Food Processing Skills Canada's iFood 360^0 Pilot Project

Final Evaluation Report

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for

Food Processing Skills Canada

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FSC is a forward-thinking centre for research and collaboration dedicated to preparing Canadians for employment success. We believe Canadians should feel confident about the skills they have to succeed in a changing workforce. As a pan-Canadian community, we are collaborating to rigorously identify, test, measure, and share innovative approaches to assessing and developing the skills Canadians need to thrive in the days and years ahead. The Future Skills Centre was founded by a consortium whose members are Toronto Metropolitan University, Blueprint ADE, and The Conference Board of Canada

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Introduction

This final evaluation report for the iFood 360^0 Pilot Project is designed to inform Food Processing and Skills Canada (FPSC) and the Future Skills Centre (FSC) on the evaluation results for this pilot project. The outline and structure of this report aligns with that suggested by FSC.[1]

iFood360° is a new program, designed by Food Processing Skills Canada, to provide virtual reality learning experiences to people employed in the Canadian food and beverage processing industry and to assist jobseekers and students in exploring new career opportunities. The design and pilot implementation of iFood360^0 was funded as a 3-year pilot project under the Future Skills Centre's *Shock-proofing the Future of Work: Skills Innovation Challenge*.

The iFood360° program was designed with separate streams targeting two populations: 1) current employees in the Canadian food and beverage processing industry; and 2) jobseekers wanting to actively explore various careers in the food and beverage processing industry. The employer stream consists of a combination of online courses and VR tasks that teach the required skills for employees to productively work in the food and beverage processing industry in the areas of food safety, technical skills, and social-emotional learning. These skill areas align directly with the FPSC Learning and Recognition Framework (LRF) which is an industry-validated framework that defines the various required competencies across multiple occupations ranging from new entrants through to executives in the food and beverage processing industry. The employer stream program is delivered in the workplace with provision of the necessary equipment (e.g., Chromebook and VR equipment) directly to employers.

The career exploration stream consists of multiple VR experiences that participants can freely explore to better understand the importance of the food and beverage processing industry in Canada, and the multiple career opportunities available. The exploration is based on a light gaming environment that provides participants with various pathways and self-directed exploration.

The specific design and implementation objectives for the iFood360^0 pilot project include:

- To provide safe, engaging learning environments that lower barriers for challenged groups by developing and integrating highly-tailored, immersive virtual learning experiences with on-line training approaches for the food and beverage processing industry workforce.
- To enhance the training capacity of SME employers in the food and beverage processing industry by developing and disseminating employer technology training resources.

[1] Future Skills Centre (no date). *Guidance and Questions for Evaluators of FSC-Supported Projects*

- To increase the awareness of career opportunities available in the food and beverage processing industry among challenged groups by developing and implementing engaging, immersive career exploration tools for job seekers and students.
- To develop and maintain partnerships with employers, industry associations and post-secondary institutions to assist with project design and delivery, and dissemination of project results.
- To disseminate key project results to employers, industry associations, post-secondary institutions, community organizations and researchers.

The *pilot phase* for iFood360° covered by this evaluation report started in Spring 2021 and concluded in Winter 2023 and focuses on program design activities and initial implementation of the employer stream with some testing of the career exploration stream. The iFood360° program's two streams are continuing to be implemented by FPSC with industry and partner organizations.

Section 1: Stakeholders and Evaluation Goals

From Guidance and Questions for Evaluators of FSC-Supported Projects
a) Who were the stakeholders for the program undertaken with FSC?
b) How has the purpose and use of this evaluation been articulated?

There were multiple partners and stakeholders identified and consulted for the iFood360° Pilot Project. These included the following:

A) ***Project Partners*** *(directly contributed to inputs and resources)*:
- Participating Canadian food and beverage processors (employers)
- Participating industry associations
- Participating training and employment organizations and post-secondary institutions
- Future Skills Centre
- FPSC Board of Directors

B) ***Project Stakeholders*** *(vested interest in Pilot results)*:
- Canadian food and beverage processors
- Industry associations
- Organizations and institutions supporting career exploration and working directly with jobseekers (e.g., employment & training organizations, immigrant support organizations, post-secondary institutions, community organizations)
- Future Skills Centre
- Industry trainers

The evaluation has been an integrated component from the initial stages of the Pilot development. Pilot project design integrated the evaluation methods directly into the Pilot activities. Project partners were consulted on the purpose, design and anticipated outcomes for the Pilot from the early conceptualizations, through design and implementation, and via dissemination and review of results from ongoing monitoring and preliminary analyses of results. Throughout implementation of the Pilot, FPSC consistently worked to increase awareness of the evaluation, outline its importance, and emphasize the "pilot" nature of the program. Evaluation purpose and data collection methods were highlighted in all onboarding activities with participating organizations and individual participations so that awareness of need for participation in surveys was high and satisfactory completion rates were obtained.

Section 2: Learning-focused Background and Description of the Project

2.1 Project Need and Opportunity

From Guidance and Questions for Evaluators of FSC-Supported Projects i) Why was this project needed? ii) Who are the populations that this project aimed to serve?

2.1.1 Need for iFood3600 Pilot Project

To date, the development and integration of virtual, immersive-learning technology in the Canadian food and beverage processing industry has been limited despite evidence indicating its utility. While large, multi-national companies and some post-secondary educational institutions have been able to afford the development costs and to then demonstrate the effectiveness of this technology in training and skill development, the largely SME-based Canadian food and beverage processing industry is behind other industries in advancing and integrating this technology.

The time is "ripe" for the introduction of this technology to the food and beverage processing industry in Canada, but it needs to be done in a manner that fits with the current context and diversity of capacity, size and focus of the industry. From FPSC research, the introduction of new approaches to learning that involve technology need to focus on the most pressing areas of need (e.g., food safety, technical skills, social-emotional learning) identified by employers to ensure that there is buy-in and willingness to try something new.

The iFood360^0 pilot project was specifically designed to learn how SMEs with limited capacity (e.g., time, resources, technology) can begin to use to their advantage available learning technologies that has been demonstrated as effective and relevant for them to assist with their future growth and improve the skill levels of their workforce.

From the previous research undertaken by FPSC, consistent findings have included the following which have significant considerations for training in the industry:

- Training considerations that recognize many of the entry-level positions require very little or no post-secondary training, so the workforce does not have the same experience with training opportunities or methods compared with many other sectors. According to recent FPSC LMI research, the majority (55%) of the industry does not have any post-secondary diploma, degree or certificate. VR learning methods can often mitigate barriers that exist from gaps in formal education methods.

- There is a high proportion of immigrants working in the industry (31%) who also come with varied educational backgrounds and experiences and language skills. VR-based learning can often alleviate language barriers as it is based on doing and seeing, rather than reading and listening.
- Preferred learning style of hands-on learning among most of the workers in the industry – previous evaluation research conducted by FPSC on its various programs has consistently demonstrated that the strong preference in learning styles among workers is to be able to learn by doing, followed closely with learning by seeing. Other learning styles (reading, hearing) are less preferred. VR-based learning aligns well with these learning style preferences for the industry.
- Significant skill gaps in the industry's workforce, particularly with respect to "soft skills" or social-emotional learning areas. An innovative approach for this project is the use of VR scenarios to demonstrate various social-emotional skill applications.

The iFood360^0 Pilot was developed specifically to address these areas of need and opportunities for progress for the industry with respect to workforce development which in turn should contribute to addressing the severe ongoing challenges of recruitment and retention.

2.1.2 Populations that iFood360^0 Aimed to Serve

The iFood360^0 Pilot aimed to serve two main target populations. These included:

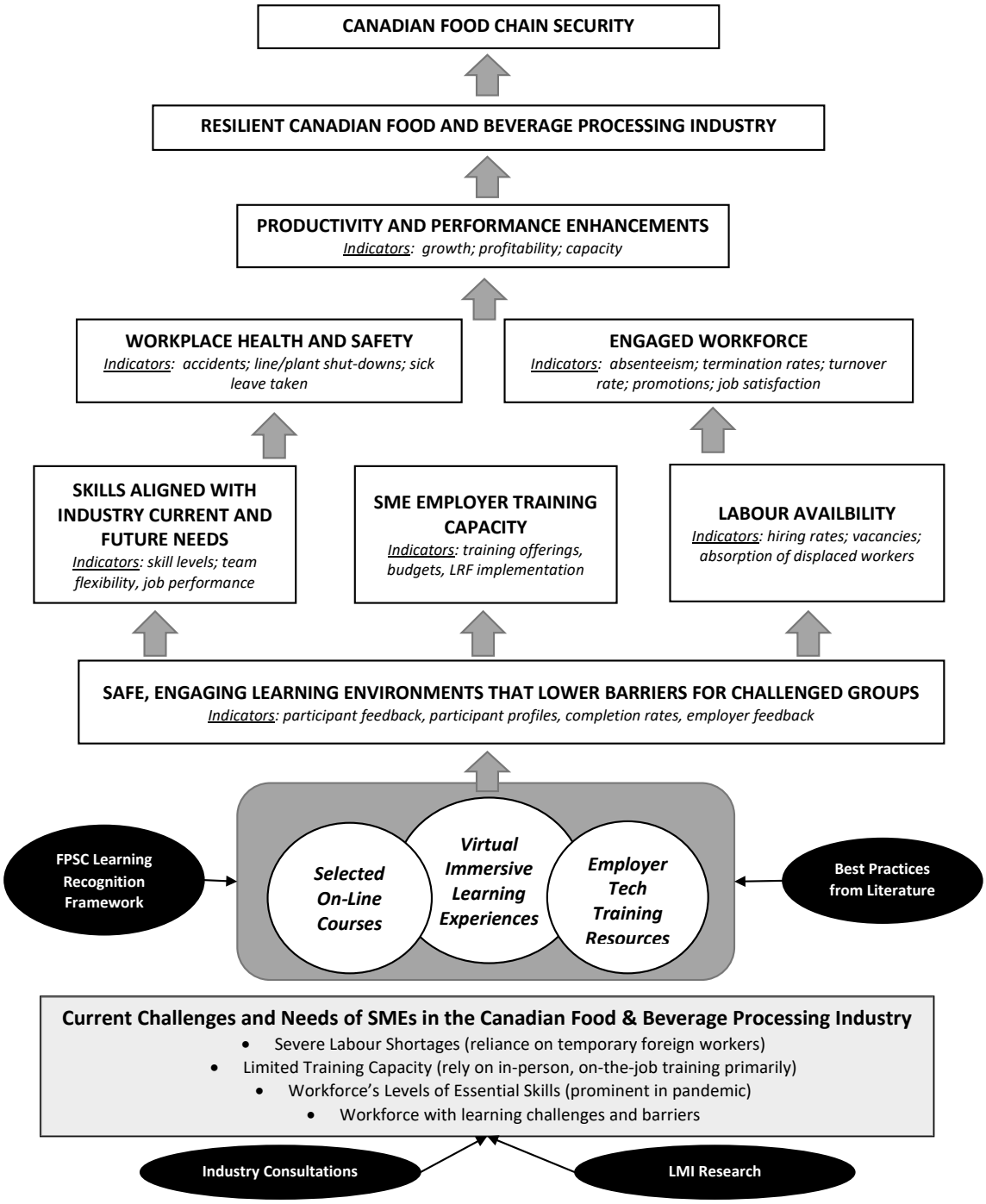
- ***Workers employed in the food and beverage processing industry*** – for the employer stream, this was left purposefully broad to try and get a cross-section of participants from varied occupations, backgrounds, business sizes and skill-levels. This diversity across participants permitted a better test of the extent to which the technology was appropriate for the sector.
- ***Jobseekers engaging in career exploration*** – the career exploration stream was targeted towards new entrants to the job market (students, youth, recent graduates), as well as current job seekers who are interested in exploring different sectors and potential career paths. Again, the idea was to have diversity among the population participating in this stream to better understand how the VR experience was received among different people with different backgrounds and skill levels.

2.2 Theory of Change Model

From Guidance and Questions for Evaluators of FSC-Supported Projects
i) What was being tested in this project?
ii) How did project partners think the project would work and address stated needs?
iii) What assumptions were initially made about the project in order to achieve its objectives?
iv) What contextual factors were anticipated that might affect how the project is delivered?
v) How was success initially articulated for this project?

The iFood360^0 design included a relatively simple model or theory of change for the food and beverage processing industry. As illustrated in Figure 1, the model follows a pathway of applying innovative learning technologies within a simple knowledge/skills acquisition approach that translates into behaviours practiced in the actual workplace. Given the timeline for the pilot, the evaluation team anticipated that initial results could be assessed at the first level of outcome ("*safe engaging learning environments that lower barriers for challenged groups*") which is largely the focus of this evaluation report. Further testing of the theory of change could eventually be completed if the pilot was to evolve into a mature program that is expanded and run over a few years with larger groups of participants that included follow-up over a longer period.

Figure 1: Overall Theory of Change Model used for iFood360^0 Pilot



Section 3: Evaluation Questions, Data Sources and Indicators

From Guidance and Questions for Evaluators of FSC-Supported Projects
Please structure the evaluation questions against the following categories:

- ***Implementation (Process)*** What did we learn about how the program is being implemented?
- ***Effectiveness (Outcomes):*** What did we learn about the outcomes of the intervention? After what time period? At what levels? (individuals, institutions, systems)
- ***Efficiency***: What will we learn about how to use resources more efficiently to achieve the desired outcomes?
- ***Causal Attribution***: To what extent will we learn about the extent to which any outcomes can be causally attributed to the project intervention? What information (qualitative or quantitative) would improve our confidence in the role the project played in achieving outcomes?

The overall iFood360^0 pilot evaluation focused primarily on **design and early implementation issues** given that this was largely a design project with piloted delivery for the first time (see Table 1). Given the emphasis on design work and project timelines, there was less focus for the period covered by this evaluation on effectiveness, efficiency and casual attribution which would occur with program expansion and longer timelines.

Table 1: Evaluation Questions - Design and Implementation of iFood360^0 Pilot Project

Evaluation Question	
Design	
EQ1	How does the iFood360^0 program **address the needs** of the target populations and stakeholders/partners?
EQ2	Did the iFood360^0 program **change during the design**?
EQ3	What were key **successes and challenges** in the iFood360^0 program **design**?
Implementation	
EQ4	Did the iFood360^0 program **change during implementation**?
EQ5	To what extent has the VR experience **enhanced engagement** with training and career exploration activities?
EQ6	To what extent have participating employees' **skill levels increased** in the identified focus areas?
EQ7	What were key **successes and challenges** in the iFood360^0 program **implementation**?

The main data collection methods for the evaluation study included the following:[2]

- Project administration data such as intake forms, application forms, progress information, course marks, and enrollment statistics;
- Baseline surveys (*pre-intervention*) with iFood360^0 participants (n=115);

[2] *The reader should note that the data was pulled for the evaluation as of December 1, 2023 – implementation of the iFood360^0 pilot is ongoing so not all collected data will necessarily be reflected in the data used for this evaluation – a follow-up evaluation will likely be needed to capture the full impacts of additional activities and ongoing initiatives of the program.*

- Post-course surveys with iFood360^0 participants following completion of online courses in employer stream (n=68);
- Post VR-experience surveys iFood360^0 participants following completion of the VR components in the employer stream (n=56);
- Follow-up surveys with iFood360^0 employers (n=11);
- Group qualitative feedback from testing sessions for participants in the iFood360^0 career awareness stream (n=15).

As will be described in the findings below, the **design phase** of the VR experiences required significantly more time and resources than originally anticipated. As a result, the focus shifted from implementing two streams (employer and career exploration) to implementation of one stream (employer stream), while preparing the technology and developing partnerships for implementing the career exploration stream (which is currently ongoing). This evaluation report focuses primarily on the results for initial implementation of the employer stream with the intention of future planned evaluation work (2024-25) to focus on understanding the implementation of the career awareness stream (as of Winter 2023-24) and a follow-up on anticipated outcomes/effectiveness of the employer stream (as of Summer-Fall 2023).

It should be noted that at the time of extracting the data for the evaluation analysis and reporting (Winter 2023), data collection for the Pilot was ongoing for both the employer and career awareness streams. As a result, the numbers of completed surveys reported in this report will not necessarily match the administrative reporting of number of participants in the Pilot.

Section 4: Evaluation Results

From Guidance and Questions for Evaluators of FSC-Supported Projects
Please provide more detail on results based on data gathered against evaluative questions articulated above. Where anticipated results were not achieved, please provide any discussion as to what factors might explain what was observed. Where possible please provide any discussion about what has been learned about assumptions that were made at the onset, as well as the role of context.

As previously indicated, the evaluation results for this report focus primarily on the design of the iFood360^0 program, and the initial stages of implementation of the Employer Stream. Future evaluation work will focus on the implementation of the Career Exploration Stream once sufficient data are collected, and include follow-up on anticipated outcomes with Employer Stream participants.

4.1 How does the iFood360^0 program address the needs of the target populations and stakeholders/partners?

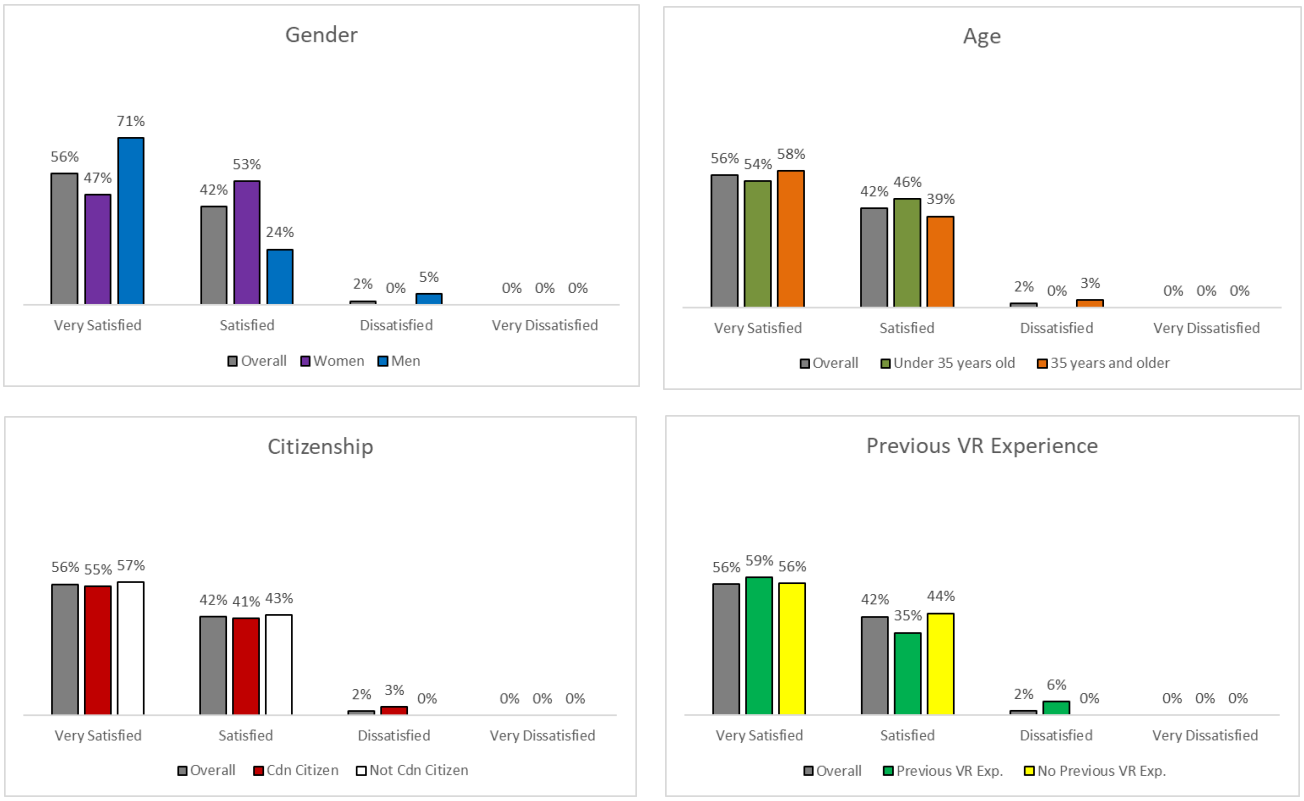
4.1.1 Meeting the needs of participants

The main indicators of the extent to which the iFood3600 program is meeting the needs of program participants was the satisfaction ratings that were measured with those who completed the program components (on-line courses and VR experiences). As illustrated in Figure 2, participants reported high levels of satisfaction with what they had learned in the program overall. Nearly all participants (98%) reported being satisfied with what they had learned with the majority (56%) being in the "*very satisfied*" range. This is an interesting result given the diversity in experience and occupations involved with work experience ranging from less than one-year to over 30 years in the food and beverage processing sector, and occupations ranging from front-line workers through to managers and quality control specialists. The online courses selected as part of the program were at a core/front-line worker level which might indicate that the novelty of the VR experiences in providing learning opportunities and practice that go beyond the content provided by courses alone (which would likely not have received that high rating for "learning satisfaction" among this diverse, more senior group).

When we examined the satisfaction with learning levels according to gender, age, citizenship and previous VR experience (see Figure 2), gender was the only dimension that showed some differences with men expressing higher levels of being "*very satisfied*" (71%) when compared with women (47%). With this exception, these analyses indicate that the program is meeting the needs of participants overall, and including various sub-groups such as older workers, non-citizens (permanent residents/non-permanent residents), and those with little or no previous VR experience. The gender difference in satisfaction levels will continue to be explored in future evaluation work to try and provide some additional understanding as to why this might be the case, and if the trend holds with larger samples of participants.

Figure 2: Satisfaction with Overall Learning

How satisfied are you with what you have learned in the iFood360⁰ program?

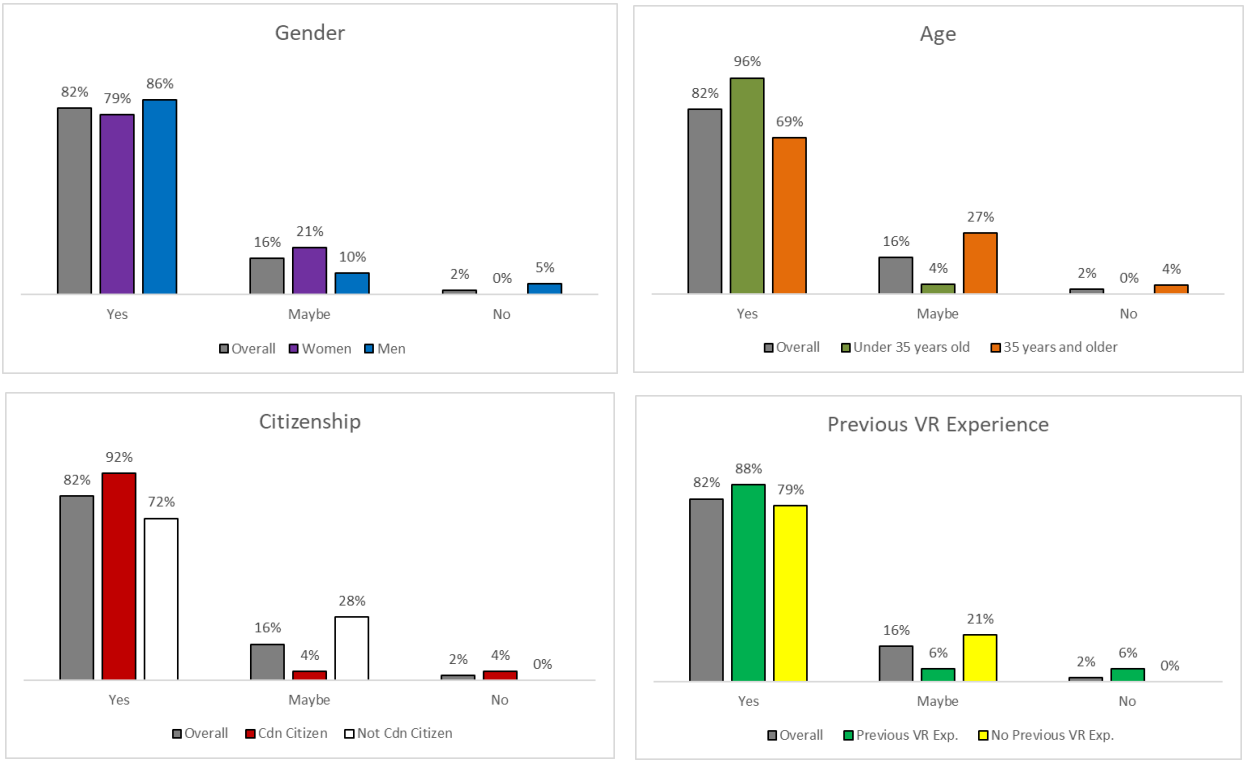


Source: Participant Surveys (n=58)

In addition to overall satisfaction with learning, we also assessed satisfaction specifically with the VR experiences by asking participants if they would recommend this component to their colleagues. As illustrated in Figure 3, most participants (82%) reported that they would recommend the VR experiences to colleagues with an additional 16% of participants indicating that they "maybe" would recommend. Interestingly, there was a higher likelihood of men, younger participants, Canadian citizens and those with previous VR experience to recommend the VR component to colleagues. This attraction to and satisfaction with VR among these sub-groups is not unexpected; however, it is important to continue to support those who may be less familiar with, and initially less attracted to this method of learning and experiencing to ensure that they have opportunities, and that this learning technology is made accessible. A strong finding that this support is happening with the program is that nearly 4 out 5 participants (79%) who reported having absolutely **no** prior VR experience would recommend this VR component to their colleagues. In future evaluation work with this program, it will be important to continue to monitor this trend, and to identify if the gap in satisfaction is closing as the VR experiences and materials improve with further program development.

Figure 3: Recommend VR Experience to Colleagues

Would you recommend the VR experience to colleagues?



Source: Participant Surveys (n=58)

4.1.2 Meeting the needs of employers

Employers are key partners and stakeholders in the project given that they are providing time and resources within their workplaces to test and implement the iFood360^0 pilot in partnership with FPSC. In a survey with participating employers, all respondents (n=11) reported being satisfied with the program and that the training was useful. Qualitative comments collected from participating employers included:

- "*A great program…I liked the learning format, it was fresh and more engaging.*"
- "*Very useful for our staff-wide training program - it gave me lots of new and fresh ways of approaching subjects that we train on annually.*"
- "*We had employees from different areas of our facility take part in the training - some in production, some in supervisory positions - the feedback I received from everyone was that they found the content valuable, and all felt that they learned something from the training.*"

- "*The training was very useful. Not only did it reinforce safe food handling guidelines and measures, they [participants] learned about emotional intelligence and how to better handle certain situations.*"
- "*Our team loved the program. We are great ambassadors for the program, sharing it with all our networks. We are even learning of ways to incorporate this training into our everyday on-boarding as our company grows.*"
- "*iFood360 was very useful to train our employees. It gave them a first-hand experience. They were not able to understand what food safety is even though we used to remind and train them about food safety. Now, they are aware of about food safety. For example, they started to remind each other about allergens now.*"
- "*Generated conversation and a better understanding of the "WHY?" in our processes.*"

4.2 Did the iFood360^0 program change during the design?

As documented throughout the quarterly reporting for the pilot, the anticipated design of the VR components had to be adjusted. The need for adjustments and recognition of the levels of effort, time and resources required to develop quality, relevant VR experiences was one of the most significant areas of learning for FPSC and partners. Even though immersive technology is becoming more popular within some contexts (e.g., gaming, marketing, entertainment), the application to training and education within an industry-specific context is still relatively new for the manufacturing industries, and specifically for one like food and beverage processing which is made up largely of companies with fewer than 100 employees. As a result, all VR components for this project had to be conceptualized, designed and programmed using a blank canvas as a starting point.

The project management and design requirements were much more involved and time/resource consuming than originally anticipated. As well, given the need to align VR experiences with actual workplace functions and demonstration of LRF competencies in risk-averse areas such as food safety, there was the requirement to have industry experts continuously review designs and products to ensure that they were meeting industry requirements.

While the evaluation results indicate that FPSC met the mark in designing relevant, engaging, useful, and accurate VR experiences, the amount of effort this required resulted in fewer VR experiences than originally planned being designed and implemented, and a considerably longer timeline requirement for the design phase which then impacted the timeline for planned implementation (see section 4.4).

4.3 What were key successes and challenges in the iFood360^0 program design?

4.3.1 Design successes

The design phase resulted in various successes for the project. Some of the highlights identified through the quarterly reporting and confirmed by the project team included:

- The research report entitled *Augmented and Virtual Reality in the Food and Beverage Processing Sector* remains a valuable resource in demonstrating the potential of VR technology in organizational training to industry and community members. It serves as a credible and comprehensive reference for industry members exploring the potential of VR technology and served as an incentive to broaden their exposure through participation in the iFood360^0 Pilot. The report was initially released through a live webinar broadcast to approximately 80 viewers and then continues to be disseminated on the program website via a download link along with links to examples of case studies and a recording of the webinar.

- The full development of the VR experiences situated in the workplace for the employer stream in which seven tasks across three different workplace environments were conceptualized, developed, and thoroughly tested. The competencies and skills required to successfully complete these VR activities align directly with those identified in the industry-validated Learning Recognition Framework. These included:
  - *Locker room environment*
    - Activity: Hand washing station
    - Activity: Identify hazards in the locker room
  - *Production floor environment*
    - Activity: Identify packages for food spoilage and other contaminants
    - Activity: Identify food allergens
    - Activity: Perform Lock Out Tag Out procedures
    - Activity: Perform a Full Wet Clean
  - *Warehouse and Distribution area*
    - Activity: Send and receive shipments

- The full development of multiple VR experiences designed to focus on enhancing social-emotional learning skill sets. These were developed using social and emotional learning scenarios and re-enactments that participants could experience through VR technology. The scenarios focus on the areas of:
  - Knowing your Emotions
  - Handling your Emotions
  - Recognizing other's Emotions

  - Managing Relationships
  - Motivating Yourself

- Career exploration VR experiences that cover multiple occupations, sectors and plant production line tours.
  Sectors include:
  - Bakery (x2)
  - Meat
  - Beverage Processing
  - Other Foods

  Occupations include:
  - General Manager
  - Quality Assurance Technician
  - Brewer
  - Meat Cutter
  - Supervisor
  - Machine Operator
  - Maintenance Technician
  - Warehouse Technician
  - Owner

4.3.2 Design challenges

As outlined previously, the main design changes that the project encountered were related to the resource and timeline requirements for conceptualizing and designing VR experiences that are of sufficient quality and relevance to be used in training contexts for environments and occupations with strict requirements, procedures, and practices to ensure food and workplace safety. This challenge was successfully met and addressed by the project team within the parameters of the pilot; however, it did present further challenges for the implementation phase given the compressed timelines available.

4.4 Did the iFood360^0 program change during implementation?

The iFood360^0 program has not changed during the implementation stage. The schedule for implementation has had to be adjusted given the timeline required for program design, but the program itself has not changed or been adjusted. The main steps of the Employer Stream implementation include:

1. Employer applies to the program and is approved.
2. Needs assessment is conducted to determine support and equipment required.
3. Onboarding of employer to the learning management system portal.
4. Registration of participating employees and completion of baseline survey.

5. Send out of VR equipment and Chromebooks along with orientation and "getting started" materials.
6. Employees are onboarded and assigned learner accounts in system.
7. Employees complete on-line courses that align with the learning recognition framework and complete feedback survey.
8. Employees complete the VR experiences and complete feedback survey.
9. Follow-up survey with employer.

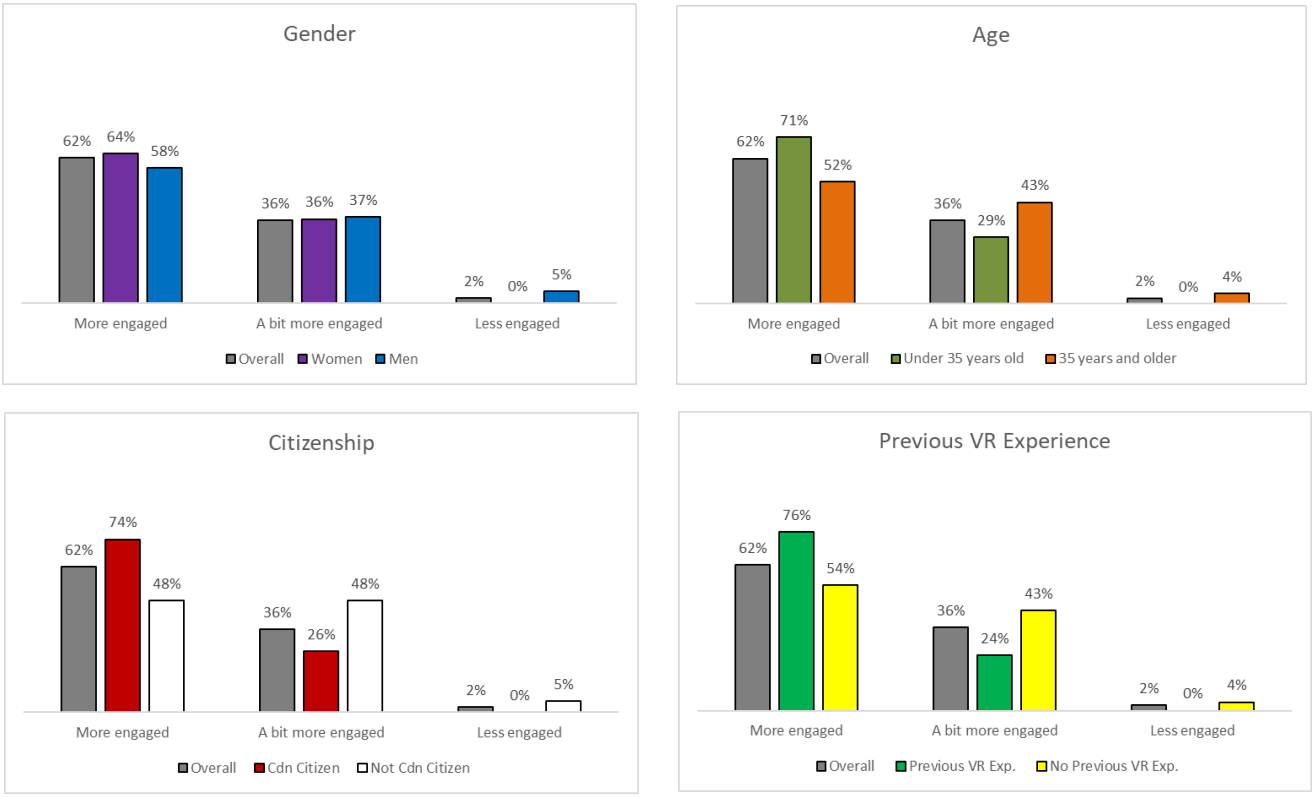
4.5 To what extent has the VR experience enhanced engagement with training and career exploration activities?

According to the data from participant surveys, the VR experience tended to enhance engagement with the learning material for the employer stream. As illustrated in Figure 4, almost all participants (98%) reported having enhanced engagement with 62% indicating "more" engagement and 36% "a bit" more engagement with the learning material during the VR experience compared with other learning settings.

Interestingly, women were slightly more likely than men (64% vs. 58%) to report high levels of engagement, while younger participants, Canadian citizens and those with previous VR experience also reporting higher levels of engagement with the VR experiences compared with other learning settings.

Figure 4: Engagement with VR Experiences

How engaged were you with the learning material during the VR experience compared with other learning settings?

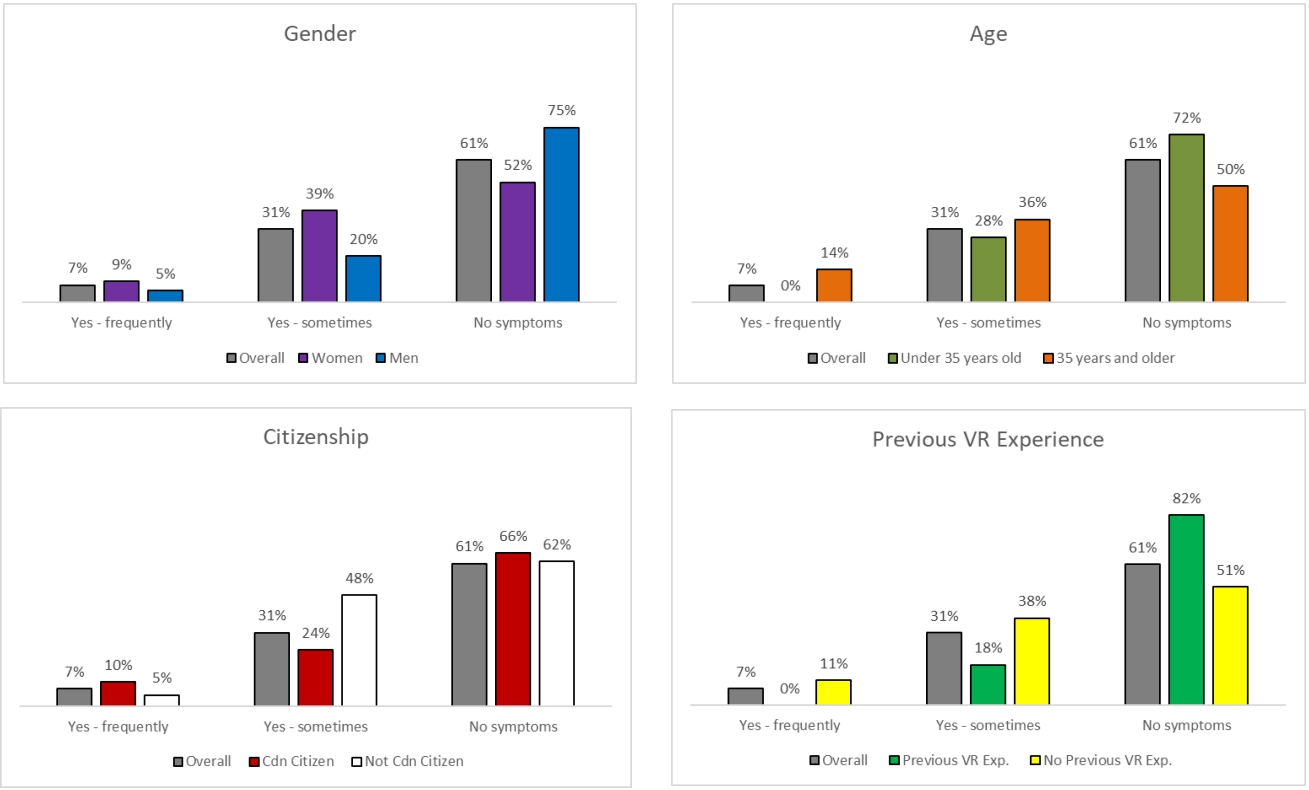


Source: Participant Surveys (n=58)

A challenge that is often cited in the VR literature is that some people can experience unwanted symptoms of dizziness, headaches, and/or nausea when participating in VR experiences. This can obviously impact the extent to which they find the experience engaging, and may explain some of the differences noted above in ratings of engagement. As illustrated in Figure 5, overall there were over one-third (39%) of the participants who reported some symptoms with 7% of these in the "frequent" range. Nearly one in ten (9%) of the participants completed less than half of the VR component due to experiencing these symptoms. Experiencing symptoms was more likely among women, older participants, and those with no previous VR experience. These statistics are slightly lower than those found in the literature but remain a consideration in the integration of VR components in workplace training. As VR becomes more common in everyday situations and contexts, this challenge in adapting to a VR environment may become less prominent. The iFood360⁰ program has already integrated some best practices in VR design to minimize these frequent symptoms but may want to consider additional orientation and practice sessions and integrating new best practices that are being frequently published in this area to accommodate those who are most likely to experience unwanted symptoms.

Figure 5: Symptoms resulting from participating in VR Experiences

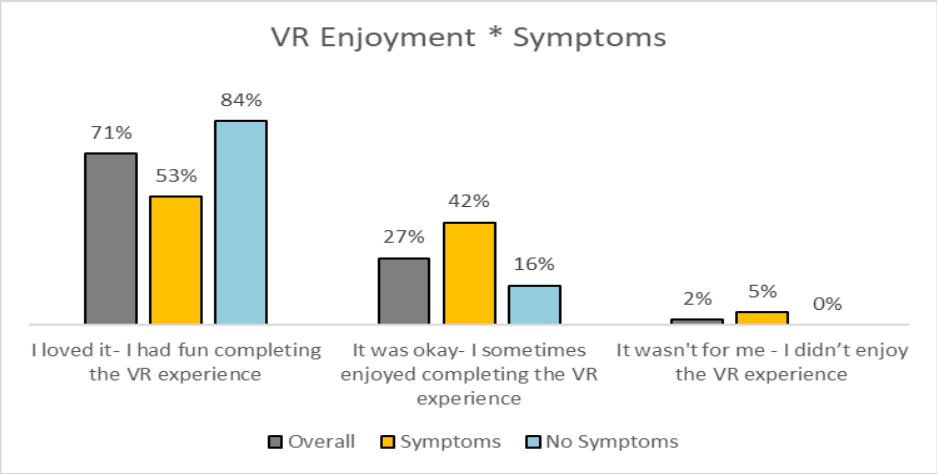
Did you experience symptoms such as dizziness, headaches, and/or nausea?



Source: Participant Surveys (n=58)

As expected, participants who experienced unwanted symptoms of dizziness, headaches and/or nausea were less likely to enjoy the VR experience (see Figure 6). Interestingly, there were still a significant proportion of those who did experience symptoms (53%) who reported high enjoyment of the VR experience.

Figure 6: Enjoyment of VR Experiences by those who reported symptoms



Source: Participant Surveys (n=58)

4.6 To what extent have participating employees' skill levels increased in the identified focus areas?

Participating employees indicated gains in skill levels which is attributable to both the on-line courses and the VR experiences. FPSC has previously and continues to extensively evaluate their on-line courses and their contribution to learning outcomes, so this evaluation focused on the incremental contributions of the VR component of the iFood360^0 pilot.

As illustrated in Table 2, most participants assessed the VR experience as helping them enhance skills and understanding of the various technical skill areas required for the food and beverage processing industry with approximately three-quarters or more indicating that VR "helped a lot".

Table 2: Contribution of VR experiences to technical skill areas

Technical Skill Area/Knowledge	*Did the VR experience help enhance your skills and understanding in some of these key industry skill areas?*		
	Helped a lot	*Helped a bit*	*Didn't help*
Performing proper sanitation steps	82%	16%	2%
Following Good Manufacturing Practices	80%	14%	6%
Following food spoilage and food safety protocols	78%	14%	8%
Being aware of workplace and industrial safety	78%	14%	8%
Completing allergen safety requirements	73%	14%	12%

Source: Participant Surveys (n=58)

Participants also indicated that the VR experience assisted them with developing their skills and understanding in areas of social-emotional learning. As illustrated in Table 3, most participants agreed that the VR experience had assisted them in these skill areas, with slightly less than two-thirds indicating that VR "helped a lot". While the social-emotional learning areas were rated lower overall compared with the technical skills, there is still a strong indication that VR and immersive technologies can have an impact on skill development and understanding in the areas of social-emotional learning.

Table 3: Contribution of VR experiences to social-emotional learning areas

Social-emotional Area	*Did the VR experience help enhance your skills and understanding in some of these social-emotional areas?*		
	Helped a lot	*Helped a bit*	*Didn't help*
Learning about emotional intelligence overall	63%	33%	4%
Exploring personal resilience	63%	33%	4%
Being adaptable to new changes and tasks at work	61%	35%	4%
Showing empathy to others in the workplace	61%	35%	4%
Recognizing and handling your emotions	57%	39%	4%

Source: Participant Surveys (n=58)

4.7 What were key successes and challenges in the iFood3600 program implementation?

4.7.1 Success in implementation of iFood360^0

Key successes of implementation of the pilot have been documented throughout the process in quarterly reports and confirmed by the project team. Some of these include:

- Increasing numbers of partners each quarter since implementation started expressing interest in participating in the Employer Stream and Career Exploration Stream.
- Growing enrollment in the program and registration of participants in the two streams.
- Once participants engage with the on-line course work, they tend to continue on to the VR experience.
- Flexibility of the program delivery enables participants (and employers) to continue with the program activities according to their own timelines and availability which is essential in a workplace-centered training program.
- Introduction of industry to new training technologies – there has been continued positive feedback on the clarity of instructions for the VR portion of the training (considerable effort and testing went into this by the project team) and the assistance received to integrate the iFood360^0 approach into workplace training settings.
- Onboarding activities and providing ongoing technical support appear to be key in successful implementation of the program at the workplace site.

4.7.2 Challenges in implementation of iFood360^0

To date the main challenge encountered in implementation of the iFood360^0 has been the compressed timelines due to the unanticipated timeline requirements for the design phase. Other challenges encountered are similar to those observed with other FPSC training programs such as accommodating employers' peak production times, finding sufficient time in workers' schedules to undertake training when many companies are experiencing staff shortages, and adapting materials for workers who have limited English language skills given the high proportion of recent immigrants in the food and beverage processing industry.

Section 5: Discussion and Implications

From Guidance and Questions for Evaluators of FSC-Supported Projects
We welcome any discussion of potential larger lessons to be drawn from this evaluation, with appropriate caveats clearly articulated. FSC is, in particular, interested in highlighting potential broader implications along the following dimensions (while recognizing that not all evaluations will be equally available to address the questions articulated)

5.1 Expansion

From Guidance and Questions for Evaluators of FSC-Supported Projects
Is there a need to expand the program or project to reach new population groups or different geographies? Why or why not?

The iFood360^0 Pilot has demonstrated positive preliminary outcomes with the introduction of VR components in the development of both technical and social-emotional learning skills required for working in the food and beverage processing industry in Canada. Given the compressed time for implementation within the Pilot context, it is anticipated that continued implementation to a wider spectrum of companies and more diverse groups of workers will assist in understanding both the challenges with this technology, and the apparent strengths and promising contributions to training in this industry. The early results combined with substantial interest among employers for the iFood360^0 program indicates a promising avenue for expansion in both new populations, and content to cover additional skills required by industry and fitting with National Occupational Standards and the industry-validated Learning Recognition Framework.

5.2 Adoption

From Guidance and Questions for Evaluators of FSC-Supported Projects
Are opportunities for other organizations serving the populations in question to adopt elements of what was being explored here? Why or why not? What factors are critical here and in what context?

There is already an indication from employers who have participated in the pilot that they are adopting the iFood360^0 components into their company-wide training programs. This is a likely occurrence as more employers become aware of the existence of the program and test it with their own workforce. As well, the iFood360^0 components are already being integrated with other FPSC current and planned training programs (e.g., STAC) and by partners (e.g., career exploration with Food and Beverage Ontario's *CareersNOW!* programming).

Appendices

A Report on Virtual & Augmented Reality in the Food and Beverage Processing Sector - A report examining studies of existing immersive technology implementations that have demonstrated significant measured improvements in areas like technical and safety training, soft skills development, productivity, and sales. It also offers guidance for food and beverage industry members on the current state of virtual reality technology and how to implement training solutions at a scale that is appropriate to their organization.

iFood Meta Quest 2 User Guide – A comprehensive 20-page user guide for the Meta Quest 2 virtual reality device, with sections on safety, device fitting and care, controller and headset functionality and diagrams, device set-up and casting, and accessing applications.

iFood Student Workbook - A workbook provided to students as a companion document in navigating their online learning journey. It serves as a dynamic tool for progress tracking, note-taking, and strategy development. Students can document their insights, jot down questions, and monitor their progress. It also serves as a gateway to support resources, ensuring students have access to assistance whenever needed.

iFood Employer Guidebook – A guidebook provided to employers to assist them in supporting their employees through the program. It includes support resources, package descriptions, a process guide, curriculum descriptions, details on the virtual reality experiences, a guide to accessing the employer dashboard, graduation details, and helpful links and resources.

iFood Recruitment Posters – Posters provided to employers and career exploration partners to promote the program within their organisation.

iFood Reference Cards – Reference cards provided to individuals to provide key information for getting started in the program.

iFood Welcome Letters – Letters provided to program participants to welcome them and lead them to the correct resources to get started in the program.

iFood Onboarding Portals: https://ifood360.ca/employees/ and https://ifood360.ca/ce/ - Web pages developed to simplify and map the process project participants must follow to complete the program.