Evaluation of ICN Training Program: Nutrition 101 (Online Mode)

2022

Applied Research Division
The University of Southern Mississippi

1-800-321-3054

Evaluation of ICN Training Program: Nutrition 101 (Online Mode)

PRIMARY RESEARCHER
Marjuyua Lartey Gibson, Ph.D., RDN
Interim Director, Applied Research Division

CONSULTANT RESEARCHERS
J. T. Johnson, Ph.D.
Statistician

Laura Thomas, MEd, RD, LD, FAND
Consultant

DIRECTOR
Marjuyua Lartey Gibson, Ph.D., RD
Interim Director, Applied Research Division

EXECUTIVE DIRECTOR
Aleshia Hall-Campbell, Ph.D., MPH

2022

Institute of Child Nutrition
The University of Mississippi

This project has been funded at least in part with Federal funds from the U.S. Department of Agriculture, Food and Nutrition Service, through an agreement with the Institute of Child Nutrition at the University of Mississippi. The content of this publication does not necessarily reflect the view or policies of the U.S. Department of Agriculture, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

Suggested Reference Citation:
Institute of Child Nutrition. (2022). *Evaluation of ICN training program: Nutrition 101 (online mode).* University, MS: Author.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EVALUATION OF ICN TRAINING PROGRAM: NUTRITION 101 (ONLINE MODE)

EXECUTIVE SUMMARY

Nutrition 101: A Taste of Food and Fitness (*Nutrition 101*) is a training resource available through The Institute of Child Nutrition's (ICN) face-to-face, virtual, and online options. The course is designed for all child nutrition professionals to provide essential nutrition information for personal health and the health of students and children served in Child Nutrition Programs (CNP). The current study aimed to evaluate the effectiveness of the ICN online course, *Nutrition 101,* using the New World Kirkpatrick Model for evaluation (Kirkpatrick & Kirkpatrick, 2016).

To accomplish the research objective, a multi-phased research approach was used. In Phase I, the researchers utilized an expert panel of ICN staff and consultants to review and validate the study's survey instruments. The instruments were piloted with consenting individuals enrolled in the *Nutrition 101* online course. In Phase II of the project, the final version of the study's instruments was administered to consenting participants. All participants in the study completed a pretest/posttest, course evaluation, six-month evaluation survey, and 12-month evaluation survey.

Between the Fall of 2020 and the Spring of 2022, researchers examined the ICN's *Nutrition 101* course to (a) explore the effectiveness of the course, (b) identify the extent to which the course meets the needs of the participants, (c) identify the areas of improvement for the course, (d) determine if knowledge or skills improved after attending the course, (e) assess behavior changes, and (f) ascertain if organizations were impacted as a result of an individual attending the course. Some of the key findings in this study include:

- Participants rated the course for satisfaction and overall impressions using a five-point Likert-type scale (strongly disagree [1] to strongly agree [5]). All statements for the satisfaction and overall impressions for Nutrition 101 were rated at agree (4) or higher on a 5-point Likert-type rating scale.
- At the six-month interval, more than half of the participants reported that they had the opportunity to apply knowledge gained from the course to personal and professional environments (77.5%) and accomplish their personal or professional goals (53.5%).
- At the 12-month mark, almost all participants (95.9%) had applied knowledge gained from the course in personal and professional settings. Over half of the respondents (55.0%) had earned the School Nutrition Association (SNA) Level 1 certification in school nutrition (SN).
- At each data collection point, most participants (83.1% at the 6-month mark and 91.7% at the 12-month mark) indicated that they would recommend *Nutrition 101* to others.

There are some limitations to the study, including (a) limited means to contact individuals to encourage participation in the research beyond a single email address and (b) decreased

participation response rates throughout the research 12-month study. Therefore, the key findings in this research may be limited and cannot be generalized to the entire population of individuals taking the Nutrition 101 online training course.

This research indicates that the *Nutrition 101* online course was well-received by all participants and met its primary goals—to increase knowledge regarding essential nutrition and encourage attainment of SNA's Level 1 certification. Information gained from this study will inform ICN on the need to revise or modify elements of *Nutrition 101*. Additionally, this evaluation study can contribute to strengthening future ICN course evaluations.

INTRODUCTION

Employee development is a critical function of human resource management. Employee development involves providing employees with learning opportunities to develop knowledge, skills, and abilities that add value to an organization (Dachner, Ellingson, Noe, & Saxton, 2019; Malik, Abbas, Kiyani, Malik, & Waheed, 2011). It is a direct investment in a company's success outcomes and staff careers (Dachner et al., 2019; Fleischman, 2019; Lee & Bruvold, 2003). As a result of employee development, employees perceive that the organization values their current skillset and contributions and is concerned with employability within and between organizations. Research in human resource management suggests that high-commitment practices, including employee development, can impact employee behaviors and attitudes (Lee & Bruvold, 2003; Malik et al., 2011; Whitener, 2001). This shift in mindset and behaviors among employees is linked to job satisfaction and turnover intention (Lee & Bruvold, 2003; Malik et al., 2011). Besides improving employee commitment, investing in employee development can result in (a) combating a skills shortage in the current job market, (b) remaining current with the latest industry and technology trends, (c) increasing employee engagement and reducing turnover rates, (d) fostering succession planning, and (e) attracting motivated candidates (Fleischman, 2019).

While employee development is essential for organizations to remain relevant and competitive globally, it requires a significant financial investment. Companies are spending money on technical and professional training for new and current staff. Nationally, approximately 8.2 billion United States (U.S.) dollars were spent in 2020 on total training expenditures for workplace training (Statista Research Department, 2020). According to the Association for Talent Development (ATD) 2020 State of the Industry report, organizations spent $1,308 per employee in 2019 (Kruse, 2021). It is important to note that the 2020 State of the Industry report's data were based on the 2019 fiscal or calendar year (Kruse, 2021). Data collected for the 2020 Training Industry report showed a slightly lower dollar amount for 2020 of $1,111 per person (Freifeld, 2020).

Although workforce training has conventionally depended on traditional, face-to-face, instructor-led, classroom-style delivery methods for training staff, technology-based learning methods have emerged. According to the ATD 2020 State of the Industry Report (Kruse, 2020), 40% of organizations used traditional classroom settings for training and development, and almost 20% of organizations used virtual classrooms in 2019. The 2020 Training Industry Report indicated that (a) 30% of training hours were delivered in a traditional classroom setting, (b) 29% of hours were delivered through online or computer-based technologies, (c) 23% of hours were delivered using a virtual classroom, and (d) 10% of training hours were delivered using mobile devices (Freifeld, 2020).

The ICN provides various educational methods in an attempt to meet the needs of CNP professionals, including synchronous and asynchronous learning opportunities. One training method is an online platform using a Learning Management System (LMS). The LMS provides training to CNP professionals in an asynchronous learning environment focused on individual independent learning. This training modality delivers information that seeks to increase participants' knowledge and provides tools that help participants apply knowledge to improve practice.

History of *Nutrition 101: A Taste of Food and Fitness*

Nutrition 101 is a training resource available through the ICN's face-to-face, virtual, and online options. *Nutrition 101* originated in 2005 as a Breakfast Lunch Training (BLT) professional development series for ICN (formerly the National Food Service Management Institute [NFSMI]).

Nutrition 101: A Taste of Food and Fitness Initial Release

Nutrition 101 was designed for small groups, such as a single kitchen staff of 12–15 people, as an introductory nutrition course focused on personal nutrition. The lesson plan design incorporated adult education and training techniques. The techniques were participant-centered and offered methods for increased training effectiveness and information application (Pike, 2003). A key feature of this approach was to organize information as *need to know* (concise content in the lesson), *nice to know* (supporting information in handouts), and *where to go* (resources on additional details). The lesson content included the newly released MyPyramid and the Dietary Guidelines for Americans (DGA), 2005, jointly issued by the United States Department of Agriculture (USDA) and the United States Department of Health and Human Services (HHS).

Each lesson's content was designed to be complete enough that a kitchen manager or other SN professional could facilitate the course. Advanced nutrition knowledge and teaching expertise were not requirements for facilitators. The vision was that every school nutrition program (SNP) could conduct staff development training cost-effectively.

Participants were encouraged to explore and learn about each topic according to their interests between sessions by utilizing assessments, skill-building activities, and resources. The original design timeline was for at least one week to one month between lessons, with sequential skill-building from lesson to lesson. Self-assessment and personal action plans were key features of each lesson's content.

The original *Nutrition 101* resource was developed as six sequential lessons. The focus of the course was personal nutrition, not SNP nutrition requirements. The resource was designed to help participants understand the critical roles of (a) good nutrition, (b) healthful food habits, and (c) a variety of daily or weekly physical activities for personal health and wellness. Each lesson on personal health and wellness featured:

- A 20-minute lesson plan;
- Lesson handouts with specific content for each topic;
- A reference sheet for topic-related resources;
- A self-assessment tool and activity for skill-building and application of the lesson topic for use between sessions; and
- A Cafeteria Connections section that provided a connection from the course to SNPs.

Each lesson also included a tasting activity (focused on the basic tastes) to support lesson content and a one-to-two-minute physical activity booster designed to support and help reinforce the lesson topic content and overall series theme. A certified trainer reviewed all physical activity boosters to assure the safety of each activity for participants.

Short, 60-second trigger videos were included to spark discussion on the nutrition content during each lesson. The pre- and post-assessments for the course completed the participant materials. Facilitators of the series utilized a leader script, PowerPoint presentation, and a DVD of the trigger videos for each lesson.

The 2005 release was edited from the final development content before release to modify some of the taste activities. The original concept's creative focus was on basic tastes (salt, sour, bitter, sweet, and emerging taste of umami). The final taste activities included foods such as whole grains, fruits and vegetables, and whole-grain and fruit-based desserts.

When *Nutrition 101* (NFSMI, 2005) was released in 2005, alternate delivery methods were employed beyond the contracted design scenario of small groups in sequential, spaced sessions. The lessons were offered as stand-alone segments for groups of 25 to 100 in one-hour sessions at state conferences or as a full-day, pre-conference training session. Drawbacks of stand-alone topics were that participants missed the content delivered in a previous lesson of the series or experienced content out of the designed sequence. A national webinar series, recorded and offered through the ICN website, was another training option for the resource.

Individual lessons were added between 2006 and 2009 to address current nutrition issues and recommendations from the DGA. By 2009, the six-lesson series was expanded to a 10-lesson series. Topics covered in order of lesson additions were a) simple sugar sources in meals and recommendations to limit, b) a popular diet comparison to the DGA meal pattern and evaluation for nutrients and potential health concerns, c) typical vegetarian diets and how to meet protein needs, along with calories and key nutrient concerns, and d) different fatty acids with an emphasis on avoiding *trans* fatty acids in the diet. The final series focused on the following lessons:

1. Nutrition is Important…to You!
2. Understanding Nutrition Tools – the Dietary Guidelines for Americans, USDA Nutrition Education Tool (MyPyramid), and Food Labels
3. Energy Nutrients – Protein, Carbohydrate, and Fat
4. Mighty Minerals and Vital Vitamins
5. Putting it All Together
6. Nutrition in the Media
7. Simple Sugars
8. Diet Decisions
9. Vegetarian Diets
10. Focus on Fatty Acids

The design of the last four lessons (topics 7–10) varied from the initial six by the omission of a lesson-specific trigger video; otherwise, all other lesson features were retained in the educational design. These four additional lessons incorporated learning activities that built upon remembering, understanding, and applying the information in earlier lessons to analyze and

evaluate activities in the new content. The goal was to progress learners through additional levels of critical thinking and increase the variety of participant-centered training techniques.

Nutrition 101: A Taste of Food and Fitness (2nd Edition), Seminar Version, and Online Course (1st Edition)

Nutrition 101 2nd Edition updates (NFSMI, 2011) reflected the release of MyPlate and the DGA, 2010. The 2nd edition revision aligned the lesson scripts, timing, and resources to accommodate the use of the resource in seminar settings. Additionally, the lesson titles were modified in the 2nd Edition updates. The seminar version of delivery proved popular with many state organizations (i.e., SNA state conferences), State agencies, and school districts. The seminar version re-ordered the delivery of the ten lessons:

1. Nutrition is Important…to You!
2. Tools for Guiding Food Choices
3. Energy Nutrients
4. Simple Sugars
5. Focus on Fatty Acids
6. Vegetarian Diets
7. Vital Vitamins and Mighty Minerals
8. Diet Decisions
9. Putting it all Together
10. Nutrition in the Media

Online Course. The online version of the course, *Nutrition 101,* was added to the course catalog of ICN in 2013. Online participants had the opportunity to download the participant manual for the course. They were encouraged to access and utilize the personal assessments, skill-building activities, and additional resources to further enhance the application of the online course.

Continuity in course materials and approach was maintained through the evolution of the course from the original small group concept through seminar and online course options. The instructional development consultant contracted to write the original six-part BLT completed the development of the additional four lessons, revised the seminar version's resource, and developed the first online course based on the seminar version. The online course followed the sequential lesson delivery order, as is assumed for seminar versions, based on course materials provided by ICN or others printing the files.

Nutrition 101: A Taste of Food and Fitness (3rd Edition)

After releasing updated SN meal pattern standards and guidance in the Healthy, Hunger-Free Kids Act of 2010, ICN staff undertook a third revision of the *Nutrition 101* resource (NFSMI, 2014). The existing ten-lesson resource was reorganized into seven lessons and renamed. Several lessons incorporated content consistent with SN meal pattern information, changing from focusing primarily on personal nutrition in the first and second editions to more SNP-based content. The training time was reduced from ten to eight hours.

New content changes included scripted lessons on (a) vegetable subgroups and whole grains as defined by MyPlate resources, (b) information on diabetes, and (c) an expansion of the content on vitamins and minerals. The original content focused on foods naturally rich in leader nutrients listed on food labels—vitamins A and C, iron, and calcium—including a handout with information on these and additional vitamins and minerals. The 3rd edition revision added 13 vitamins and 14 minerals, functions in the body, and food sources to the presentation content (lesson 4 became Micronutrients: Vitamins and Minerals). An introduction to the U. S. Food and Drug Administration (FDA)'s 2014 proposed changes to food labels was added. In general, more of the course content was provided by the facilitator's presentation with less supporting materials.

The revised changes for existing content merged some lessons from the first and second editions with added information. Content from lessons 4 (Simple Sugars) and 5 (Focus on Fatty Acids) was included in the revised lesson 3 (Macronutrients: The Energy Nutrients). A new lesson topic, Special Diets, focused more on school meal accommodations, including some content from lesson 6 (Vegetarian Diets) and new content on diabetes. Original features removed during the development of the third edition included (a) participant evaluation of diets (Diet Decisions), (b) seven of the ten Cafeteria Connections, (c) nutrition content-specific aspects of the physical activity boosters and fewer boosters, (d) taste activities, (e) most of the personal discovery assessments and skill-building activities, and (f) additional handouts and lists of resources. All pre- and post-assessment questions were selected from the second edition version with minor edits to update terms (i.e., MyPlate).

Nutrition 101: A Taste of Food and Fitness (4th Edition) and Online Course (2nd Edition)

The release of the 2015–2020 DGA created the need to update some aspects of the course content. ICN coupled DGA updates with revisions of the course to the 4th edition of *Nutrition 101* (ICN, 2018). The 4th edition revision was completed by ICN's training and education division staff—an education training specialist served as both the project coordinator of the seminar (printed) version and the project manager for the online revision.

The 4th Edition of the Resource References Professionals Standards and Sub-Sections by Key Area. The 4th edition content is similar to the 3rd edition, with minor edits to update content. The seminar version lesson script includes more instruction for facilitators for activities. Reflection activities appear at the end of each lesson to review the lesson's learning objectives and content. This printed version restores Cafeteria Connections to all lessons and includes some of the personal discovery assessment activities removed in the 3rd edition.

The 2nd Edition Online Course. The revised *Nutrition 101* online course (ICN, 2018) follows the organization of the seminar version: 7 lessons with 8 hours of professional development credit at completion. The online version incorporates some of the content from Cafeteria Connections and other lesson handouts into the onscreen content. Activities are designed for interaction in an online course. Another minor difference between the printed and online versions is the title of Lesson 5 (Alternate Eating Patterns). The 4th edition contains the following lessons:

1. Nutrition is Important to You!
2. Tools for Guiding Food Choices

3. The Energy Nutrients
4. Vitamins and Minerals
5. Special Diets online and Alternate Eating Patterns (in the printed seminar version)
6. Putting it all Together
7. Nutrition in the Media

This development review provides context for the changes, modifications, and edits to *Nutrition 101* over the past 17 years. The development history illuminates that this is one course presented through several training modalities and different objectives dependent on points of time in development.

Evaluation of Courses and Training

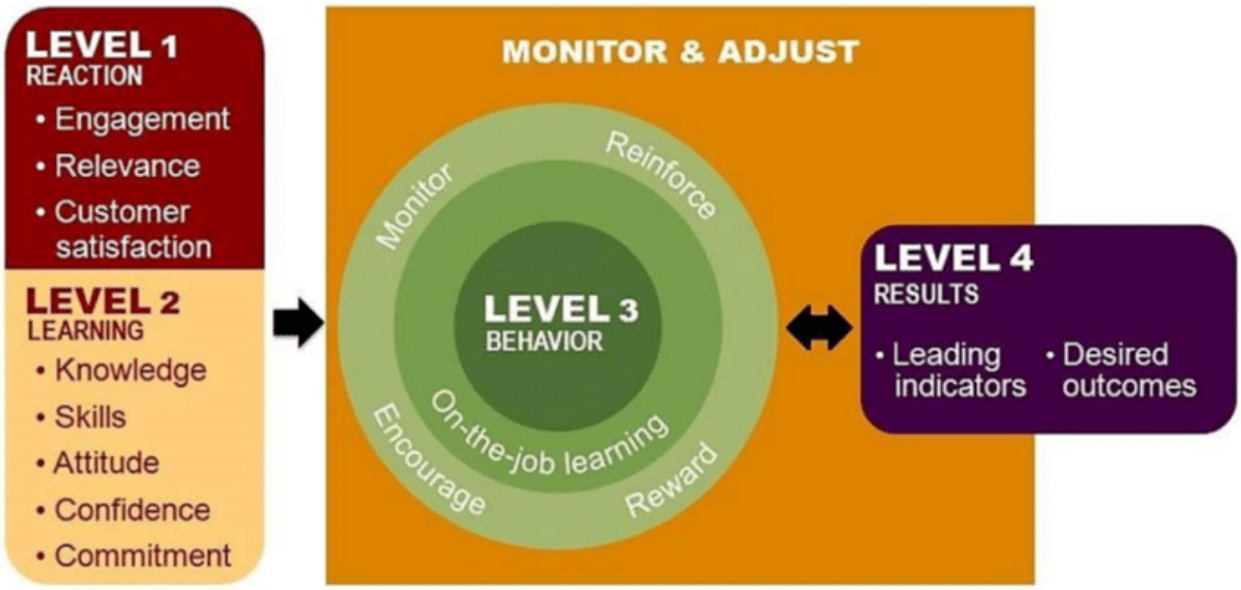
A well-established system is needed to determine how practical online training courses are for CNP participants. The New World Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2016) provides an ideal method to evaluate the ICN's online training. This model (Figure 1) uses a four-level approach to assess training. The four levels in this evaluation process include:

- Level 1: Reaction–the degree to which participants find the training favorable, engaging, and relevant to their jobs;
- Level 2: Learning–the degree to which participants acquire the intended knowledge, skills, attitudes, confidence, and commitment based on their participation in the training;
- Level 3: Behavior–the degree to which participants apply what they learned during training when they are back on the job; and
- Level 4: Results–the degree to which targeted outcomes occur as a result of the training and the support and accountability package (Kirkpatrick & Kirkpatrick, 2016).

Levels 1 and 2 provide information as to the quality of the training. Levels 3 and 4 offer information to evaluate the training's effectiveness (Kirkpatrick & Kirkpatrick, 2016).

Figure 1

The New World Kirkpatrick Model



Purpose of the Study

The ICN *Nutrition 101: A Taste of Food and Fitness* was selected to be evaluated for several reasons: a) *Nutrition 101* was recently updated to comply with the final rules published on March 2, 2015, for Professional Standards for School Nutrition Professionals (the final rule requires a minimum amount of annual training hours for all state directors of school nutrition programs, state director of distributing agencies, school nutrition program directors, managers, and staff); b) *Nutrition 101* qualifies for the School Nutrition Association's core certification level-one; c) *Nutrition 101* is one of the most frequently requested trainings for ICN; and d) ICN is establishing a systematic effort to routinely evaluate all training programs to determine their effectiveness and ways to improve them as needed. The objectives of this project were to assess:

(a) professional reaction to the training (or participant satisfaction),
(b) professional learning, including increases in knowledge and skills related to the topic area and changes in attitudes about the topic area,
(c) changes in behavior related to climate for change at work and the possibility of rewards associated with change at work, and
(d) results, including the final outcome associated with participating in the training.

An evaluation of the *Nutrition 101* allowed ICN to address five primary questions:

- How effective is the course?
- Is knowledge gained as a result of completing the course?
- Why do CNP professionals register for the course?
- How many participants use the course to obtain SNA's Level 1 SN certification?
- Have participants' attitudes changed toward nutrition after completing the course?

It is important to note that the original intent of this project was to evaluate the ICN online and face-to-face modes of the *Nutrition 101* training program. However, in early 2019, COVID-19 created a shift in the way organizations operated, including minimizing face-to-face meetings and relying more on virtual and online methods to disseminate training programs. This change also affected the ICN's mode of operation and delivery method for learning opportunities. All classes scheduled for face-to-face learning were temporarily phased out, and the ICN relied on its LMS and the virtual instructor-led training modalities to deliver professional development to CNP professionals. As a result of this change, the focus of this project was narrowed to assessing the ICN's online version of *Nutrition 101*.

METHODOLOGY

This study focused on measuring all aspects of the New World Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2016). Phase I was the development of evaluation instruments. Once the instruments were developed and the content validity established, the instruments were pilot tested with enrollees in the *Nutrition 101* online training course. Phase II was implementing the final study.

Phase I: Instrument Development and Validation

Phase I began with meeting with primary stakeholders to identify the expectations for the course evaluation and identify the anticipated training outcomes from the prospective attendees of a *Nutrition 101* course. The primary stakeholders were the ICN executive director, ICN assistant director of education and training, ICN education and training specialist familiar with the *Nutrition 101* course, and ICN data analyst. After meeting with the primary stakeholders, a course review was completed. The purpose of the review was to 1) evaluate the course and gain an understanding of knowledge and skills taught within the *Nutrition 101* course and 2) develop draft survey questions for each of the four levels in the Kirkpatrick training evaluation model, including a pretest and posttest, a six-month survey, and a 12-month survey. The proposed instruments were designed to be administered to individuals working at every level of the CNP, from administrators to frontline staff.

Following the development of the draft instruments, electronic review panel participants were identified. These participants included (a) ICN consultant trainers familiar with the *Nutrition 101* curriculum and responsible for teaching the face-to-face version of *Nutrition 101,* and (b) ICN education and training specialists responsible for developing and revising the *Nutrition 101* 4th edition online course or knowledgeable of the *Nutrition 101* course materials. Twenty-two ICN consultant trainers and two ICN education and training specialists were invited to participate in the electronic review panel from November 2019 to December 2019. The panel participants (n=18) were responsible for assessing the draft evaluation instruments for face and content validity and supporting the development of the draft evaluation instruments.

Content validity of the draft instruments was determined by the 18-member review panel. In a brief electronic introduction, the researcher asked the review panel members to respond to the draft evaluation instruments by giving an item-by-item critique of instrument instructions and questions on the pretest, posttest, course evaluation, and six- and 12-month surveys. As a part of participating in the panel, the experts were asked to revise current questions, add new questions, provide feedback on the appropriateness of questions, and assess the readability of instructions provided on instruments. Additionally, panel members were asked to identify any areas of confusion that may cause an item to be misinterpreted by respondents. All revisions, additions, and recommendations were reviewed and incorporated into the preliminary evaluation instruments. Modifications to the evaluation instruments were incorporated into the draft for pilot testing.

The evaluation instruments were pilot-tested with consenting participants enrolled in *Nutrition 101* online training from July 2020 to October 2020. The pilot test was conducted in three stages: (a) Stage I, which consisted of a pretest at the initiation of the online course and a posttest using an online survey program approximately two weeks following the conclusion of

the online course, (b) Stage II, which included a six-month evaluation survey that was administered using an online survey program, and (c) Stage III, which incorporated a 12-month evaluation survey using an online survey program.

The initial contact with the participants was at the onset of logging into the *Nutrition 101* online course. Individuals who registered for the course were greeted with a written invitation to participate in the research study. In the recruitment statement, registrants were informed of the study's purpose, importance, and benefits. Participants were also given information regarding the time commitment required for participation and confidentiality. Registrants were allowed to either consent to participate or decline to participate in the research before entering the online course. When individuals consented to participate in the study, they were asked to provide a personal email address for follow-up contact. Consenting participants were asked to create and share a self-generated unique identification (ID) number that they would use every time they completed a survey for the research project. The self-generated ID number allowed for participants' anonymity. Regardless of consent, any individual interested in taking the ICN's *Nutrition 101* course could enter the *Nutrition 101* online course. Only data collected from consenting participants were assessed in this research.

The study evaluated the *Nutrition 101* training course based on the New World Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2016). Five survey instruments were developed to assess the impact of the *Nutrition 101* course on participants. These instruments were used to measure each phase of the evaluation model. The reaction evaluation (Level 1 of the Kirkpatrick evaluation model) was designed to gauge how the participant felt about the course design, duration, and content; changes in general knowledge related to the course topics; and individual goals or plans beyond the completion of the course. This information was captured in the course evaluation survey administered after completing the online course. The reaction survey contained five primary questions and included Likert-type scales and open-ended questions. The learning evaluation (Level 2) was created to assess the degree of learning of fundamental concepts taught in the course. This was measured with the pretest (at the beginning of the course) and the posttest (administered two to four weeks after completion). The pretest and posttest questionnaires mirrored each other and consisted of ten questions with multiple-choice responses. The behavior evaluation (Level 3) assessed how well learning translated into applying knowledge personally or at the job. This was measured at the six- and 12-month marks. Finally, the results (Level 4) assessed how well targeted outcomes of the course, such as achieving SNA’s Level 1 certification, were achieved as a result of attending the course. This was assessed during the 12-month survey. Both the six-month and 12-month surveys included Likert-scale questions and open-ended questions.

Phase II: Implementation

After completing Phase I, the pretest and posttest, the six-month evaluation survey, and the 12-month evaluation survey of the *Nutrition 101* course were finalized. Potential participants were recruited from the *Nutrition 101* online course on the ICN LMS from November 2020 until February 2021. Because the recruitment and engagement strategies used in the pilot study effectively recruited individuals to participate in the research study, identical strategies were used in the final study. As in Phase I, only data collected from consenting participants were assessed in this research.

The consenting participants completed two surveys, the pretest, and the course evaluation, within the online course. Three follow-up surveys were sent to program participants who completed the *Nutrition 101* course. They included the posttest, six-month survey, and 12-month survey. Because there were no significant issues with evaluation instruments in Phase I of the project, the evaluation instruments for Phase II were the same as those presented in Phase I.

IRB Approval

Approval for this research study was obtained from the Institutional Review Board of The University of Southern Mississippi. The researchers conducted all survey data collection online. The online software was the ICN LMS for pretest and course evaluation, and the software to administer the posttest, six-month survey, and 12-month survey was the online survey software, Qualtrics.

Data Analysis

The mixed-method approach used in this research relied on integrating quantitative and qualitative data (Scholz & Tietje, 2002). Pilot study data and final study data were combined and presented in this report. As indicated in an article by Thabane et al. (2010), data from the pilot study and final study can be combined if the following parameters exist between the two studies: (a) the sample frame and study populations were the same, (b) the methodologies were the same, (c) inclusion and exclusion criteria were the same, and (d) the researcher elected to combine data from both groups.

Quantitative data were entered into Qualtrics and then transferred into SPSS version 25 (Chicago, IL). Frequencies, percentages, means, and standard deviations were run for all phases of the research. Paired sample t-tests were used to compare pretest/posttest data from the three workshops.

Qualitative data analysis techniques were used to develop evaluation instruments and assess the course evaluation, six-month and 12-month open-ended questions. Responses for all participants were compiled, reviewed, and grouped into themes independently by two researchers. Another researcher reviewed and crossed-checked the identified themes to determine consistency between the reviewers. This report presents emerging themes and direct quotes from participants to illustrate why the themes were identified. If more than one participant made a related quote, it was determined that multiple responses indicated a theme.

RESULTS

Course Evaluation

Description of Study Participants

Participants were asked about their current job title and years of experience in CNP. The participants were predominantly SN foodservice assistants (24.0%), child-care assistants/cooks (20.8%), and site-level managers (11.0%) (Table 1). Most participants had worked in the field for five years or less (62.4%).

Table 1

Job Titles and Years of Experience (N=154)

Demographic Variable	Freq.	%
Current Job Title		
Child Care Assistant/Cook	32	20.8
Child Care Director/Administrator/Manager	6	3.9
Child Care Provider	3	1.9
District-Level SN Director	5	3.2
Educator	1	0.6
School Nutrition Foodservice Assistant	37	24.0
School Nutrition Site-Level Manager	17	11.0
State Agency Staff	4	2.6
Other (unspecified)	34	22.1
No Response	15	9.7
Years in Current Position		
Less than one year	36	23.4
1 to 5 years	60	39.0
6 to 10 years	26	16.9
11 to 15 years	12	7.8
16 to 20 years	8	5.2
Greater than 20 years	11	7.1
No response	1	0.6

Note: Percentages may not total 100% due to rounding.

Overall Satisfaction

Participants were asked to rate the course on ten specific statements using a five-point Likert-type scale from strongly disagree (1) to strongly agree (5). Results are provided in Table 2. All statements received a mean of 4.0 (agree) or higher (strongly agree). The highest-rated statements were related to the course being relevant to their work, the course providing useful information, and the course objectives being clearly explained.

Table 2

Course Satisfaction and Overall Impressions (N=131)

Course Satisfaction Statements[a]	**Mean**	**SD**
The course is relevant to my work.	4.44	0.71
This course provided useful information.	4.43	0.70
The objectives for the course were clearly explained.	4.42	0.70
The content and materials used in this course were sufficient to achieve the course objectives.	4.38	0.71
Overall, I am satisfied with this course.	4.36	0.72
The instructor(s) were prepared and organized for the course.	4.35	0.75
I would recommend this course to my colleagues and co-workers.	4.32	0.75
The audiovisual aids used in this course were effective.	4.34	0.74
This course provided new information.	4.34	0.80
This course was worth the time I invested.	4.31	0.81
The course was navigated without technical issues.	4.19	0.89
The instructors (s) kept all participants actively engaged.	4.18	0.81
The instructor(s) were responsive to participant needs and questions.	4.13	0.86

[a]Questions are listed in descending order of satisfaction rating. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

Respondents were asked to rate their level of knowledge before taking *Nutrition 101* and after taking *Nutrition 101*. These statements used a scale of low (1), moderate (2), and high (3). These data can be found in Table 3 (frequencies) and Table 4 (means). All statement means increased significantly ($p < .001$) from before to after the course.

Table 3

Knowledge Ratings of Study Participants Before and After Nutrition 101 (N=154)

	Before *Nutrition 101*			**After *Nutrition 101***		
Knowledge Areas	**Low**	**Moderate**	**High**	**Low**	**Moderate**	**High**
Child Nutrition Program contributions to student health and academic performance	25 16.2%	94 61.0%	35 22.1%	9 5.8%	68 44.2%	77 50.0%
Dietary Guidelines for Americans (DGA)	43 27.9%	86 55.8%	25 16.2%	15 9.7%	79 51.3%	60 39.0%
Using a Nutrition Facts Label	35 22.7%	72 46.8%	47 30.5%	14 9.1%	56 36.4%	84 54.5%
Carbohydrates, fats, proteins, and their functions	44 28.6%	73 47.4%	37 24.0%	11 7.1%	68 44.2%	75 48.7%
Vitamins, minerals, and their functions	44 28.6%	81 52.6%	29 18.8%	13 8.4%	73 47.4%	68 44.2%
Alternative eating patterns (vegetarian, diabetes, and food allergies or intolerances)	42 27.3%	81 52.6%	31 20.1%	13 8.4%	68 44.2%	73 47.4%
Alternative methods to enhance the flavor of foods	39 25.3%	77 50.0%	38 24.7%	11 7.1%	73 47.4%	70 45.5%
Factors that influence food choices	36 23.4%	71 46.1%	47 30.5%	16 10.4%	60 39.0%	78 50.6%

Note: Percentages may not total to 100% due to rounding. *(Table 3 continues)*

(Table 3 continued)

Knowledge Ratings of Study Participants Before and After Nutrition 101 (N=154)

Knowledge Areas	Before *Nutrition 101*			After *Nutrition 101*		
	Low	**Moderate**	**High**	**Low**	**Moderate**	**High**
Signs of misleading nutrition information in the media	39 25.3%	74 48.1%	41 26.6%	18 11.7%	2 40.3%	74 48.1%
Child Nutrition Program roles in being a credible source for nutrition information	44 28.6%	77 50.0%	33 21.4%	14 9.1%	71 46.1%	68 44.2%
United States Department of Agriculture's (USDA) MyPlate Food Groups	32 20.8%	76 49.4%	46 29.9%	13 8.4%	64 41.6%	77 50.0%

Note: Percentages may not total to 100% due to rounding.

Table 4

Means and Standard Deviations of Knowledge Ratings of Study Participants Before and After Nutrition 101 (N=154)

	Before *Nutrition 101*		After *Nutrition 101*		t-test Comparisons of Before and After
Knowledge areas	**Mean**	**SD**	**Mean**	**SD**	**t[a]**
Child Nutrition Program contributions to student health and academic performance	2.06	0.62	2.44	0.61	7.08
Dietary Guidelines for Americans (DGA)	1.88	0.66	2.29	0.64	7.96
Using a Nutrition Facts Label	2.08	0.73	2.45	0.66	5.86
Carbohydrates, fats, proteins, and their functions	1.95	0.73	2.42	0.62	7.28
Vitamins, minerals, and their functions	1.90	0.68	2.36	0.63	8.16
Alternative eating patterns (vegetarian, diabetes, and food allergies or intolerances)	1.93	0.69	2.39	0.64	7.99
Alternative methods to enhance the flavor of foods	1.99	0.71	2.38	0.62	6.27
Factors that influence food choices	2.07	0.73	2.40	0.67	4.21
Signs of misleading nutrition information in the media	2.01	0.72	2.36	0.68	5.18
Child Nutrition Program roles in being a credible source for nutrition information	1.93	0.71	2.35	0.64	6.95
United States Department of Agriculture's (USDA) MyPlate Food Groups	2.09	0.71	2.42	0.64	5.68

Note: Scale is Low (1) to High (3).
[a]All t-values are $p < .001$.

With regard to the intentions of the participants to achieve specific goals following the course, the participants responded to four statements ranging from No to Already Doing This. The statements and results are presented in Table 5. The majority of the participants (52.6% or higher) responded in the affirmative to all statements. The highest numbers responded "yes" to applying the information learned from the course to their CNP (N = 117, 76.0%) and everyday life (N = 118, 76.6%).

Table 5

Goals of Study Participants after Completing Nutrition 101 (N=154)

As a result of this course, do you intend to:	No	Maybe	Yes	Already doing this
Apply the course toward SNA's Level 1 Certification requirements	24 15.6%	47 30.5%	81 52.6%	2 1.3%
Implement nutrition education strategies in the classroom or cafeteria	17 11.0%	29 18.8%	106 68.8%	2 1.3%
Apply what you have learned to your Child Nutrition Program	13 8.4%	23 14.9%	117 76.0%	1 0.6%
Apply what you have learned to your everyday life	9 5.8%	26 16.9%	118 76.6%	1 0.6%

Note: Percentages may not total to 100% due to rounding.

Nearly all respondents provided feedback on *Nutrition 101* through open-ended questions addressing plans (n = 101) and goals (n = 85) identified due to attending the course. When respondents were asked to describe how they planned to use the information learned in the *Nutrition 101* course, four primary themes were derived from the responses (a) develop healthier lifestyles for themselves and their families, (b) improve overall eating habits, (c) share knowledge gained, and (d) use in CNP operations. When respondents were asked to share specific personal or professional goals they would like to attain in light of attending the *Nutrition 101* course, the responses followed similar themes as the plans, which included (a) health and wellness, (b) improve eating habits, (c) career advancement, (d) educational attainment, and (e) improve CNP operations. Some of the direct quotes for goals to attain included: (a) "I would like to achieve my Level 2 certification," (b) "help me become a better Foodservice Field Manager," (c) "advance to manager," (d) "have a better variety at school for breakfast and lunch," (e)

"better at work, lose weight, exercise more," and (f) "decrease the number of obese children at our centers by providing healthier foods and education [sic] parents on MyPlate."

Survey respondents were asked to share what they liked best about the *Nutrition 101* course and which areas needed improvement in the course. The most popular response to what the respondents liked best about the *Nutrition 101* course was that the course was informative and detailed. The second most favored portion of the course was the vitamin and mineral discussion. The third most liked element of the *Nutrition 101* online course was the section that addresses special diets.

In addition to the positive feedback, respondents provided suggestions on improvement areas. The themes that arose from this question were (a) change the automated voice to a human voice-over, (b) make the course more interactive, (c) make the course shorter, and (d) incorporate more examples of how to apply knowledge gained to the CNP. Respondents also commented on the technology used in the course as an area of potential improvement, including making the course compatible with mobile devices and the speed of the online instructor's reading.

Issues with Self-Generated Identification Numbers

Participants who agreed to be part of the research were asked to self-generate an ID number by answering a few questions. The number could then be used to match data across questionnaires anonymously. However, this method created tremendous problems. Many participants simply chose not to provide the ID number on subsequent questionnaires. Some misinterpreted the questions later in the process, so the ID numbers did not match up. The major problem from this was matching pre- to post-knowledge questionnaires

Pretest/Posttest

Pretest/Posttest Comparisons

Of the participants in the *Nutrition 101* classes who agreed to be a part of the research study and provided usable anonymous ID codes, only 27 have completed matched pretest to posttest data. For the 27 participants, pretest scores averaged 8.7 out of 10 with a standard deviation of 1.33, while posttest scores averaged 8.6 out of 10 with a standard deviation of 1.05. Frequencies of all these scores are given in Table 6. Posttest scores were not significantly different [$t(26)=.32$, $p > .05$) than the pretest scores.

Table 6

Comparison of Study Participants' Pretest and Posttest Scores (N=27)

Pre-Test[a]		Post-Test[a]				
Mean	**SD**	**Mean**	**SD**	**t**	**df**	**Sig**
8.7	1.33	8.6	1.05	.32	26	>.05

[a]Total number of questions and/or total score was 10.

Six-Month Survey

Approximately six months after completing *Nutrition 101*, participants were asked to complete a survey about their transfer of knowledge gained in the course to their job performance and professional and personal behaviors and goals. Responses on their profession and individual behaviors and goals are given in Table 7. The majority of participants had not participated in any other formal nutrition training (70.4%). Of the participants who acknowledged attending additional general nutrition courses, most of the classes were ICN courses. One of the courses mentioned was Best Practices in Summer Foodservice Program. The participants applied their knowledge (77.5%), accomplished their personal or professional goals (53.5%), and would recommend the course to others in their school district (83.1%). Only 46.5% of participants had earned the SNA's Level 1 SN certification.

Table 7

Responses of Study Participants to Nutrition 101 Training Workshop Six-Month Survey (N=71)

Questions	No		Yes		No Response	
	Freq.	%	Freq.	%	Freq.	%
Would you recommend this course to others in your school district/school center?	0	0.0	59	83.1	12	16.9
Since participating in the *Nutrition 101* course, have you had opportunities to apply what you learned in the course?	9	12.7	55	77.5	7	9.9
Have you accomplished any of the personal or professional goal(s) that were set at the end of the *Nutrition 101* course?	24	33.8	38	53.5	9	12.7
Since participating in the *Nutrition 101* course, have you earned the SNA's Level 1 SN certificate?	29	40.8	33	46.5	9	12.7
Have you participated in any formal, general nutrition training(s) or course(s) since completing ICN's *Nutrition 101* course?	50	70.4	21	29.6	0	0.0

Note: Percentages may not total to 100% due to rounding.

Participants' transfer of knowledge ratings are given in Table 8. All statements were rated on a five-point Likert-type scale (1 = *Strongly disagree* to 5 = *Strongly agree*). All statements were rated very positively. The lowest rated statement, with a mean of 4.04 (SD = 0.84), pertained to changes in their personal eating and physical habits.

Table 8

Study Participants' Perceived Transfer of Knowledge to Personal and Professional Lives Based on Participation in Nutrition 101 (N=71)

Perceived Transfer of Knowledge	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Mean	SD
I believe that CNPs are a source of credible nutrition information for those who participate.	0 0.0%	1 1.4%	4 5.6%	25 35.2%	41 57.7%	4.49	0.67
I have increased my basic nutrition knowledge.	0 0.0%	0 0.0%	6 8.8%	31 43.7%	34 47.9%	4.39	0.64
I have a better understanding of the role nutrition plays in promoting health.	0 0.0%	0 0.0%	4 5.6%	34 47.9%	33 46.5%	4.41	0.60
I have identified a personal interest in nutrition and health.	0 0.0%	2 2.8%	8 11.3%	31 43.7%	30 42.3%	4.25	0.77
I have applied the nutritional information I learned in *Nutrition 101* to CNPs.	0 0.0%	2 2.8%	3 4.2%	38 53.5%	28 39.4%	4.30	0.68

Note: Percentages may not total to 100% due to rounding. Scale for means: 1 = Strongly Disagree to 5 = Strongly Agree.

(Table 8 continues)

(Table 8 continues)

Study Participants' Perceived Transfer of Knowledge to Personal and Professional Lives based on Participation in Nutrition 101 (N=71)

Perceived Transfer of Knowledge	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Mean	SD
I have implemented nutrition education strategies learned in *Nutrition 101* in the classroom and/or cafeteria.	2 2.8%	2 2.8%	10 14.1%	31 43.7%	26 36.6%	4.08	0.94
I have made some changes in my eating and physical activity habits.	0 0.0%	4 5.6%	11 15.5%	34 47.9%	22 31.0%	4.04	0.84

Note: Percentages may not total to 100% due to rounding. Scale for means: 1 = Strongly Disagree to 5 = Strongly Agree.

Ratings on job performance improvements are given in Table 9. While most participants rated all statements positively, communicating with customers to determine influences on eating habits; promoting the CNP to children, staff, parents, and the community; and incorporating herbs and spices to reduce salt were rated lowest, with a mean of 3.20 (SD = 0.89), 3.15 (SD = 0.87), and 3.13 (SD = 0.90), respectively.

Respondents were asked to elaborate on areas of job performance where they had experienced "a great deal" of improvements. The themes that emerged from that open-ended question were (a) increased knowledge, (b) improved menu planning skills, (c) confidence to discuss nutrition with colleagues and students, and (d) improved health.

Table 9

Study Participants' Perceived Job Performance Improvements (N=65)

Perceived Job Performance Improvement	None	Little	Somewhat	A Great Deal	Not an Aspect of My Job	Mean	SD
Implementing district policies and procedures for ensuring that children with food allergies/special needs are served correctly.	1 1.5%	2 3.1%	19 29.2%	38 58.5%	5 7.7%	3.57	0.65
Using nutrition education materials in the cafeteria and on the serving line to promote an awareness of healthy school/CACFP meals.	3 4.6%	7 10.8%	17 26.2%	37 50.8%	5 7.7%	3.33	0.88
Ensuring applicable policies are followed when providing school/child and adult care food program (CACFP) meals for children with special needs.	2 3.1%	4 6.2%	16 24.6%	35 53.8%	8 12.3%	3.47	0.78
Ensuring the use of nutritionally equivalent foods when menu substitutions are necessary in the CNP.	1 1.5%	6 9.2%	18 27.7%	36 55.4%	4 6.2%	3.46	0.74
Encouraging children to make wise food choices that result in healthy, well-balanced meals.	2 3.1%	3 4.6%	21 32.3%	35 53.8%	4 6.2%	3.46	0.74

Note: Percentages may not total to 100% due to rounding. Scale for means: 1 = None to 4 = A Great Deal.

(Table 9 continues)

(Table 9 continued)

Study Participants' Perceived Job Performance Improvements (N=65)

Perceived Job Performance Improvement	None	Little	Somewhat	A Great Deal	Not an Aspect of My Job	Mean	SD
Encouraging children to select a variety of foods.	2 3.1%	5 7.7%	19 29.2%	35 53.8%	4 6.2%	3.43	0.78
Sharing nutritional information with children, parents, and others about foods served.	3 4.6%	5 7.7%	26 40.0%	27 41.5%	4 6.2%	3.26	0.81
Assisting teachers, school/CACFP administrators, and parents with nutrition education resources.	5 7.7%	5 7.7%	20 30.8%	27 41.5%	8 12.3%	3.21	0.94
Communicating with customers to determine what influences their eating habits.	3 4.6%	9 13.8%	20 30.8%	27 41.5%	6 9.2%	3.20	0.89
Promoting the CNP to children, staff, parents, and the community	4 6.2%	7 10.8%	26 40.0%	24 36.9%	4 6.2%	3.15	0.87
Incorporating the use of herbs and spices to enhance flavor when using less salt/sodium.	3 4.6%	12 16.9%	21 33.3%	26 40.0%	3 4.6%	3.13	0.90

Note: Percentages may not total to 100% due to rounding. Scale for means: 1 = None to 4 = A Great Deal.

Additional open-ended questions in the six-month survey allowed respondents to share some dialogue about participation outcomes in the *Nutrition 101* online course. When asked to share specific examples of how information from *Nutrition 101* had been applied professionally or personally, most of the responses indicated that knowledge gained in the course was used to improve menu planning activities or improve family health.

Several themes were identified when participants were asked to share personal and professional goals attained since attending the *Nutrition 101* course. The primary themes that emerged from the responses were professional empowerment, improved health for the family, improved personal health, and earning SNA certification. Specific goals mentioned included the following: (a) "managing weight;" (b) "use this knowledge in our public health;" (c) "I have gained momentum in my department and earned the knowledge necessary to take on more responsibilities in my role;" (d) "…I have learned how to eat healthy [sic]";" (e) "I have completed enough courses to earn my certification;" and (f) "able to train more confidently."

When asked to indicate any barriers to meeting their personal and professional goals, the most frequently mentioned obstacles preventing participants from achieving their goals were the COVID-19 pandemic, and no plan was set.

Finally, participants were allowed to share what they believed were positive and negative attributes of *Nutrition 101*, including those issues that would cause them to recommend or discourage participation. When participants were asked to share reasons to recommend *Nutrition 101* to other CNP professionals, the primary responses were related to the course content. Multiple respondents indicated the course (a) provided "great knowledge," (b) was "very informative," and (c) provided "good information." None of the participants provided any issues with the course that would prevent them from recommending it to others.

Twelve-Month Survey

Approximately one year following the *Nutrition 101* course, participants were asked to complete a survey to determine the impact of the course on the participants at the personal and professional levels.

Descriptive Characteristics of Study Participants

Participants were asked to provide their current job titles and changes in job title/positions since completing the *Nutrition 101* course. The data are given in Table 10. The participants responding to the 12-month survey were predominantly those participants classified as other (24.1%), child care assistant/cooks (19.0%), and SN foodservice assistants (17.2%) indicated that there had been no change in job title or position since completing the *Nutrition 101* course.

Table 10

Study Participants' Job Title and Position Changes One Year After Course Completion (N=58)

	Freq.	%
Current Job Title		
Child Care Assistant/Cook	11	19.0
Child Care Director/Administrator/Manager	3	5.5
Educator	1	1.7
Private Consultant/Trainer	1	1.7
School Nutrition Foodservice Assistant	10	17.2
School Nutrition Site-Level Manager	9	15.5
Other (unspecified)	14	24.1
No response	9	15.5
Position Changes		
New position in a new SNP	1	1.7
New position in the same SNP	2	3.4
Same position	31	53.4
Same position with extended responsibilities	2	3.4
Other (unspecified)	1	1.7
No response	21	36.2

Note: Percentages may not total 100% due to rounding**.**

Other Survey Questions

Responses on the effects of the course on job performance are given in Table 11. All statements were rated positively by the participants. The lowest rated statement for job performance improvements was encouraging customers to select a variety of foods, with a mean of 2.43 (SD = 1.7). Ratings about the impact of the course are shown in Table 12. The statement with the lowest rating on the perceived impact of the course, with a mean of 2.43 (SD = 1.6), concerned implementing strategies in the classroom or cafeteria.

Responses to the final follow-up questions are reported in Table 13. Over half (54.2%) of the respondents had not participated in formal training or attended general nutrition courses since completing the *Nutrition 101* course. Of those respondents who shared information on the classes they had attended after *Nutrition 101*, several ICN courses were mentioned, such as STAR Food Safety from Beginning to End: Follow the Flow of Food and Civil Rights in Nutrition Programs. Other courses were noted in the responses; however, the origin of the classes is unknown. Almost all participants have applied their knowledge (97.9%) and would recommend the course to others (91.7%). Fifty-six percent (56.3%) of the respondents have earned the SNA's Level 1 SN certificate after completing *Nutrition 101*.

Table 11

Perceived Job Performance Improvements of Study Participants (N=49)

Perceived Job Performance Improvements	None	Little	Somewhat	A Great Deal	Not an Aspect of My Job	Mean	SD
Ensuring the use of nutritionally equivalent foods when menu substitutions are necessary in the CNPs.	0 0.0%	0 0.0%	16 37.7%	33 67.3%	0 0.0%	3.40	1.4
Implementing district policies and procedures for ensuring that students with food allergies/special needs are served correctly.	0 0.0%	1 2.0%	16 32.7%	32 65.3%	0 0.0%	3.07	1.4
Ensuring applicable policies are followed when providing school/Child and Adult Care Food Program (CACFP) meals for children with special needs.	0 0.0	1 2.0%	18 36.7%	29 59.2%	1 2.0%	2.97	1.5
Encouraging students to make wise food choices that result in healthy, well-balanced meals.	1 2.0%	3 6.1%	17 34.7%	26 53.1%	2 4.1%	2.78	1.5

Note: Percentages may not total to 100% due to rounding. Scale for means: 1 = None to 4 = A Great Deal.

(Table 11 continues)

(Table 11 continued)

Job Performance Improvements (N=49)

Perceived Job Performance Improvement	None	Little	Somewhat	A Great Deal	Not an Aspect of My Job	Mean	SD
Communicating with customers to determine what influences their eating habits.	2 4.1%	5 10.2%	23 46.9%	16 32.7%	3 6.1%	2.78	1.5
Sharing nutritional information with students, parents, and others about foods served.	2 4.1%	2 4.1%	21 42.9%	23 46.9%	1 2.0%	2.74	1.5
Incorporating the use of herbs and spices to enhance flavor when using less salt/sodium.	3 6.1%	6 12.2%	17 34.7%	23 46.9%	0 0.0%	2.67	1.5
Using nutrition education materials in the cafeteria and serving line to promote an awareness of healthy school/CACFP meals.	1 2.0%	6 12.2%	17 34.7%	22 44.9%	3 6.1%	2.60	1.5
Assisting teachers, school/CACFP administrators, and parents with nutrition education resources.	1 2.0%	2 4.1%	24 49.0%	18 36.7%	4 8.2%	2.55	1.5
Promoting the CNP to students, staff, parents, and the community.	2 4.1%	3 6.1%	25 51.0%	16 32.7%	3 6.1%	2.50	1.5
Encouraging customers to select a variety of foods.	0 0.0%	1 2.0%	17 34.7%	22 44.9%.	3 6.1%	2.43	1.7

Note: Percentages may not total to 100% due to rounding. Scale for means: 1 = None to 4 = A Great Deal.

Table 12

Study Participants' Perceived Impact of the Nutrition 101 Course on Knowledge, Skills, and Behavior (N=48)

Perceived Impact of Nutrition 101	None	Little	Somewhat	A Great Deal	Mean	SD
Did the content of the course accurately reflect the knowledge and skills needed to do your job?	0 0.0%	3 6.3%	11 22.9%	34 70.8%	3.01	1.5
Have you had the opportunity to use the knowledge and/or skills presented in *Nutrition 101* at work?	0 0.0%	3 6.3%	12 25.0%	33 68.8%	3.00	1.5
Have you used the knowledge and skills learned in *Nutrition 101* to improve your personal nutritional health and habits?	1 2.1%	1 2.1%	14 29.2%	32 66.7%	2.97	1.5
Has participating in the *Nutrition 101* course had a positive impact on the CNP you serve?	3 6.3%	1 2.1%	16 33.3%	28 58.3%	2.79	1.6
Have you or your CNP experienced improved compliance with Federal meal pattern regulations?	3 6.3%	3 6.3%	17 35.4%	25 52.1%	2.71	1.6

Note: Percentages may not total to 100% due to rounding. Scale for means: 1 = None to 4 = A Great Deal.

(Table 12 continues)

(Table 12 continued)

Study Participants' Perceived Impact of the Nutrition 101 Course on Knowledge, Skills, and Behavior (N=48)

Perceived Impact of Nutrition 101	**None**	**Little**	**Somewhat**	**A Great Deal**	**Mean**	**SD**
Have you experienced improvements with menu planning?	0 0.0%	7 14.6%	21 43.8%	20 41.7%	2.71	1.4
Have you actively sought out opportunities to share with others what you have learned in *Nutrition 101*?	1 2.1%	5 10.4%	25 52.1%	17 35.4%	2.64	1.4
Have you used the knowledge and skills learned in *Nutrition 101* to implement nutrition education strategies in the classroom and/or cafeteria?	5 10.4	8 16.7	15 31.3%	20 41.7%	2.43	1.6

Note: Percentages may not total to 100% due to rounding. Scale for means: 1 = None to 4 = A Great Deal.

Table 13

Study Participants' Responses to Participation Follow-Up Questions (N=48)

	No		Yes	
	Freq.	**%**	**Freq**	**%**
Since participating in the *Nutrition 101* course, have you had opportunities to apply what you learned in the course?	1	2.0	47	97.9
Would you recommend *Nutrition 101* to others in the field of child nutrition?	2	4.2	44	91.7
Since participating in the *Nutrition 101* course, have you earned the SNA's Level 1 SN certificate?	21	43.8	27	56.3
Have you participated in any formal, general nutrition training(s) or course(s) since completing ICN's *Nutrition 101* course?	26	54.2	23	47.9

Note: Percentages may not total to 100% due to rounding.

Open-Ended Questions

The 12-month survey also provided multiple opportunities for respondents to answer open-ended questions regarding their experiences resulting from participating in *Nutrition 101*. Participants were asked to give examples of applying what was learned from *Nutrition 101*. Several responses were generated from this question. The most common theme in the responses was menu planning. A few additional themes arose out of that data, including (a) making healthier food choices, (b) understanding how to use spices instead of salt, (c) training staff on basic nutrition, (d) monitoring food temperatures, (e) understanding basic nutrition, and (f) menu planning for students with allergies.

Participants were also asked to share personal or professional goals they have accomplished due to participating in *Nutrition 101*. The goals achieved included (a) improving eating habits, (b) improving menu options for students with food allergies, (c) developing standard operating procedures for time and temperature, (d) obtaining SNA certification, and (e) attending college.

As noted earlier, most participants indicated that they would recommend the *Nutrition 101* course to others in the CNP field. These responses were based on the idea that the course offered a "great learning opportunity" and increased "knowledge" for attendees. On the contrary,

one respondent (a participant identified as a registered dietitian) indicated that the course was not one that they would recommend to others because the course was “long and boring.”

DISCUSSION

This evaluation study used the New World Kirkpatrick Model for evaluation (Kirkpatrick & Kirkpatrick, 2016) to examine the effectiveness of the ICN's *Nutrition 101* online course. The assessment addressed each level of the Kirkpatrick model – Level 1 (Reaction), Level 2 (Learning), Level 3 (Behavior), and Level 4 (Results). The model provides a helpful framework for evaluating the *Nutrition 101* online course; it is valuable in conceptualizing and directing the data collection activities, organizing results, and presenting them. While it is generally acknowledged that it may be difficult to evaluate Levels 3 and 4 of the model and tends to be avoided by many researchers, this project addressed all levels of the New World Kirkpatrick Model (Kaufman et al., 1996; Kirkpatrick & Kirkpatrick, 2016; Twitchell et al., 2000).

Reaction (Level 1)

Level 1 of the model was designed to assess how participants perceive the training's relevancy, training quality, and participant satisfaction and is typically given at the end of the training or course. For most organizations, a course or training evaluation is limited to Level 1. This is due in large part to the idea that (a) reaction data are easy to obtain, (b) data collection can be done immediately following the course or training, and (c) feedback at this level is inexpensive to collect (Kirkpatrick & Kirkpatrick, 2016).

The Level 1 evaluation for *Nutrition 101* was assessed using the course evaluation instrument. The course evaluation instrument was a self-assessment identifying the participants' satisfaction with the *Nutrition 101* online course, knowledge gaps between before and after taking the course, personal or professional goals to be accomplished as a result of attending the course, and general feedback regarding course improvements.

Upon completing the *Nutrition 101* online course, each participant was prompted to complete the course evaluation. The survey was divided into the following sections: demographics, satisfaction and overall impressions, knowledge, in the future, and general comments. Professionals from all areas of the CNP participated in this study, with the most significant percentage of participants being professionals who classify themselves as SN foodservice assistants and child care assistants/cooks with less than five years' experience in the position. The third highest group of participants were SN site-level managers. The various job levels reported are expected because the course is designed for and promoted to all CNP professionals. Moreover, the course developers have a primary goal of assisting SN professionals in attaining SNA's Level 1 certification. Therefore, it is also plausible to see job titles such as SN managers reported in the course evaluation.

Regarding satisfaction, most of the participants were satisfied with their experience with the course. When given a chance to highlight areas of the course that participants liked best, responses included (a) depth of information shared regarding basic nutrition, (b) specific lessons that addressed vitamins and minerals, and (c) information about special diets.

Per ICN stakeholders, *Nutrition 101* was developed with the expectation that participants could meet the following goals: (a) increase basic nutrition knowledge, (b) identify areas of improvement for personal nutritional habits in comparison to the DGA, and (c) when applicable, attain half of the SNA's Level 1 certification. When participants were asked to share any personal or professional goals identified as a result of participating in the *Nutrition 101* course,

over half of the respondents indicated that they were either applying the course towards the SNA's Level 1 certification or applying what was learned in their personal and professional lives. While the current edition of this course does not teach participants about developing or creating personal or professional goals, participants were able to respond to the question. It is important to note that many of the goals align with the ICN expectations for the course.

Learning (Level 2)

The Level 2 evaluation in the Kirkpatrick (2016) model involves a self-assessment of knowledge gained from attending a training or course, usually collected in the form of pretest and posttest. Data gathered at this step in the evaluation can be very persuasive for specific classes and training.

The pretest and posttest served to corroborate the participants' self-reported learning outcomes mentioned in Level 1 and validate that learning took place as a result of attending the course. Participants experienced some difficulty creating self-generated identification numbers, which could provide some longitudinal data on how participants respond across different data points. As a result, the pretest/posttest data only represent data where matching self-generated identification numbers could be grouped.

Participants scored high on both the pretest and posttest. Test scores were not statistically significantly different between the pretest and posttest. This lack of improvement may indicate that participants did not gain substantial nutrition knowledge from completing the *Nutrition 101* course, participants were knowledgeable of basic nutrition before joining the course, or the instrument was not adequately designed to capture changes in knowledge. Another possibility is that the individuals who successfully created self-generated identification numbers may have more advanced knowledge or training in general nutrition.

While there were no statistically significant changes in knowledge identified in the formal testing for *Nutrition 101*, self-reported data indicated that participants perceived that there was an increase in knowledge of key course concepts after attending the course. The results from the course evaluation show that participants reported a significant increase in knowledge of the course objectives after taking the *Nutrition 101* course. (See Table 4.)

Behavior (Level 3)

The Level 3 evaluation identifies how well participants have applied the learning and implemented behavior changes from the course or training. The Level 3 evaluation happens three to six months following a training course, allowing time for changes to be tangible (Kirkpatrick & Kirkpatrick, 2016). For the current study, participants were contacted approximately six months after completing the *Nutrition 101* online course to provide feedback regarding the (a) transfer of knowledge gained in the course to personal and professional environments; (b) impacts on knowledge gained on specific job duties and responsibilities as identified by the ICN competency, knowledge, and skills resources for CACFP professionals and SN professionals; and (c) achievement of personal and professional goals.

The Level 3 evaluation relies on the subjective claims of the participants completing the online survey; therefore, the challenges associated with measuring behavior changes can be complex (McLean & Moss, 2003). Regarding behavior changes, a majority of the participants claimed to have applied knowledge gained and accomplished their personal and professional goals. More specifically, participants responding to the six-month survey indicated the course positively influenced their eating habits and subsequently the eating habits of their families and others. Examples of behavior changes mentioned include "consuming more food high fiber cus [sic] help my blood pressure," "brought home nutritional information to share with family," and "giving healthy food to my kids." Similarly, participants at the six-month mark indicated they had applied information from the course to teach others about good nutrition. Comments such as "teaching students about sugar and healthy snacks/drinks; little flyers/posters with nutrition facts around the cafeteria," and "able to provide education for foodservice workers to share in their school" are examples of how respondents shared information with others. Teaching others about nutrition is a vital component of an expected long-term goal of the course—applying nutrition information throughout CN programs.

The Level 3 evaluation also addressed how the information gained from *Nutrition 101* had influenced job performance for participants and the transfer of knowledge and application of skills. According to participant responses, the *Nutrition 101* course effectively improved job duties and responsibilities in all areas listed. However, topics with the lowest ratings were ones for which there was little coverage in the course.

Results (Level 4)

The Kirkpatrick Model Level 4 evaluation is designed to assess the results of attending a course or training on the business or environment and is ideally identified through improved performance (Kirkpatrick & Kirkpatrick, 2016). For this evaluation study, the Level 4 assessment came approximately 12 months after course completion. The 12-month evaluation survey was divided into five sections and included demographics, job duties and responsibilities, personal and professional activities, accomplishments, and application of knowledge. While participants were aware of the data collection periods for the study, participation waned at the Level 4 mark.

The data showed the majority of respondents did not advance in their job. A little over half of the respondents remained in the same position 12 months after completing the course. As noted in the introduction section of this report, implementation of Professional Standards for SN Professionals requires some annual training hours for CNP staff. The desired goal for professional development is not training for training's sake. The goal is to help staff perform job tasks and responsibilities better for improved performance. *Nutrition 101* qualifies for the SNA's core certification Level 1, an indicator of an individual's competency in CNP essentials. While most respondents did not advance in their careers related to job changes, over half reported earning the SNA's Level 1 certification. This was a nearly 10% increase for those who responded to the six-month survey. This percentage may not reflect the actual percentage of eligible individuals achieving SNA Level 1 certification. As the demographics revealed in Table 1, many respondents were employed in child care settings and may not have belonged to the SNA, thus not eligible for Level 1 certification. Other participants may have held higher SNA certification levels due to years of experience or college education. The Level 1 certification is entry-level; thus, the 37 SNP foodservice workers participating may be among the most likely to pursue certification. The percentage of eligible participants to achieve SNA Level 1 certification may have approached upwards of 73% (27 out of 37 respondents) when reviewed for those most likely to be eligible. It is also important to note that because we cannot successfully match the self-generated identification numbers across data collection periods, we have no assurance that respondents at the six-month and 12-month data collection periods are the same individuals. Therefore, the increase could be higher or lower than reported. Regardless of the difference between six- and 12-months, the course met the goal of assisting participants in attaining the SNA's Level 1 certification.

The majority of the 12-month respondents indicated that the course either somewhat or greatly improved their job performance and encouraged the transfer of knowledge to others. These findings suggest that the *Nutrition 101* online course does have the capacity to assist attendees in meeting vital education and training requisites to be proficient in their current jobs.

Participants responding to the 12-month survey gave feedback supporting the ongoing influence of the course on their eating habits and the eating habits of others. Examples of the participants' applied lessons learned from the course included "I personally choose to eat more foods with less sodium," "changed my eating habit completely," and "learning the balance of our daily food to promote better health." The responses from participants indicated that they were willing and able to transfer knowledge to family, students, and staff working in CNPs. These findings show that participants applied knowledge gained from *Nutrition 101*, which is encouraging. One of the identified goals of *Nutrition 101* is to ultimately have participants be able to assess personal nutrition health and habits. Consequently, when participants indicated they have taken inventory of their habits and adjusted their behaviors, this is an indication that the program was effective.

Similar to the six-month survey, respondents at the 12-month mark reported how they shared information gained from the course with students and program staff. Comments such as "teaching my employees the value of nutrition," "use it to teach my staff about spices," and "shared nutritional info with high school students" also help confirm that the course met its intended goal.

Beyond the New World Kirkpatrick Model

Application to Child Nutrition Programs

The respondents in the six-month and 12-month surveys included multiple examples of applying information from *Nutrition 101* to CNPs. A likely program area to benefit from a nutrition course is menu planning. Responses related to menu planning at the six-month mark include, "I use the nutritional info when deciding on items for the lunch menu. We are limited as to our choices during Covid," "I am able to use the information when planning menus," and "through creating healthier menus." Continuity in responses was observed in comments noted in the 12-month survey data. Respondents stated the following: "making menu," "general meal planning, food balance, really helped with food allergies," and "how to make the food choices look more appealing to kids."

The *Nutrition 101* course, based on MyPlate and the DGA, features similarities to the meal patterns and targets for CNPs. It is reasonable that respondents who gained increased knowledge of these resources may easily transfer and develop skills for tasks such as menu planning in school meal programs. Respondents may have meant personal menu planning; however, the context of comments points toward program requirements. While school meal menu planning is not a major component of the course content, connections to the cafeteria through the program help link the concepts.

Additional Topics

The number of topics that the participants reportedly applied represent many different aspects of the course. Several comments provided by respondents warrant careful review and discussion. Topics included feedback regarding improving knowledge of substituting spices to lower sodium in cooking, food safety/food allergies, and program guidance /reimbursable meals/ /Offer versus Serve meal service.

Lower Sodium Cooking. The *Nutrition 101* course provides tips to lower sodium intake by purchasing lower sodium foods, reading labels to identify higher sodium foods, emphasizing fresh or frozen products without added sodium, and maintaining flavor by adding spices and herbs to reduce salt in food preparation. The course also provides a link to the USDA's 10-Tip-Series (in Lesson 2), which is dedicated to tips to reduce sodium in the diet. Participants in the course would need to click the link to access this information; it is not part of the handouts that can be downloaded as course materials. Examples of how the respondents at the six-month and 12-month mark noted they applied the information from the course include (a) "I have learned how to apply different spices to vegetables to make them more nutritious," (b) "I've learned how different spices help to enhance the flavor of preparing meals," (c) "using herbs and spices in place of salt for a healthier meal," and (d) "use it to teach my staff about spices."

The wording of the responses suggests that these participants sought out additional information on cooking with herbs and spices to lower sodium content when preparing foods. *Nutrition 101* does not include charts or specific tips for using spices and herbs instead of salt in recipes, yet participants note these skills. A reasonable explanation is that the information on sodium in the diet from the course motivated these participants to seek additional resources and training on the topic. Motivating self-sought knowledge and skills demonstrates a continued return on training investment for both the individual and sponsoring organization.

Food Safety and Food Allergies. Several respondents at the six- and 12-month survey mark indicated very specific food safety practices in response to how they applied the information from the course or personal goals achieved. The practices noted were avoiding cross-contamination and careful attention to time and temperature controls. The course content of *Nutrition 101* mentions food safety in general terms. It does not convey specifics, as noted by the survey respondent, as in this example:

> "I have implemented procedures to ensure that Time & Temperature Standards are strictly followed, and my staff understands the importance of these policies. Most of the information that is covered in the program I use in my initial job orientation: Personal Hygiene, Cleaning & Sanitizing, FIFO, Proper Storage of Foods, HACCP."

Another topic closely related to food safety is food allergies. Respondents mentioning food safety comments often included a food allergy comment. Two examples of respondent comments that illustrate this observation are:

> "Food Allergies. Now I am more aware and the importance how to prepare foods without contamination [sic]. Be sure what food can cause allergies. Some food allergies are milk, eggs, fish, peanuts, some tree nuts, soy, and shellfish."

> "Keeping food in appropriate temperature, cleaning superficies [sic] where we prepare food, contamination for food allergies."

Similar to food safety, food allergies are generally mentioned during the course, but the content does not cover allergens in detail. Participants noting increased knowledge of food safety and food allergies as outcomes of *Nutrition 101* may be attributing content learned in a different ICN course (or another provider) to *Nutrition 101*.

A plausible explanation for why food safety/food allergy content appears in some respondents' comments may be related to SNA's Level 1 certification. SNA's Level 1 certification requires 8 hours of nutrition training and 8 hours of food safety training. ICN offers both training topics. *Nutrition 101* is one of the two core courses; the other is Food Safety in Schools. As reported earlier, at least 33 unique individuals reported achieving SNA Level 1 certification. Participants in the study were asked if they had completed "Any formal, general nutrition training(s) or course(s) since completing *Nutrition 101*." The respondents often interpreted this question as training related to CNPs and not explicitly limited to nutrition as the training topic. Courses listed in response to this question included food safety, STAR food safety, district annual training, and ServSafe.

Child Nutrition Program Guidance. Child Nutrition Program guidance is the last topic of knowledge and skill application reported by respondents that warrants additional discussion. As stated in the introduction, the primary focus of *Nutrition 101* is personal nutrition with

connections to school programs. The content does not cover meal patterns, Offer Versus Serve meal service, or program guidance in specific detail. Specific feedback on knowledge gained from respondents at the six-month and 12-month intervals, such as (a) "What can be served and how much for the age groups," (b) "to understand rules and regulations for Child Nutrition," (c) "learning about components and what's [sic] makes a meal and the right portion and following a recipe," (d) "learning about a reimbursable tray," (e) "food options; offer vs. serve" and (f) "how to plan" were likely attained outside of the *Nutrition 101* course.

Similar to observations for food safety/food allergies, participants may be attributing knowledge gained in a different course or training to *Nutrition 101*. Another factor for consideration for this transfer of knowledge is the changes in meal pattern guidance during the pandemic. Most likely, all study participants were engaged in additional training in their facilities on meal patterns and portion sizes, substitutions when supply chain issues emerged, and other current program guidance. Respondents' interpretation of the question regarding any additional training related to CNPs and not explicitly limited to nutrition as the training topic may be at play regarding increased knowledge of reimbursable meals.

CONCLUSIONS

The New World Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2016) provided a valuable framework for evaluating the *Nutrition 101* online course. The evaluation of this course was more rigorous than the typical evaluation approach of assessing participant satisfaction only. Researchers employed their best efforts to gather evidence about the effectiveness of the course related to the degree to which participants (a) find the training favorable, engaging, and relevant to their jobs; (b) acquire the intended knowledge and skills; (c) apply what they have learned; and (d) reach targeted outcomes as a result of the training.

Overall, the *Nutrition 101* online course was received well by the participants, improved knowledge and skills, positively impacted the transfer of knowledge on a personal and professional level, and positively contributed to personal and professional outcomes. Moreover, the overall objectives established by the ICN for the *Nutrition 101* online course were met.

The breadth and depth of the lessons of the ICN's *Nutrition 101* online course were considered valuable in helping participants learn more about basic nutrition and helping participants complete SNA's Level 1 certification. The course also provided a solid foundation to acquire knowledge and skills to meet some key competencies identified by ICN for CNP professionals.

Participants in the current evaluation study provided tips to expand the impact of the *Nutrition 101* course, and these recommendations should be considered in the future as methods for program improvements. Some of the recommendations include changing the instructor's voice from an automated voice to a human voice-over, making the course more interactive to engage participants, and improving the technology used to present the course to make it more user-friendly for mobile devices.

Lessons Learned

The ICN needs to continue to evaluate all courses and training for (a) their contributions to the strategic goals and mission of the organization and (b) their effectiveness and use. There are lessons to be learned from this evaluation of the *Nutrition 101* online course, and they include the following:

- Evaluations that last longer than six months may result in attrition. This loss may be attributed to participant fatigue, loss of interest in the research topic, or changes in the personal or professional lives of the potential participants. Evaluators should consider employing shorter evaluation intervals such as three months and six months after training for this population.
- Self-generated ID numbers are valuable for tracking participants across data points but should be established to encourage participant accuracy and maintain continuity. It is recommended that researchers simplify the development of ID numbers for participants, such as asking the ID questions individually and creating the code for the participant or using only two identifiers that will never change, such as the participant's best friend's first name or the initial first name and birth month.
- All participants should have multiple methods to be contacted. It is essential to be able to contact eligible participants to ensure data collection is completed. When the

research is limited to one primary point of contact, there is a chance that data collection may be limited.

- Create a pretest/posttest challenging enough to assess increases in knowledge, competence, and performance after attending a course. The recommendation is to create a pretest and posttest that strike a balance between an easy test that will favor low-ability participants and a challenging test that will favor high-ability participants.
- Participants may take additional training classes during an evaluation period; therefore, it is likely that individuals may experience a transfer of knowledge between courses. This knowledge gain may make it difficult to differentiate between what was learned in one class or training versus what was learned in another class or training.
- Determining how many respondents are SNA members may help accurately identify those eligible for Level 1 certification. Additionally, asking about the current SNA certification level may help determine how ICN courses contribute to further advancement or maintenance of certification, thus identifying the actual contribution of ICN courses to increased professional development.
- If ICN hopes to track changes in participants' behaviors due to attending a course or training, it would be essential to teach participants how to create action plans within the course. This could be achieved by (a) adding a brief introduction to the benefits of developing and defining goals that result from attending an ICN training and (b) sharing tips on developing an action plan, including some examples of the process. By adding this additional information, future evaluation study participants could report goals established and successes more accurately.

Limitations of the Study

There are some limitations to the study that should be noted. The first limitation is the contact information provided by individuals who agreed to participate in the evaluation research. Participants in this study were asked to provide a singular method of contact, an email address, by which they can be reached. This data collection method depended on participants' willingness to provide accurate and reachable email addresses to receive all subsequent online surveys at the sixth and twelfth-month mark. By only collecting one method of contact, the researchers' opportunities to reach the potential respondent was constrained. Participants in this study did, in some instances, provide (a) inaccurate email addresses, (b) unreachable email addresses, or (c) email addresses where they could no longer be reached (i.e., work email addresses where they no longer are employees).

A second study limitation is that there were participants who agreed to participate in the study at the onset but dropped out of the study over time. There are various reasons why participants may choose not to continue in a study, and it is difficult to determine those reasons. Some factors that might have kept participants from completing the evaluation study include job changes, lack of interest in the research project over time, or time constraints related to participation.

The third study limitation is that the data collection method is based on self-reported data through an online survey. This kind of data collection lends itself to measurement errors such as recall bias, where participants respond to the assessment based on what they can recall at the time of contact (Althubaiti, 2016). According to Althubaiti (2016), recall bias may be associated

with several factors, including the length of time required for the recall and accuracy in reporting. The recall bias for this study may mean that respondents may have overestimated or underestimated the impact of the *Nutrition 101* course on job performance outcomes and personal or professional behavior changes.

A fourth study limitation is the self-generated ID codes. To start, participants were instructed to provide (a) the first initial of their mother's name, (b) the last four digits of a cellphone or home phone (if they did not have a cellphone), and (c) the number of older (not younger) brothers living or deceased to create an ID the code unique to the individual participant. Secondly, participants were provided with an example for creating the ID code, "My mother's name is Sally, the last four digits of my cellphone number are 6977, and I have no (0) older brother. Therefore, my identification code is S69770." Many participants had difficulty creating an ID code that met the requirements with all of this information.

Education and Training Implications

Participant feedback is valuable and necessary for improving course delivery and outcomes. The information ascertained from the course evaluation offers insight into the *Nutrition 101* course and its effectiveness. Findings from this evaluation study can contribute to future *Nutrition 101* online course success and future ICN course evaluations.

REFERENCES

Althubaiti, A. (2016). Information bias in health research: definition, pitfalls, and adjustment methods. *Journal of Multidisciplinary Healthcare*, *9*, 211–217. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4862344

Dachner, A. M., Ellingson, J. E., Noe, R. A., & Saxton, B. M. (2019). The future of employee Development. *Human Resource Management Review*. https://www.sciencedirect.com/science/article/pii/S1053482219301500

Fleischman, E. (2019, May 9). Why employers need to invest in professional development in 2019. *Forbes*. https://www.forbes.com/sites/forbeshumanresourcescouncil/2019/05/09/why-employers-need-to-invest-in-professional-development-in-2019/?sh=1dddac436d12

Freifeld, L. (2021, November 19). 2021 Training industry report. *Training*. https://trainingmag.com/2021-training-industry-report/

Institute of Child Nutrition. (2018). *Nutrition 101: A taste of food and fitness. 4th Edition.* University, MS: Author.

Kaufman, R., Keller, J., & Watkins, R. (1996). What works and what doesn't: Evaluation beyond Kirkpatrick. *Performance and Instruction*, *35*(2), 8–12.

Kirkpatrick, J.D., & Kirkpatrick, W.K. (2016). Four levels of Training Evaluation (1st ed.). East Peoria, IL: Versa Press.

Kruse, K. (2021, January 18). ATD 2020 state of the industry report. https://leadx.org/articles/atd-2020-state-of-the-industry-report/

Lee, C. H., & Bruvold, N. T. (2003). Creating value for employees: Invest in employee development. *International Journal of Human Resource Management*, 14, 98–1000.

Malik, O. F., Abbas, Q., Kiyani, T. M., Malik, K., & Waheed, A. (2011). Perceived investment in employee development and turnover intention: A social exchange perspective. *African Journal of Business Management*, *5*, 1904–1914.

McLean, S. & Moss, G. (2003). They're happy, but did they make a difference? Applying Kirkpatrick's framework to the evaluation of a National Leadership Program. *The Canadian Journal of Program Evaluation*, 18, 1-23. https://evaluationcanada.ca/secure/18-1-001.pdf

National Food Service Management Institute. (2005). *Nutrition 101: A taste of food and fitness.* University, MS: Author.

National Food Service Management Institute. (2011). *Nutrition 101: A taste of food and fitness. 2nd Edition.* University, MS: Author.

National Food Service Management Institute. (2014). *Nutrition 101: A taste of food and fitness. 3rd Edition.* University, MS: Author.

Pike, R. W. (2003) *Creative training techniques handbook: Tips, tactics, and how-to's for delivering effective training (3rd Edition).* HRD Press, Inc.

Scholz, R. & Tietje, O. (2002). *Embedded case study methods: Integrating quantitative and qualitative knowledge.* Thousand Oaks, CA: SAGE Publications.

Statista Research Department. (2020, December 15). *Spending in the training industry in U.S.* 2012–2020. https://www.statista.com/statistics/788521/training-expenditures-united-states/

Thabane, L., Ma, L., Chu, P., Cheng, J., Ismaila, A., Rios, L. P., Robson, R., Thabane, M., Giangregorio, L., & Goldsmith, C.H. (2010). A tutorial on pilot studies: The what, why and how. *Medical Research Methodology.* https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/1471-2288-10-1

Twitchell, S., Holton, E. F., & Trott, J.W. (2000). Technical training evaluation practices in the United States. *Performance Improvement Quarterly*, *13*(3), 84–110.

Whitener, E. M. (2001). Do "high commitment" human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modeling. *Journal of Management*, *27*, 515–535.

The University of Mississippi
School of Applied Sciences

800-321-3054
www.theicn.org