada and Victoria, Australia: a comparative pilot study

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### Abstract

*Home Economics Food and Nutrition (HEFN) courses offered through schools have the potential to provide youth with food literacy (knowledge, attitudes and skills) to manage in the contemporary food environment. Little is known, however, about the capacity of current HEFN programs to foster food literacy. While the existence of such courses varies between schools, regions and countries, many students in the province of Manitoba, Canada and the state of Victoria, Australia are enrolled in HEFN programs in grades 7 and 8 (students aged 11-13 years). This study sought to explore the feasibility of HEFN programs to support the development of food literacy competencies in Manitoba and Victoria through curricula document reviews and qualitative interviews with home economics teachers. Curricular mapping compared the Manitoban Specific Learning Outcomes (SLOs) and Victorian Content Description Codes (CDCs) from curricula documents with a framework of food literacy competencies for youth (Slater, Falkenberg, Rutherford, & Colatruccio, 2018). Semi-structured interviews were conducted with eight teachers. Curriculum mapping revealed that not all food literacy competencies were present in curricular documents. The interviews showed that teachers mainly focused on developing functional food literacy competencies, while higher-ordered competencies, such as the relational and systems competencies, were less obvious. The discussion considers four areas in which to improve the development of food literacy competencies: (1) curricular structure and content; (2) teacher pedagogy and training; (3) teacher resources for supporting programming; and (4) time allocated to HEFN programs. Unless students receive HEFN in higher years, their food literacy competencies established in grades 7 and 8 may not be sufficient for healthy living in adulthood.*

**KEYWORDS:** FOOD LITERACY, NUTRITION EDUCATION, CURRICULUM, HOME ECONOMICS, HUMAN ECOLOGY

### Introduction

Over one-quarter of Manitoban (Government of Manitoba, 2014) and Victorian (Victoria State Government, 2015) adolescents (aged 11-17 years) are overweight or obese. Adolescents with excess weight tend to become adults with excess weight (Simmonds, Llewellyn, & Woolacott, 2015) and are at greater risk for developing non-communicable diseases like type II diabetes, cardiovascular disease, and some cancers (Reilly & Kelly, 2011). Diets of adolescents in Manitoba and Victoria consist of high proportions of ultra-processed foods (Victoria State Government, 2015; Moubarac, J.-C., Batal, M., Louzada, M. L., Martinez Steele, E., & Monteiro, C. A., 2016), the regular consumption of which has been associated with excess weight gain and obesity (Lobstein et al., 2015; Lobstein, Jackson-Leach, Moodie, Hall, Gortmaker, Swinburn, ... McPherson, 2015; Malik, Popkin, Bray, Despres, Willett, & Hu, 2010; Popkin, Adair, & Ng, 2012; Rao, Vijayapushpam, Subba Rao, Antony, & Sarma, 2007). In addition to high consumption of ultra-processed foods and sugar-sweetened beverages, Manitoban and Victorian adolescents do not meet the recommended servings of fruits and vegetables (Government of Manitoba, 2014; Victoria State Government, 2015).

Paired with poor dietary intake is the observation of a downward trend in adolescent food skills. “Food skills” are a collection of knowledge, information, and skills that involve the purchasing,

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preparing, and cooking of food materials to produce healthy, tasty meals (Fordyce-Voorham, 2009a; Fordyce-Voorham, 2011). Engagement in food-related activity has been associated with improved diet quality (Larson, Perry, Story, & Neumark-Sztainer, 2006). Laska, Larson, Neumark-Sztainer, & Story (2011) revealed that those who have positive food-related experiences in adolescence have improved food skills and confidence in the kitchen in adulthood. However, the contemporary “nutrition transition” (Popkin et al., 2012) has transformed the ways in which family meals are prepared, cooked, and shared (Colatruglio & Slater, 2014). Little time spent on cooking unprocessed or minimally processed food at home (Moubarac et al., 2016) has contributed to loss of individual food knowledge and skill, and transfer of knowledge and skill from caregiver to adolescent (Berge, MacLehose, Loth, Eisenberg, Fulkerson, & Neumark-Sztainer, 2012; Laska et al. (2011); Lu, Huet, & Dube, 2011; Pelletier & Laska, 2012). It is reasonable therefore to suggest that if adolescents are introduced to positive food-related experiences in grades 7 and 8, and build on these experiences through food and nutrition education in higher grades, that these skills are likely to be transferred into adulthood.

Education aims to build human capacity and agency which positions schools as catalysts for food skill development. Classes that teach food skills in Manitoba and Victoria come under a variety of nomenclature, including human ecology, food technologies, or food studies, although for this study “home economics food and nutrition” (HEFN) will encompass these practical skill programs (Slater, 2013). The greatest proportion of students enrolled in HEFN classes occurs in the middle year grades 7 and 8 in Manitoba, Canada (Slater, 2013) and Victoria, Australia (Ronto, Ball, Pendergast, & Harris, 2017a). Subsequently, HEFN courses become elective options in grades 9 to 12 and are prone to being cut from schools’ offerings as more optional subjects are introduced (Ronto et al., 2017a). As enrollment of HEFN programs are the greatest in grades 7 and 8, their positioning in the development of food skills is of interest.

Several scholars have positioned food skills within the broader, emerging construct of “food literacy” (Pendergast & Dewhurst, 2012) (Cullen, Hatch, Martin, Higgins, & Sheppard, 2015). Vidgen & Gallegos’ (2014) describe food literacy as “the scaffolding that empowers individuals, households, communities or nations to protect diet quality through change and strengthen dietary resilience over time”. Food literacy is thought to capture a broader scope of understanding of the attributes required for eating within a complex modern foods system (Slater, 2017). Slater organizes food literacy competencies into three categories: functional, relational, and systems (Slater et al., 2018). Functional competencies are similar to Fordyce-Voorham’s “food skills”, involving choosing, preparing, and cooking food (Fordyce-Voorham, 2009b). Relational competencies, like finding joy and meaning through food and eating, demonstrate foods’ capacity for well-being. Systems competencies, such as understanding equity and sustainability for food systems, recognizes foods’ relation to the natural environmental and global markets (Slater et al., 2018). These competencies formulate the framework “Food literacy competencies for young adults (Slater et al., 2018).” This framework provides an opportunity for examining how extensively the recently revised Manitoban Human Ecology and Victorian Home Economics curricula include food literacy issues. However, despite this evolved thinking, barriers prevail that influence the quality of HEFN programming (Ronto et al., 2017a; Slater, 2013), which questions programs’ and facilitators’ ability to teach and develop food literacy competencies. It is in this context that this exploratory study aimed to investigate the extent to which food literacy competencies are integrated into Manitoban and Victorian grades 7 and 8 HEFN curricula and teacher implementation of programming.

## Methods

The research is composed of two complementary parts: curricular mapping and in-depth interviews with home economics teachers. Data was collected in Victoria, Australia and Manitoba, Canada. Ethical approval for this research was provided by the University of Manitoba and Deakin University.

### Curricular mapping

In Manitoba, HEFN programming is organized in the document *Middle Years Human Ecology: Manitoba Curriculum Framework of Outcomes* (grades 5 through 8) (Government of Manitoba, 2015). In Victoria, content from the *Design and Technologies* (Victoria Curriculum and Assessment Authority, n.d. a) and *Health and Physical Education* curricula (grades 7 and 8) (Victoria Curriculum and Assessment Authority, n.d. b) are the prescribed materials for HEFN programming (Home Economics Victoria website, n.d.). Specific Learning Outcomes (SLOs) from the Manitoban curriculum and

Content Description Codes (CDCs) from Victorian curricula provide explicit descriptions and scaffolding for the application of HEFN programming. SLOs and CDCs provide explicit descriptors of what content make up HEFN programming. Slater et al.'s 2018 framework *Critical Food Literacy Competencies for Young Adults* illustrates components of food literacy that are deemed essential for young adults. Thus, SLOs and CDCs were mapped against Slater et al.'s framework to determine the status of food literacy principles in the respective curricula.

## Participants

Five Manitoban and three Victorian HEFN teachers participated in the interviews. Teachers were from different school systems which use their provincial/state HEFN curriculum to cover variations in programming. Participants were recruited via convenience sampling, and varied in age and years of experience teaching HEFN programs (Table 1). No participants identified as males. Inclusion criteria were that teachers must have been teaching grades 7 and/or 8 HEFN at the time of the interview. An introductory statement about the research was given to teachers and their consent was provided.

Table 1: Participant Demographics

Home economics teachers	<i>n</i> = 8 (%)
<b>Gender</b>	
Women	8 (100)
<b>Age in years</b>	
20–29	1 (12.5)
30–44	4 (50)
45–59	2 (25)
60+	1 (12.5)
<b>Years of experience teaching HEFN</b>	
1–5	1 (12.5)
6–10	3 (37.5)
11–15	1 (12.5)
16–20	2 (25)
Over 20 Years	1 (12.5)
<b>School system</b>	
Provincial (MB)	5 (62.5)
State (VIC)	1 (12.5)
Catholic (VIC)	1 (12.5)
Independent (VIC)	1 (12.5)
<b>HET training</b>	
Tertiary education in HEFN	7 (87.5)
Other teacher qualifications	1 (12.5)

## Interviews

Semi-structured interviews were conducted to explore the home economics teachers' (HETs) perceptions of food and nutrition curricula in grades 7 and 8, teacher training, and classroom instruction. Face-to-face interviews were conducted in Victoria (*n* = 3), and telephone interviews were conducted with Manitoba HETs (*n* = 5), from May through August 2018. All interviews were conducted by a single interviewer who took field notes to facilitate data collection and analysis. Questions are in Table 2. Interviews lasted between 30 and 65 minutes each.

Table 2: Semi-structured interview questions

Interview questions	
1.	What is your educational background? Do you think this is similar to most HMEC teachers in your school system?
2.	Is HMEC mandatory or optional for students in your school system?
3.	How do you use the provincial food and nutrition curriculum for developing your unit plans?
4.	What is your opinion of the food and nutrition curriculum?
5.	What resources and/or supports do you use to develop your unit plans to align with the food and nutrition curriculum?
6.	Do you have a teaching focus on Indigenous food and nutrition issues? If yes, can you elaborate?
7.	Do you have a teaching focus on multi-cultural food and nutrition issues? If yes, can you elaborate?
8.	Do you have a teaching focus on health and wellness issues? If yes, can you elaborate?
9.	Do you have a teaching focus on sustainability? If yes, can you elaborate?

### Data analysis

Slater's food literacy framework outlines 59 competencies of a food literate young adult (Slater et al., 2018). The competencies were inserted in an Excel spreadsheet and "mapped" or cross-referenced to curricular SLOs (Manitoba) and CDCs (Victoria) that encompassed the competency. For example, the competency "Understanding the role of nutrients in the body" was paired with the Manitoban GLO 2.1 "Develop understanding of the relationship between food and a healthy body".

Field notes were reviewed after each interview for clarification. Similar statements were organized together to identify common themes and sub-themes. Manitoban and Victorian data were analyzed separately to identify differences in response between regions.

### Results

Results showed many similarities, as well as some differences, between the content and application of the respective HEFN curricula. The amount of class time devoted to HEFN education varied from 16-45 hours per year. While some of the food literacy components were incorporated into curricula and teaching, some were not. Teachers identified barriers to implementation.

#### Manitoban and Victorian HEFN education and curricula

##### *Manitoba*

Education in Manitoba is divided into three grade groups: early years from kindergarten to grade 4, middle years from grades 5 to 8, and senior years from grades 9 to 12. There are four sectors of Manitoban education: public schools (provincially funded), independent schools, First Nation<sup>1</sup> schools, and home schooling. The majority (> 90%) of students attend public schools (Government of Manitoba, 2018).

HEFN classes are not required for all students in Manitoba; however, some of the 34 School Divisions have mandated classes in middle school, while in other Divisions it is optional or not offered at all. Curriculum is available from grades 5 through 12 and is designed for a stand-alone course or as a part of a comprehensive human ecology program, which includes family studies and textiles. The curriculum is organized into General Learning Outcomes (GLOs), which are overarching statements about what students are expected to learn in each course. Each GLO consists of assorted learning outcome (Government of Manitoba, 2015), called Specific Learning Outcomes (SLOs). SLOs are prescriptive and define precisely what students should know and do by the end of a learning activity. GLOs remain the same across grades, however SLOs become increasingly more complex and specific as grades progress. SLOs build upon knowledge, skill, and behaviour that were learned in previous years.

<sup>1</sup> First Nation Schools are operated by registered Indigenous bands or First Nations communities under federal jurisdiction. "First Nations" is a term used to describe Aboriginal people who are not Métis or Inuit (Gadacz, 2019).

Although curriculum is prescribed from grades 5 to 8, schools' implementation of programs varies greatly. Schools schedule HEFN by semester or trimester, rotating classes between other skill-based programs, like textiles, woodworking, electronics, or industrial art classes. Time allotted for HEFN classes also varies between schools. For example, one school offers 32 hours per year of HEFN, while another offers 10 hours.

### Victoria

Primary schools have a preparatory year prior to grade 1, and go through to grade 6, while secondary schools have grades 7 to 12. There are three school sectors in the state of Victoria: government, independent, and Catholic. In 2017, 63.5% of Victorian students attended government schools, while the remaining students attended non-government schools or home schooling (Government of Australia, 2018).

All State government Victorian schools are mandated to follow the Victorian curriculum that is implemented between kindergarten and grade 10. Students finish their education in grades 11 and 12 with a Victorian Certificate of Applied Learning (vocational focus) or the Victorian Certificate of Education (preparatory for tertiary education).

HETs in Victoria design HEFN programs using content from two curriculum documents: *Design and Technologies* (Victoria Curriculum and Assessment Authority, n.d. a) and *Health and Physical Education* (Victoria Curriculum and Assessment Authority, n.d. b) for grades 7 through 10. Both curricula are used for programs aside from HEFN classes, such as physical education, mechanical engineering, graphic arts, and woodworking. Accordingly, curricular content must use broad language for its cross-disciplinary utilization. Curricular content, through Content Description Codes (CDCs), provides general themes that programs should embrace, similar to Manitoba's GLOs. Teachers in Victoria use the mandated curricula as a guide to develop courses and learning activities that will meet thirteen achievement standards.

### Food literacy principles in curricula

The comparison of the respective curricula with Slater's framework revealed some gaps; 12 missing competencies in Manitoban curricula, and 14 in Victoria which were primarily Functional and Relational (Table 3). However, all systems competencies were present in the curriculum documents.

Table 3: Gaps in food literacy competencies in curricula

	Manitoban Curriculum	Victorian Curricula
Functional Competencies	<ul style="list-style-type: none"> <li>Being able to prepare meals with basic ingredients</li> <li>Being able to compare food costs to make economical choices</li> <li>Being able to stock a pantry with staple ingredients</li> <li>Being able to develop a food budget</li> <li>Being able to select healthy foods within a budget</li> <li>Having positive attitudes around food and eating</li> <li>Being able to advocate for availability of healthy foods in the community</li> <li>Understanding food and weight loss/supplements industry interests and marketing</li> </ul>	<ul style="list-style-type: none"> <li>Understanding nutritional needs at different life stages</li> <li>Understanding seasonality of food</li> <li>Understanding where to access food</li> <li>Being able to prepare meals with basic ingredients</li> <li>Being able to read/follow a recipe</li> <li>Being able to cook with and for others</li> <li>Being able to use technology to find appropriate recipes</li> <li>Being able to stock a pantry with staple ingredients</li> <li>Having positive attitudes around food and eating</li> <li>Having healthy body image and self-esteem</li> <li>Understanding that all foods can have a positive role in our diets</li> </ul>
Relational Competencies	<ul style="list-style-type: none"> <li>Enjoy food and eating</li> <li>Being able to access foods particular to one's culture</li> <li>Being open to eating new and diverse foods</li> <li>Enjoying cooking new and diverse foods</li> </ul>	<ul style="list-style-type: none"> <li>Enjoy food and eating</li> <li>Preparing food in a fun and enjoyable way</li> <li>Enjoying preparing new and diverse foods</li> </ul>

## Themes

Four major themes emerged from HETs perceptions of food and nutrition curricula in grades 7 and 8, teacher training, and classroom instruction.

### *HETs should receive specialized training.*

Participants indicate that the majority of HETs receive their HEFN education through a tertiary educational body, yet the majority felt that many of those newly entering the occupation do not receive proficient training to instruct HEFN programs. Participants in Manitoba know of other HETs with backgrounds in Physical Education and Family Studies, but not Nutrition. They report that the closure of University programs, a shortage of French-speaking HETs, and the under-appreciation of HEFN professionals have contributed to the reduction of qualified teachers instructing HEFN. Similar perceptions of teacher credentials were identified in Victoria. Victorian participants commented that many individuals with culinary training and teacher certificates have been instructing HEFN. A Victorian HET comments:

Chefs are hired because shows like Master Chef have become so trendy, and culinary programs make schools look good... these programs don't provide kids with the everyday knowledge to prepare simple, everyday meals using whole ingredients. Culinary shows often feature foods with high levels of fat, sugar, and salt. It's not a sustainable way of cooking.

### *Curriculum implementation has challenges.*

Manitoban HETs found the layout of the curriculum easy to follow and could identify how learning objectives build upon one another. They valued the breadth of curricular content, which encompass a variety of food and nutrition-related issues. A teacher who did not have formal training in HEFN remarked that the SLOs give clear guidance on what content is expected to be covered in the course, yet also expressed that the curriculum had components they could not interpret.

Victorian HETs had varying opinions of the curriculum. One appreciated its broad structure which gives her the autonomy to design her own program, tailoring it to students' needs or interests, and allowing in-depth exploration of topics. Another HET felt the curriculum is too general and would like more guidance on what students should be learning and able to do. She suggested that some HETs misinterpret the curriculum and design classes that primarily produce patisserie items, with little focus on healthy eating.

Manitoban and Victorian HETs both described that there is too much content within curricula to cover within the time they are given and struggle to include all content.

The curriculum covers a lot of information... you are forced in a course like this to pick and choose based on your time restrictions

[My time with students] is not long, so I have to narrow down what they're going to do

To cope, they may design tasks that cover a variety of SLOs in one lesson:

Yes, there are a lot of SLO's, but if you look at the big picture and focus on the GLO's as your leading force, you are probably hitting the SLOs.

The restricted time to cover the large curriculum may not allow for students to fully develop ideas:

I feel I just introduce each topic. I would love to spend more than one class on a topic, but I don't want to take away from all the other content that I still need to teach... I feel like I'm giving them an information overload

A Victorian HET stated that students' minimal time spent in HEFN programming is not enough to develop food skills necessary for adulthood:

It's still not enough information or skill development for students to never receive food education again. It's really basic, really introductory stuff.

### *Instructional resource procurement*

HETs in Manitoba and Victoria use human and non-human resources to support HEFN curricular content (Table 4). Manitoban HETs use the government publication *Eating well with Canada's Food*

*Guide* (Government of Canada, 2007), share resources with colleagues, and create or use resources from various online sources. One HET cited use of a government recommended textbook *Food for Life* (Government of Manitoba, 2015). Victorian HETs use the food model *Australian Guide to Healthy Eating* as well as resources supplied by the Victorian Curriculum Assessment Authority and professional associations such as Home Economics Victoria. Both Manitoba and Victoria HETs used internet resources. All Victorian participants use the Facebook page Teachers of Food Studies (Food Technology), although it is not necessarily an endorsed platform of best practice teaching materials. HETs in Manitoba and Victoria say that their education in HEFN has prepared them to critically evaluate the quality of online resources.

Table 4: Learning resources that HETs use to support curricular outcomes

Manitoban HET Resources		Victorian HET Resources	
Teachers that cited use of resource (N = 5)		Teachers that cited use of resource (N = 3)	
Human resources			
Sharing with colleagues	3	Facebook	3
Social Media	1	Sharing with colleagues	2
Instagram	1		
Non-human resources			
<i>Print</i>			
Teacher's university textbook	1	Food by Design (textbook)	2
Food for Life (textbook)	1	The Food Book	1
Stone soup (story book)	1	Materials from Home Economics Victoria	1
		Magazines	1
		Newspaper	1
<i>Government and Industry</i>			
Eating Well with Canada's Food Guide	3	Australian Guide to Healthy Eating	3
Ag in the Classroom	1	Healthy Eating Pyramid	1
Nuton (Dairy Farmers)	1		
<i>Online sources</i>			
YouTube	3	YouTube	2
Google search	2	ClickView	1
CBC news articles	1	Documentaries	1
Learning Zone Express	1	Google search	1

## Inclusion of food literacy topics is variable

### *Health and wellness*

Manitoban and Victorian HETs incorporate health topics into programming. Three HETs in Manitoba introduce nutrition knowledge by focusing on “developing a healthy body”.

Being sick as an adult is so far away it is hard to make the connection between health and nutrition for them. I have a focus on “what kind of body are you growing?” and what you need to feel good.”

For some HETs in Manitoba and Victoria this was support through use of government-issued eating guidelines *Eating Well with Canada's Food Guide* (Government of Canada, 2007) and the *Australian Guide to Healthy Eating*. Some HETs employ food mapping assignments where students plot the food they ate over time in a blank food guide to assess their dietary quality. They introduce major nutrients, what foods they are found in, and their primary functions in the body. Only one teacher mentioned instruction related to well-being, “sitting and eating with classmates after a practical task”.

*Multi-cultural and Indigenous food and nutrition issues*

Manitoban and Victorian HETs teach about multi-cultural food and nutrition issues in middle years; however, one Manitoban HET situates meals within a culture and geographical context by comparing governmental eating guidelines with Canada and France. Participants include components of *cuisine*, as in making recipes from different ethnic foods traditions, such as make a Spanish paella. Two Victorian HETs present cuisine in grade 9 or 10 HEFN and exclude it from middle-years' programs.

Not at the moment—these early years in a students' food education [are] about getting their skills up.

Manitoban HETs include little information about Indigenous food and nutrition issues in grades 7 and 8. Two HETs make bannock<sup>2</sup> with their classes. One teacher includes the First Nation, Inuit, and Métis version of *Eating Well with Canada's Food Guide* (Government of Canada, 2010) in programming. Some teachers felt that time constraints and the small Indigenous populations in their schools allow for the exclusion of this topic.

I do talk about Aboriginal perspectives, but I don't elaborate. I want them to be aware of it, but I generally don't have the time to go into depth.

Victorian HETs also present little information about Indigenous food and nutrition issues in grades 7 and 8. One HET presents the *Indigenous Food Model* (Aboriginal and Torres Strait Guide to Healthy Eating, 2015), but stated that the school's food supplier does not stock any Indigenous or heritage ingredients. Another claimed there is a lack of teaching resources on Indigenous food and nutrition. All HETs mentioned that Indigenous food and nutrition issues are included in more senior years. One teacher suggested that it is inappropriate for non-Indigenous teachers to present Indigenous topics:

If we want more Indigenous content, we should have more Indigenous leaders come into schools—and they should be paid. It's a beautiful way to reconcile. Then the knowledge comes right from source. They want teachers to learn and teach this knowledge, but then it becomes second-hand knowledge.

*Social justice & sustainability*

The teachers reported difficulties in teaching social justice and sustainability issues in HEFN. One Manitoban HET compares food prices between Winnipeg and isolated, northern communities (where food is very expensive) to introduce the concept of food security and lack of access for some populations. One Victorian HET introduces reducing, reusing, and recycling. Others suggested that sustainability is demonstrated through school-based initiatives, such as recycling, and composting. The majority felt, however, that developing basic food skills is a greater priority in the early years of food education:

It's sometimes hard to reach things like the food sustainability aspect of the curriculum when you're focused on fundamental food skills and food safety.

**Discussion**

This study set out to investigate food literacy competencies in Manitoba and Victoria grades 7 and 8 HEFN curricula and teacher implementation.

**Curricula structure and content**

Several gaps were identified in Functional and Relational competencies through curricular mapping. Absent competencies, however, may be implicitly written in curriculum and may be covered by an effective teacher, a trained HET, or one that uses a food literacy framework in which to base their lessons. Missing competencies in middle years' curricula may also be introduced in later years, as identified by some HETs who focused more on food skills; however, since senior years enrolment in HEFN is significantly lower in Manitoba, youth may not benefit from the current curricular structure.

Teachers in Manitoba and Victoria value the content and structure of their respective curricula although they differ. The Manitoban curriculum is more descriptive, while the Victorian curriculum is broader, because it is used to meet multiple program needs. A more descriptive curriculum may

<sup>2</sup> Bannock is culturally significant food for some Indigenous people of Canada. In pre-contact times, bannock was made from ground roots, water, and berries, although its contents varied based on what was available. Today, recipes commonly use flour, sugar, salt, yeast, and water. (Colombo, 2017)



scaffold programming for untrained HETs. However, a descriptive curriculum that uses discipline-specific terminology may be an obstacle for a new and/or untrained HET, and may affect their ability to implement certain components into programming. A descriptive curriculum may also prevent teachers from designing patisserie programs, which lead to fewer food literacy competencies.

Interestingly, all “systems competencies”, including food security and the impact of food waste, were present in SLOs and CDCs. However, when teachers were asked about incorporating sustainability in programming, most suggested that this was taught through school-based initiatives, like compost and recycling programs, rather than through HEFN classes. Teaching to learning outcomes, however, is very different than school-based activities. This suggests that there are deviations or omissions from curricular content, as teachers may see other school-based initiatives taking care of these topics.

### **Teacher pedagogy and training**

Most teachers interviewed had tertiary HEFN education and expressed concern that untrained HETs are teaching HEFN programs. The closure of tertiary educational programs was cited as a reason for fewer HET-trained professionals entering the field, something that has been reported in previous studies in Manitoba (Colatruglio & Slater, 2014) and Victoria (Ronto et al., 2017a). Untrained HETs may not understand or misinterpret curriculum, influencing the development of food literacy competencies. For example, untrained HETs may take a culinary or patisserie approach to programming, which do not focus on skills for healthy living.

### **Teachers’ resources for supporting programming**

HETs do not value print material as they once may have, choosing instead online resources. However, a plethora of questionable resources, obtained through platforms like Instagram and Facebook, have replaced government recommended learning materials. Social media platforms are used for sharing resources between teachers, although materials may not be credible or appropriately resourced and referenced. The use of online sources as teaching materials is especially concerning considering the presence of untrained HETs who may not be able to identify evidence-based HEFN educational resources.

### **Challenges to HEFN programs**

While time devoted to HEFN classes varied in Manitoban and Victorian schools lack of time was identified as a major obstacle by everyone. This has been identified elsewhere as a significant barrier to quality food literacy education (Goldstein, 2014; Ronto et al., 2017a). Teachers manage curricular volume and time restrictions by exploring the breadth or depth of curriculum; but not both. In response, teachers progress through all curricular content quickly, without sufficient depth, or do not include all components. Despite lacking specific curricular outcomes, they tend to focus on functional food literacy competencies, like food skills, in these middle years. This is a pragmatic approach, as young people who have positive food-related experiences in adolescence have improved food skills (Laska et al., 2011) and a dietary quality in adulthood (Larson et al., 2006). However, evidence supports the HET’s assertions that their limited teaching time does not improve food skills to a significant degree (Ronto, Ball, Pendergast, & Harris, 2017b). This indicates, that even with a ladder curriculum, students may not develop comprehensive food literacy competencies by the end of their schooling.

### **Future directions**

Tertiary programs should be resourced to ensure appropriately trained HETs are entering the field. Evidence-based online materials should be generated and made readily available for teachers as a means for content-specific professional development to replace current social media repositories such as Facebook.

Developing food literacy competencies should be the aim of HEFN programs. To ensure that food literacy competencies are being incorporated into programs and scaffolded across grades, curriculum should be descriptive and explicit. This will ensure that schools and educators have clear expectations for what is required of HEFN programming and allow for appropriate evaluation. Appropriate tertiary training should be available to ensure a supply of adequately trained teachers, and to support existing untrained HETs. Further, restrictions could be made by educational governing bodies to secure the

employment of discipline-specific teachers; Ireland's *Teaching Council Act* supports the employment of discipline-specific teachers by protecting their employment in their curricular area (The Teaching Council, 2013).

As teachers have become more dependent upon online sources for educational materials, an investment should be made to accommodate this approach to resource acquisition. An online platform of curated, evidence-based HEFN education materials should involve a variety of learning materials including assignments, lesson plans, instructional videos, news articles, and activities that align with curricular outcomes. Ideally, the structure of the learning plan should have a consistent layout, so users become comfortable navigating the learning materials, yet incorporate flexibility for different users and contexts. Further, materials should be overseen by a body of expert HETs through the respective home economics professional associations such as Home Economics Victoria and the Manitoba Home Economics Association to ensure quality and currency.

Finally, more time should be allocated towards food literacy education. Research suggests that food skill development should start at an early age for the greatest skill retention, confidence, cooking practices, cooking attitude, and diet quality (Lavelle, Spence, Hollywood, McGowan, Surgenor, McCloat, Mooney, Caraher, Raats, & Dean, 2016). A study with Australian parents found one third felt HEFN should be compulsory for grades 11 and 12 while three quarters felt having HEFN as a non-compulsory subject for grade 11 and 12 would help students develop food skills (Nanayakkara, Burton, Margerison, & Worsley, 2017). When food literacy education is started early and sustained throughout a student's education, they are given the opportunity to develop higher order competencies (Goldstein, 2014). The UK has taken this approach with their *Food a Fact of Life* program (British Nutrition Foundation, 2019) which is mandatory throughout England. Despite the compulsory nature of the program, a review revealed that its impact has been hampered by many challenges and constraints. These include lack of time and budget for instruction, no additional teaching resources, and limited professional development opportunities (Ballam, 2018).

For schools to scale up and support food literacy education for all students, programs must be resourced and new models of programming will need to be explored such as incorporating into existing subject areas. This will also involve new conversations about moving from the reductionist approach of equipping students for the workforce to preparing students with skills for health, well-being, and citizenship. In our complex food environment filled with incentives to inhibit food literacy development (e.g. ultra-processed and fast food, meal delivery apps) and the damaging consequences (e.g. nutrition-related disease pandemics such as diabetes, environmental degradation), scaled-up food literacy education is essential moving forward.

### Limitations

While this study has contributed to a greater understanding of HEFN programming in Manitoba and Victoria, there are limitations. Firstly, a small size of convenience participants was used to gather data, which only reflects the opinions of this group and their biases. Second, the researcher also identified as an HET which may inflate participant bias. However, participants may have felt more likely to divulge their opinions and experiences with a colleague instead of an extraneous researcher. Nonetheless, these preliminary findings provide researchers and educational regulators opportunities for further investigation of food literacy competency development and HEFN program implementation.

### Conclusion

Food literacy provides a new and evolving framework for food and nutrition education, but time and resources are required for curricula to fully reflect the scope of food literacy. While grades 7 and 8 HEFN programs in Manitoba and Victoria provide some of the foundations for food literacy competency development, curricula gaps, minimal exposure to HEFN programs in later years, and variable teacher training and program implementation present barriers and challenges. The expansion of food literacy education to all, or at least the majority of students, along with curricula that scaffold food literacy competencies are required as a buffer to an increasingly obesogenic food environment and the development of unhealthy food relationships. These strategies should be supported through adequate teacher training and the creation of evidence-based learning materials, to support programs. It is recommended that schools embrace food programs at an early age for the greatest development and retention of functional food competencies (Lavelle et al., 2016) while

continuing to develop higher-order relational and systems competencies in more senior years (Goldstein, 2014). To do otherwise leaves our children at considerable risk in an increasingly complex foodscape (Slater, 2017).

## Author biography

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