Environmental Scan of Instructional Technology Used to Develop and Deliver Virtual Training

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PURPOSE
Improve the operation of child nutrition programs through research, education and training, and information dissemination.

VISION
Lead the nation in providing research, education, and resources to promote excellence in child nutrition programs.

MISSION
Provide relevant research-based information and services that advance the continuous improvement of child nutrition programs.

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EXECUTIVE SUMMARY

Instructional technology (IT) has provided several innovations for virtual training. IT includes webinar/virtual platforms, multimedia, and software/hardware to develop and deliver training. Several industries, allied organizations, and universities provide virtual professional training for individuals who manage and operate federally funded child nutrition programs (CNPs), such as the National School Lunch Program, School Breakfast Program, Child and Adult Care Food Program, and Summer Food Service Program. The Institute of Child Nutrition, Education & Training Division (ICN, E&T) offers virtual training through the Zoom platform; however, other instructional technology may be more effective for developing and delivering virtual training. The purpose of this study was to identify instructional technology used by industry and allied organizations and universities that provide virtual training to CNP professionals. This study aimed to describe the instructional technology format, benefits, challenges, emerging trends, and best practices for providing virtual training for CNP professionals.

Qualitative research methods were used to achieve the project objectives. Researchers conducted an environmental scan to identify allied organizations, State agencies, universities, and consultants that provide virtual training for CNP professionals. The project included semi-structured interviews with key informants from various organizations who provided CNP training. The key informants were interviewed about the instructional technology used to develop and deliver virtual training, perceived challenges, emerging trends, and best practices regarding using instructional technology to provide virtual training.

Twenty-six key informants representing State agencies, allied organizations, higher education institutions, and CNP consultant trainers participated in the 60-minute interviews. The key findings include:

1. Thirty-nine IT tools were listed to develop virtual training. PowerPoint, Zoom, Canvas, and Moodle were listed most frequently.
2. Thirty-six IT tools were listed to deliver virtual training. Zoom was listed most frequently by the key informants (81%). Other IT tools listed more frequently were Zoom Webinar, Microsoft Teams, YouTube, Articulate, and Canvas.
3. Nearly all (88%) of the key informants provided synchronous and asynchronous training, stating it depended on the type of training they provided.
4. Several methods to promote interaction were named: breakout rooms, polling, partnering with another individual, Chatbox, and discussion boards.
5. The themes for benefits of IT for virtual training included instructional technology usability, participant flexibility, training availability, trainer preference, interactivity, data generation, and translation and accessibility.

6. The themes for IT challenges centered around technology, participant, and engagement challenges.
7. The trends focused on incorporating adult learning principles when planning the training, ensuring participant engagement, including relevant information and training schedules.
8. Best practices were similar to trends highlighting the importance of utilizing adult learning principles, instructor preparation, and developing training with relevant information. Other best practices included activities encouraging participant engagement, ensuring technology support was available as needed, and practicing virtual etiquette not to disrupt the training flow.

Findings from this study illustrate that virtual training offers several benefits to the CNP professional, including accessibility, schedule flexibility, and cost savings. Several IT tools can be used to develop and deliver training for CNP professionals, depending on the type of training and whether it is synchronous or asynchronous. It is anticipated that virtual training will continue to be a method of training due to the many advantages it offers for a busy working CNP professional. The results from this study suggest that effective virtual training incorporates adult learning principles that ensure the training is relevant, concise, and based on current needs. Activities that promote interaction and engagement can ensure better learning outcomes. The length of training is an important consideration for their busy schedule and attention span for learning. Additionally, when developing training, instructors must consider participants' technological capabilities, with a best practice of reviewing how to use the IT tool at the beginning of a class or course. Developing an instructional video on using the IT and having technical support on standby were suggestions.

INTRODUCTION

Child nutrition program (CNP) professionals are required to obtain continuing education and training to strengthen the ability of the CNP and staff to improve the quality of school meals and enhance program integrity (Professional Standards for School Nutrition Professionals, 2015). Several industries, allied organizations, and universities provide face-to-face and virtual CNP professional training for individuals who manage and operate federally funded child nutrition programs such as the National School Lunch Program, School Breakfast Program, Child and Adult Care Food Program, and Summer Food Service Program. The impact of the pandemic and the restriction of travel or face-to-face training forced an increase in virtual training needs. Therefore, the virtual platform has become a valuable tool for CNP professionals to attend and obtain training.

Typically, two types of virtual training are available depending on the need for interaction between the trainer and the learner– asynchronous and synchronous online training.

Asynchronous online training refers to training where the learner can access course materials on their own time and where it is convenient for them. The learner can access the training when their schedule allows. Training can be completed all at once or over several sessions.

Synchronous online training refers to a specific time for the group to participate in the training that a professional online instructor leads. This type of training allows learners to interact live with the instructor and other learners. Interaction can occur through audio chats, video chats, comments in the chat box, and other activities in the virtual classroom.

Virtual training has several advantages for both the institution providing the training and the learner. From the institutional perspective, virtual training reaches more CNP professionals, especially from a distance. Virtual training can accommodate a larger number of participants during the training. Additionally, this can help with staffing needs for training and reduce the travel budget.

From the CNP professional's perspective, virtual training offers schedule flexibility because learners can take training where they want, at work or even from the comfort of their home. Training can be taken when it fits into their schedule. Another advantage is the cost savings from not having to travel for training. Virtual training allows staff from small districts to obtain training when it may be difficult to get away from their facility due to staffing or budget constraints.

The Institute of Child Nutrition (ICN), Education & Training Division (E&T) offers virtual training for CNP professionals. Virtual training is offered asynchronous or synchronous. The asynchronous online courses are self-paced and can be viewed on a desktop, laptop, or mobile device. The courses are organized to align with the United States Department of Agriculture's (USDA) Professional Standards Codes and School Nutrition Associations (SNA) Key Areas, allowing learners to find what is needed to complete their goals and providing a method of meeting professional standards requirements (Institute of Child Nutrition, 2023,

iLearn). Synchronous online training is offered through virtual instructor-led training (VILT). VILT trainings are live, interactive virtual trainings led by trainers in a variety of topics, including Food Safety, Financial Management, Procurement, Nutrition, Meal Patterns, Human Resources, and Train-the-Trainer (Institute of Child Nutrition, 2023, Training).

At this time, ICN VILT training is offered through the Zoom platform; however, other IT may be more effective for developing and delivering virtual training. Currently, a comprehensive resource detailing the types of IT used in CNPs professionals' virtual training is unavailable. Therefore, this study aims to identify the IT used by applicable industry and allied organizations and universities that provide virtual training for CNP professionals. In addition, this study aims to gain an understanding of the IT benefits and challenges of providing virtual training.

Research Objectives:

- Identify IT used by industry and allied organizations and universities that provide virtual training to CNP professionals.
- Describe the IT format, benefits, and challenges of using IT, emerging trends, and best practices to provide virtual training for CNP professionals.

METHODOLOGY

Research Design Overview

The purpose of this study was to identify IT used to provide virtual training to CNP professionals. In this study, instructional technology (IT) includes webinar/virtual platforms, multimedia, and software/hardware used to develop and deliver training. To achieve this, the project was divided into two phases. In Phase I, the demographic questionnaire and the semi-structured interview guide were developed and validated. In Phase II, researchers conducted an environmental scan to identify key informants within allied organizations, State agencies, universities, and CNP consultants that provide virtual training for CNP professionals. Semi-structured interviews were conducted with the key informants to achieve the study goals and objectives. The key informants were informed that on the demographic questionnaire and during the semi-structured interviews, the terms 'instructional technology' and 'educational technology' would be used synonymously. This interchangeability of terms was clearly communicated to ensure clarity and consistency in their understanding and responses.

Phase I: Instrument Development and Validation

Phase I of the study consisted of developing the key informant demographic questionnaire and semi-structured interview guide and validation of the instruments. The instrument development was based on the literature review (Anstey & Watson, 2018) and in collaboration with ICN subject matter experts (SMEs). The primary SMEs included the ICN Associate Director of Information Services, the ICN Instructional Design and Training Specialist, and the ICN Multimedia Specialist. After meeting with the SMEs, the demographic questionnaire and interview guide were developed.

The researchers utilized both a quantitative and qualitative research design in this study. Key informants were asked to complete a demographic questionnaire of multiple-choice and open-ended questions before their interview. On the demographic questionnaire, key informants were asked questions about the IT used to deliver the training. Questions involved asking about their role in selecting the IT used by their organization and the IT used to develop and deliver virtual training. Additionally, key informants answered questions designed to describe the IT, such as the flexibility to access training on a mobile phone, class size accommodations, ease of use from the trainer’s viewpoint, and student access to communicate with the instructor. The demographic questionnaire was completed before the interview to enhance the interview process and allow adequate time for discussion during the interview.

The semi-structured interview guide gathered in-depth information about the IT used to develop and deliver virtual training. Participants were asked open-ended questions that described how the IT was used, such as the capability of the IT to be synchronous or asynchronous, the opportunities for interactivity with training participants, the benefits and challenges of using the IT for training, and what trends and best practices have emerged from using IT for training.

Once the draft instruments were developed, prospective electronic review panel members were identified. The panel members included ICN consultant trainers familiar with providing

virtual training. The potential panel members were emailed an invitation to participate in the electronic review panel and were provided with a consent form. Seven participants consented to review the draft instruments. The review panel was responsible for assessing the draft demographic questionnaire and the draft interview guide for face and content validity and supporting the development of the draft instruments.

The review panel determined the content validity of the draft instruments. Panel members were provided an electronic version of the draft demographic questionnaire, an interview guide, and a guided review form to evaluate the draft instruments. The panel members were asked to assess the readability of instructions, provide feedback on the appropriateness of questions, revise current questions, and add new questions if appropriate. All additions, recommendations, and revisions were reviewed and incorporated into the draft instruments.

The research team pilot-tested the draft demographic questionnaire and key informant interview guide with the review panel to assess for clarity, question sequencing, interview timing, the flow of the questions, and the researcher's ability to probe and capture details. The draft instruments were revised based on the recommendations of the review panel. The semi-structured interview guide is provided in Appendix A.

Phase II: Key Informant Interviews

Sample

A purposive sampling technique (Colorafi & Evans, 2016) was taken to recruit those with experience and knowledge of providing virtual training to CNP professionals. The subject matter experts used their experience and contacts in Child Nutrition and industry colleagues to recruit participants from a sample of CNP trainers from various industry categories. Allied organizations, higher education institutions, CNP training consultants, and State agencies that provide virtual training to CNP professionals were targeted. The participants from the State agencies were selected to represent a national sample from several United States Department of Agriculture Food Nutrition Service (USDA FNS) regions. The sample size was determined by data saturation, the stage at which the data no longer revealed new information or themes. This approach is considered the benchmark for determining purposive sample sizes in qualitative research (Guest et al., 2006).

Recruitment

When the allied organizations, State agencies, higher education institutions, and consultants who provide CNP training were identified, potential key informants were emailed an invitation to participate in the study. The key informants were given a study description, participant responsibilities, approximate time requirements of one hour for the interview, and contact information for questions and concerns. Once they agreed to participate in the study, a follow-up email and the Zoom meeting link were sent to confirm an interview time. The key informants were provided directions for completing the demographic questionnaire that would be returned to the researchers. A consent form that included a confidentiality statement and proof that the study was reviewed and approved by the IRB was contained in the email

correspondence. Potential participants were provided with contact information for the Human Subjects Protection Review Committee. The key informants were given directions to sign the consent form and return it to the researcher before the interview. Recruitment for the interviews was an ongoing process throughout Phase II until data saturation was established through repeated responses.

Data Collection

The data were gathered utilizing a demographic questionnaire and a semi-structured interview. The demographic questionnaire was created in a fillable Word document and emailed to the key informants to be completed and returned to the researchers before the interview. This study's main data collection method was semi-structured interviews with key informants. The semi-structured interview format was selected to encourage a free flow of thought and response. Open-ended questions provided the opportunity to request clarification and the flexibility to ask related questions, furnishing greater detail than a structured interview or survey. One member of the research team conducted the interviews to maintain consistency. The average length of the interviews was one hour. The interviews were conducted on the virtual platform (Zoom) and recorded with the consent of the participants. Detailed notes were captured during the interview. These notes were cross-checked against the original audio recording and used during analysis.

IRB Approval

The researcher for this project followed consent procedures established by the IRB at the University of Southern Mississippi. No identifying codes were used to identify participants from the pilot study or the key informants who were interviewed.

Data Analysis

The data analysis involved quantitative descriptive statistical methods, including means and frequencies for questions that asked what IT was used for developing and delivering virtual training, interaction methods, and the key informants' demographic characteristics. Qualitative thematic content analysis was performed for the semi-structured interviews. Thematic analysis was used for "identifying, analyzing, and reporting patterns (themes) within data" (Braun & Clarke, 2006).

Once the twenty-six interviews were complete, the audio recordings were transcribed. Researchers reviewed all notes and analyzed information gathered from each interview individually for pertinent data and themes. Each subgroup of the key informants (allied organizations, universities, CNP consultant trainers, and State agencies) was asked the same questions to ensure the triangulation of sources. Standard comparative analysis methods were used to obtain common themes (Gibbs, 2007; Miles et al., 2023). The interview transcripts were coded into broad themes, and the team reviewed the notes within those themes and identified additional themes for sub-coding (Gibbs, 2007; Miles et al., 2023; Stuckey, 2015). The coding decisions were compared with another researcher. Once the coding decisions were compared, content analysis was performed. Thematic coding of data specific to the research objectives was

analyzed from the interview transcripts. Data were categorized and cross-checked to identify the benefits, challenges, emerging trends, and best practices of using IT for training.

RESULTS

Key Informant Semi-Structured Interviews

An in-depth interview was conducted using a virtual platform (Zoom) with key informants from various subgroups involved with providing virtual training for CNP professionals. Twenty-six key informants representing State agencies, allied organizations, higher education institutions, and CNP consultant trainers participated in the 60-minute interviews. Of the participants, ten (38%) State agency key informants represented five USDA regions, seven (27%) key informants represented allied organizations, six (23%) represented higher education institutions, and three (12%) represented CNP consultant trainers. The key informants' experience in their current position averaged 8.87 years, ranging from six months to 29 years. Almost one-half (11) of the key informants did not have a role in selecting the IT used by their organization. Six key informants provided input, and five made the final decision in choosing IT. Descriptive statistics and distribution of key informants can be found in Table 1. In addition, the USDA regional representation of key informants in the state agency sample can be found in Table 2.

Table 1

Descriptive Statistics of Key Informant Subgroup (n=26)

Characteristics of Key Informant	n	Percentage
Key informant subgroup		
State Agency	10	38
Allied Organizations	7	27
Higher Education Institutions	6	23
Consultant Trainers	3	12
Years of CNP experience		
1–5 years	5	19
6–10 years	7	27
11–15 years	3	12
16–20 years	3	12
More than 20 years	8	30
Role in selecting the IT used by your organization		
Final Decision Maker	5	19
Recommended the IT	4	16
Provided input during the selection process	6	23
No input	11	42

Table 2

Key Informant State Agency Participant Overview USDA Regions (n=10)

USDA Regions	N
NERO	1
MWRO	3
MARO	1
MPRO	3
SERO	2

Note: *NERO=Northeast Regional Office; MWRO=Mid-West Regional Office; MARO=Mid-Atlantic Regional Office; MPRO=Mountain Plains Regional Office; SERO=Southeast Regional Office.*

The semi-structured key informant interviews were designed to help identify and describe the IT used to develop and deliver virtual training. Questions were tailored to gather information to describe the characteristics of IT, the benefits and challenges of using IT, trends observed while using IT to provide training and best practices that emerged from virtual training. All subgroups were asked the same questions related to the study's objectives. The results were categorized into the following major components: (a) IT used to develop virtual training, (b) IT used to deliver virtual training, (c) characteristics of IT used to provide virtual training including asynchronous, (d) benefits, (e) challenges, (f) observed trends, and (g) best practices for utilizing IT for virtual training.

Identification of Instructional Technology Used to Develop and Deliver Virtual Training

The key informants were asked to identify all the IT used to create virtual training. Key informants mentioned the average number of IT tools used to develop virtual training was four (4). The most frequently named IT included PowerPoint, Zoom, Canvas, Moodle, Microsoft Teams, Blue Sky, Canva, Blackboard, Microsoft Office, WebEx, and Articulate. Table 3 lists the most frequently reported IT used to develop virtual training. A description of the IT used to develop and deliver virtual training is included in Appendix B.

Table 3

Frequency of Instructional Technology Used to Develop Training

Instructional Technology	n
PowerPoint	9
Zoom	8
Canvas	4
Moodle	4
Microsoft Teams	3
Blue Sky	3
Canva	2
Black Board	2
Microsoft Office	2
WebEx	2
Articulate 360	2
Adobe Captivate	1
Adobe Illustrator	1
Articulate 360 Storyline	1
Articulate 360 Suite	1
Audacity	1
Brightspace	1
Camtasia	1
Cengage Resources	1
Cvent	1
Excel	1
Google Classroom	1
Google Quizzes	1
GoTo Webinar	1
JIRA Service Desk	1
Kahoot!	1
Kaltura	1
Microsoft Forms and Flows in Microsoft Power Automate	1
Narrasys Videoplayer/Learning Tool Interoperability	1
One Button Studios	1
Pressbooks	1
Professional Videographer	1
Studio with Canvas	1
SwapCard Event Platform	1
Talent Learning Management System (LMS)	1
Top Hat	1
Video Editing Software	1
VoiceThread	1
Wondershare Filmora	1

Next, the key informants were asked to identify the IT used to deliver virtual training. Twenty key informants named more than one IT that was used for delivering virtual training. Several reported that the type of IT used depended on the training provided, whether synchronous or asynchronous. The most often named IT used were Zoom, Zoom Webinar, Microsoft Teams, YouTube, Articulate, and Canvas. Table 4 includes the IT used to deliver virtual training and how frequently each IT was reported.

Table 4

Frequency of Instructional Technology Used to Deliver Virtual Training

Instructional Technology	**n**
Zoom	23
Zoom Webinar	8
Microsoft Teams	6
YouTube	3
Articulate 360	3
Canvas	3
Moodle Workplace	2
Panopto	2
PowerPoint	2
WebEx (Webinars)	2
Brightspace	2
Microsoft Teams Webinars	2
Google Classrooms	2
Talent LMS	2
Blackboard	1
Blue Sky	1
Camtasia	1
Citrix WebEx	1
Google Meet	1
GoTo Webinar	1
JIRA service desk	1
Kaltra	1
Path Learning Management	1
PowerPoint Captions	1
PowerPoint with Audio	1
PowerPoint with voiceover	1
Rise	1
Scratchpad	1
Skype Business	1
SwapCard	1
Top Hat	1
Wellsaid	1
Wikis	1

Key informants were asked what factors influenced the selection of the IT tools used to deliver virtual training. Over half of the participants (58%) reported not playing a role in determining what IT to use. Those who reported having a role in choosing the IT stated they considered factors such as the cost, whether it was affordable for the participant, easy to use, accessible, and simple to use, and whether the IT tool would meet the training objectives.

Characteristics of Instructional Technology Used to Deliver Virtual Training

Synchronous or Asynchronous/Learning Method

Most (n=23) of the key informants reported that synchronous and asynchronous training were offered depending on the trainee's demand or the topic to be presented. Some stated that live training was offered as often as possible to make training more interactive and provided training on demand to fit participants' schedules. Two key informants reported that the training was just asynchronous, and one offered only synchronous training.

Methods to Promote Interaction and Engagement.

Several methods were reported that promote engagement with participants during training. The most common was using breakout rooms. Other frequently listed methods included polling, participants partnering with another individual for a discussion, using the Chatbox, discussion boards, question and answer boxes, reaction buttons, quizzes, and the whiteboard. The methods of interaction and engagement with participants and the frequency reported are found in Table 5.

Table 5

Frequency of Methods for Interaction

Method	n
Breakout rooms	13
Polling	6
Partnering with another individual	6
Chatbox	5
Discussion Boards	5
Question & Answer box	3
Reaction Buttons	2
Quizzes	2
Whiteboard	2
Annotate	1
Anything with a QR (Quick Response) code	1
Bright Space: play games, scavenger hunt	1
Case studies	1
Electronic pen	1
Google Jam Board	1
Group discussions	1
Homework– cooking assignment or assessment	1
Hour of preparation before class	1
Invited lecture/webinar	1
Kahoots	1
Map tool to indicate where they live	1
Mentimeter	1
Miro Board	1
Modules and activities	1
Moodle	1
Shared Google Docs	1
Survey with Scratchpad	1
Video	1
Word Cloud	1
YouTube video	1

Participant Response to Instructional Technology

The key informants were asked how training participants responded to using IT for virtual training. Several (31%) of the key informants reported that it was a big transition at the beginning of the pandemic, but now everyone is used to online training. They reported that keeping training participants engaged is a challenge and stated it is too easy for them to be distracted and miss a piece of training. Several key informants (23%) reported high comfort

levels with online instruction. Although virtual training has become common, the key informants reported that some training participants need more directions and instructions, which can distract from the learning experience. Developing an instructional video on how to use the IT and having technical support on standby were suggestions for helping those who needed extra assistance.

Benefits of Instructional Technology Used to Deliver Virtual Training

The key informants were asked about the perceived benefits of the IT used for virtual training. Several themes emerged, including instructional technology usability, participant flexibility, training availability, trainer preference, interactivity, data generation, and translation and accessibility.

Instructional Technology Usability

Zoom was the instructional technology mentioned most often that provided ease of use and intuitive performance. Single responses indicated that Camtasia was easy to use and Kaltura was useful for recorded lessons. Key informants reported that Blackboard uses a consistent template, so students know where to find assignments and discussion posts, and Canvas is streamlined and user-friendly. Articulate was considered responsive and customizable. Key informants reported that Zoom was not blocked at the training participant's location, whereas other instructional technology systems may be blocked.

Participant Flexibility

Comments related to participant accessibility were most often cited. Ease of access and availability, with access to training when the participant's schedule allows, were also mentioned as benefits. Training that can be replayed, with the option to watch on demand, pause, and proceed, provided flexibility to participants. On-demand training was also reported as essential to CNP professionals who work alone and cannot leave their worksites to attend training. Key informants stated that reduced costs associated with virtual education could positively impact the availability and number of times a CNP professional participates in training. Significant savings are associated with travel time, travel expenses, and lodging costs. Practical considerations include convenience and consistency of messaging delivered by State agency staff. Online training may allow skill development in a participant's school kitchen.

Training Availability

Key informants reported that training that was accessible, with easy-to-use instructional technology, was essential to trainers as they could increase the number of participants enrolling in training versus face-to-face training. Training on demand also creates a larger net of opportunities to offer training and for participants to participate. Trainers can also provide training for multiple sites in one training session.

Trainer Preference

Key informants stated that the single platform for Zoom webinars and meetings was appreciated. The availability of a free platform was favored. Trainers agreed that virtual training offered them more time to train, with less travel and more efficiency in delivering instruction. Training on demand provides more freedom for the trainer, who can train from any location. Platforms that accommodated links for additional resources and incorporated automatic quiz scoring were considered beneficial.

Interactivity

Key informants cited Zoom as the most often-used interactive software, allowing the instructor and participants to see each other online and providing a live training solution. The benefits of peer-to-peer interactivity and features to promote interactivity, such as polls, chats, and the ability to stop and ask/answer questions, were reported. Articulate 360 has simulation features and powerful audio, video, and links. Interactivity is enhanced with shorter presentation times that provide more produced or polished training. Communication with participants as they proceed through training was considered a benefit.

Data Generation

Key informants reported that instructional technology could gather data analytics, which was considered beneficial. Polling questions that allow a trainer to gauge trainees' grasp of materials assist in knowing when to stop and review information. The key informants cited beneficial features such as developing training certificates, creating quizzes and evaluations, and other attentiveness measures. From the analytics, data can be aggregated or used to determine how much time participants spend on quizzes and can provide statistics from quizzes and exams.

Translation and Accessibility

Key informants reported that Zoom provides closed captioning in Spanish, allowing English-language videos to be available in a Spanish speaker's native language. Spanish subtitles also allow greater outreach to non-English speakers. A key informant reported that Articulate 360 meets Web Content Accessibility Guidelines. Participant quotes about the benefits of IT are included in Table 6.

Table 6

Quotes Illustrating Themes About Benefits

Benefit	Representative Quote
Instructional Technology Usability	"Zoom is easy, intuitive, and not blocked at school sites."
	"My brother, who is in software, says, 'What's the best software? The one you know.'"
	"As Zoom has evolved, it has become more streamlined and easier to use."
Participant Benefits	"More frequent training, more timely delivery."
	"It's easier to attend training virtually."
	"The consistency of training has improved greatly because everyone is hearing the same message at the same time, which was not the case in regional face-to-face meetings."
	"I like that virtual, recorded training doesn't disappear. You can go back and review details, which reinforces learning."
Training Availability	"Access and accessibility– we're reaching a greater number of people."
	"We are using it more to get information out that we would never have provided training for in the past."
	"We used to be able to only provide summer training, but now we can provide training all year."
	"Over the past three years, there has been a seismic shift in virtual training."
	"School districts are finding that it's more economical, it costs less for travel, we can deliver more training, and deliver more content."
Trainer Preference	"Travel to provide training twice a month is not sustainable."
	"We want to provide shorter, more targeted training."

(Table 6 continues)

(Table 6 continued)

Quotes Illustrating Themes About Benefits

Benefit	Representative Quote
Interactivity	"I 100% think it's more effective. People used to be able to sit in a classroom and zone out. Now, you have to participate online. You have to be active in discussion posts, quizzes, and assignments, and we are building better communication skills, which is a good thing for their jobs."
Data Generation	"If participants don't engage and receive a good score, they do not receive a certificate."
	"Gather data to see how long people stay on a certain page."
	"We need to consider if the training is truly impactful or not. Did their behavior change? Before you develop online training, you need to think about how you will measure performance."
Translation and Accessibility	"Elevating voices that were not heard in the past."
	"We are reaching audiences we were unable to reach before."

Challenges of Instructional Technology Used to Deliver Virtual Training

The key informants were asked what challenges they encountered while using IT for virtual training. Three primary themes emerged: technology, participant, and engagement challenges.

Technology Challenges

Several participants voiced concerns over the challenges of using IT. Learning management systems can be difficult to use, difficult to understand, and challenging to integrate. When the IT is not user-friendly, instructors and users alike can have difficulties with settings. Key informants reported that IT with a substantial learning curve may require time-consuming workarounds. Technology-related issues included difficulty playing music on Zoom, difficulty sharing a screen with Microsoft Teams, and changing screens or navigating links. Certain integrated quiz builders do not synchronize with existing test banks, and software updates may occur when training is scheduled. Other challenges were cited, such as the time needed to learn Blackboard, the limited functionality of Google Classroom, the difficulty a trainer faces in fixing problems in Moodle, edits that are difficult to make, the tedious nature of integrated polls, and the overall lack of integration of different technologies. There was agreement that one never

knows when a technology issue may arise or when tech support might be required. Another limitation was that some trainers needed tutorials on using platform features such as polls and breakout rooms. Key informants reported that specific platforms are less user-friendly than others. They stated that an inability to edit the content or insert an addendum to the material makes it challenging to prepare training materials. Key informants noted that training is challenging to create with IT and requires trained individuals.

Various challenges have emerged that can impact the availability of virtual educational opportunities. The most common concern was internet issues and lack of connectivity, especially in rural areas. Key informants reported that in some locations, the lack of bandwidth limits the effectiveness of educational tools such as training videos and other teaching tools that require adequate data transmission rates. Likewise, Wi-Fi may be available but blocked by the facility structure, and video and audio quality may be compromised or completely lost. If unanticipated events, such as power failure or a lost signal, occur, this may stop the virtual training. Key informants reported that participants may not have the required camera or microphone for full involvement in the training. They cited that many participants lack a desktop computer and are forced to rely on a cell phone or tablet, which is inadequate for many virtual training opportunities.

Participant Challenges

Key informants reported that virtual training could present challenges to some participants who struggle with computer literacy and cannot use the computer's functions and features to navigate the training. For example, some training participants need help understanding how to use the technology, including operating the chat feature or troubleshooting issues with microphones or speakers. User errors are commonplace, depending on the training audience. If there is a delay or an issue that needs to be resolved before the training can continue, it can be challenging to get the group back together to continue the training. Participants who are unfamiliar with virtual etiquette may talk over each other or even the instructor, which detracts from the training. Lastly, some people prefer face-to-face training and are not comfortable with virtual training. They reported that some participants may not feel comfortable talking during a virtual training session.

Engagement Challenges

Key informants expressed concern over a lack of natural engagement that occurs in a classroom versus virtual training. Concerns included situations in which participants chose to turn off their cameras and not engage during the training or failed to participate in activities such as breakout room discussions. Furthermore, there is uncertainty about those who turn off their camera being engaged or attending at all. Key informants reported that when participants kept their cameras off, it was difficult to gauge whether the content was effective and whether the audience understood what was presented. Lastly, there is a concern that certain types of training, such as culinary or other skills-based training, may be less effective when delivered virtually. Participant quotes about the challenges in using IT are in Table 7.

Table 7

Quotes Illustrating Themes About Challenges

Challenges	Representative Quote
Technology Challenges	"If someone is not comfortable with the tech, it can be a real problem, so too much instruction (up front) is better than not enough."
	"People need to understand the technology before they can get into the content. If they don't understand the technology, they won't even try."
	"We discussed that training specific to the Learning Management System would be a good idea so the instructor could focus on content, and students could learn content without being distracted by tech issues."
	"We need to have the ability to make edits to training, especially when the information becomes dated."
Participant Challenges	"In the past, directors had time to train, and now they don't."
	"The fewer clicks it takes to get to an assignment, the better. If they have to click through too much, they can get lost."
	"If we (at the State agency) think something is easy and great, but sponsors cannot use it, it's not easy and great."
Engagement Challenges	"It is hard to get to know the audience when they fail to engage."
	"Virtual training may be good for audio learners, but those who are kinesthetic, tactile learners may be totally missing out."

Factors that Influenced the Selection

Participants were asked what factors influenced the selection of the IT. The factors included user-friendly IT; the IT was predetermined by what was available through the State agency, university, or institution; the cost of the IT; and the accessibility of the IT.

Emerging Trends

The next set of questions during the interview centered around identifying emerging trends observed by the key informants. The key informants were asked if they had observed a change in the number of virtual training participants. The most frequent response (n=12) was that the number of participants taking virtual training had increased. Key informants reported that on-demand numbers remained strong, with participation peaking during the pandemic. Some key

informants from state agencies and higher education institutions indicated that participant numbers increased and continued to build. However, other key informants said that numbers increased but started to level off. Key informants were asked about changes in the rate of occurrence of virtual training. The most frequent response (n=17) indicated an increase in the number of virtual training courses.

Key informants were asked how the effectiveness of virtual training is measured. An end-of-training evaluation was the most frequently cited response among all groups. State agencies and key informants of higher education institutions were most likely to refer to engagement opportunities, such as required quizzes and learning checks, which may be taken before participants can continue their training. State agencies and consultants cited pre-tests and post-tests and an overall increase in participants taking virtual training to measure effectiveness. All sub-groups except the consultants reported that participant surveys were used to measure the effectiveness of virtual training.

Additional Observed Trends

The instructional technology trends themes identified included incorporating adult learning principles, accessibility and inclusion, participant engagement, relevance, technology advancement, training format, and training schedules.

Incorporating Adult Learning Principles

Key informants reported that incorporating adult learning principles, such as shorter, more targeted messages, is needed in virtual training environments. A key informant from an allied organization reported that a well-accepted example was creating training that balanced screen time with eight minutes of content followed by two minutes of engagement. Instructors should adapt and not use the same strategies they have used in face-to-face classes. Additionally, instructors need an understanding and passion for instructional design. The expectations of the trainee have increased. They expect to see and experience a similar quality of audio and video to what they see on television.

Accessibility and Inclusion

Equitable access to training is essential. Training available in a person's native language or a lesson that provides subtitles is a much more successful outreach to the intended audience. Age was mentioned as an issue, as some older individuals and those with little experience with instructional technology may struggle with accessing or fully using the technology's capacity. Concern was expressed over individuals who live in rural areas who may not have dependable internet access. Instructors design courses assuming that everyone has the appropriate and available technology, and when they do not, this impacts inclusion. A similar issue was raised about equipping visual or deaf and hard-of-hearing individuals with adequate tools to access training.

Participant Engagement

Key informants reported that participants' familiarity and comfort levels have increased as virtual training opportunities have increased. However, the challenges of participant engagement persist. According to the key informants, a lack of participant engagement is a very real issue that must be addressed. Gamification techniques create more interest and interaction. There needs to be greater variety in creating virtual training and more tools to engage participants. Participants can benefit when interacting and learning from each other rather than always listening to the expert or the instructor.

Relevance

The issue of relevance resonated with the key informants, who indicated that instructors must consider their approach to online training before they commence design and implementation. More research is needed to analyze the fit and appropriateness of instruction to determine the effectiveness of online training. Transferring knowledge from instructor to participant may require greater intentionality than in a face-to-face environment. Instructors need a deliberate focus to keep training relevant as the expectations of participants continue to increase. Participants are more selective about training. There is more competition for online courses than in the past. However, instructors are eager to share resources to address current issues. There was agreement that virtual training is more accepted than in the past.
A key informant stated, "Prior to the pandemic, people thought that virtual was second rate. If it is well done, it's just as good (as face-to-face)!"

Technology Advancement and Training Format

Key informants reported that technological advancements have provided greater assurances that instructional technology will work– it is not as "glitchy" as in the past. As the availability of virtual education has increased, so have the delivery methods. More synchronous learning is taking place, and although it is different from face-to-face learning, it may be a more acceptable approach to some instructors and participants who desire greater interactivity. Hybrid opportunities, such as initial virtual training supplemented with hands-on, face-to-face training to reinforce skills, provide the positive aspects of direct and virtual training. Cohort-based training, in which technology allows participants to stay with each other over time or the course of study and interact in a virtual environment, is gaining popularity.

Training Schedules

The flexibility and adaptability of training to a participant's schedule seem to provide many benefits. Participants do not have to leave their homes or workplaces to engage in training. Training can be provided and taken more often, and there is an increase in the availability and types of training. Recorded sessions may influence how many people attend the live training. If a session is recorded, there is no urgency to participate at the exact date and time of the initial training. Asynchronous training benefits participants, as it can fit into their schedules and increase the likelihood that they can participate in training at their convenience. Additionally, more timely delivery of the training was cited as a trend that allows trainers to develop and provide training on an as-needed basis instead of waiting months to access participants, such as during a Back-to-School meeting.

Best Practices

Participants were asked what they perceived as best practices for using instructional technology for virtual training. Similar to emerging Teen fatigue are issues to be considered in a virtual environment that may not be as important during in-person training. It was stated that "micro-lessons and micro-learning, meaning shorter, more concise messages, are needed. The day of the hour-long narrative is gone. Now it is six or seven minutes; then you need an activity, a joke of the day, questions, or some interactivity."

No assumptions should be made about the familiarity of virtual training. A discussion about how to use tools and a general housekeeping discussion to address the online environment need to occur before training begins.

Virtual presentations require less time than in-person training and tend to move faster, yet participants can get bored. The appropriate use of visuals to keep participants engaged is necessary. The key informants commented that networking time needs to be built into the lesson, and the instructor needs to be more conversational instead of forcing lecture-based training, which does not work in a virtual environment. Similar statements emphasized the need to use plain language and cautioned against reading slides word for word.

The overall structure and pace of training should be a consideration during training development and be process-driven using project management theory. If the training lasts an hour or more, more than one trainer can help to maintain interest.

Instructor Preparation

Key informants agreed that, in a virtual environment, it is more important than ever for instructors to know their audiences. Instructors also need to know their material. They should take time to consider the intended outcome before developing training. A suggestion was made to start with the end goal, to write a quiz first and then work backward, allowing the instructor to focus on the most relevant content. A solid instructional design, such as the ADDIE Model (Analyze, Design, Development, Implementation, and Evaluation), should be used to inform the process when developing training. Attention to detail, such as a properly functioning camera, audio, background, and easy-to-read, easy-to-understand slides, will provide a better virtual experience for participants. The instructor should ensure that the tools used enhance, rather than detract from, the training.

Emerging best practices include collecting questions and posting answers to a chat box or website. When instructors provide training, they can conduct online research before answering a question. It may be more seamless to incorporate best practices with actual experiences that the group can share. Finally, to keep participants engaged, instructors should focus on what is interesting and, in some cases, fun for the audience. A key informant stated, “It’s the difference between reading a script and holding a conversation.”

Participant Engagement

Key informants suggested that virtual training should prioritize participant engagement, making the material and delivery as interesting as possible. Activities developed to clarify and synthesize information can make the material easier to understand. Games and interactive lessons can be used in virtual training to assess learning, which is more difficult to offer in a traditional learning environment. If participants choose not to engage and receive a good score, they should not automatically receive a certificate of completion.

Relevance

Key informants reported that more timely training could be developed based on current needs and observations of what is happening in the field. A wider degree of resources can be made available to an expanded audience. Secondly, there appears to be more collaboration and relationship-building than in the past, emphasizing team-building, greater representation, and improved connectedness.

A key informant stated, “We have learned to make training have a longer shelf life. We try not to mention the school year so that it dates the training. We focus on new content without having to redo the training every single year.”

Training Schedules

The scheduling of virtual training can improve access and participation. Recorded lessons, in which participants watch or listen to training during available times, have expanded training outreach. Additionally, training can be delivered at times that work for most people and avoid CNP professionals' busiest time of day.

Technology Support

Technology support must be available behind the scenes. Instructors know the content but may not be as familiar with the software used to provide training. Instructors and participants need to have a telephone number or other option available if they do not have internet access or lose connectivity.

Virtual Etiquette

A best practice of virtual training is to expect a degree of virtual professionalism from all instructors and participants to the point of developing policies and a more formalized Code of Conduct. It is acceptable to ask and expect participants to keep their cameras on throughout the training, although many do not comply. Asking questions at the end of the training or having another instructor field questions in the chat box to avoid disturbing the training flow or interrupting the speaker was suggested. There also needs to be an awareness of the online environment, such as the absence of background noise, background activity, and other potential distractions.

Virtual Platform

Key informants suggested that the virtual platform should be a good match to the modality or format of delivery. The IT selected should support the instruction process and the desired outcomes of the training.

DISCUSSION

Results from the study revealed that multiple IT platforms or tools are used to develop and provide virtual training to CNP professionals. Synchronous and asynchronous online delivery styles were used to deliver training, dependent upon the needs of the trainees. Trainers encouraged training participants to interact and engage during training using innovative methods.

Benefits of Instructional Technology for Developing and Delivering Virtual Training

Based on the interviews, several benefits of IT for virtual training were identified for both the training participant and the trainer. Virtual training can increase the trainees' accessibility to training by allowing them to access training remotely and at a time convenient to their schedules. Trainee accessibility is also increased when easy-to-use, familiar IT tools are used to deliver virtual training. Additionally, asynchronous training, such as on-demand training, allows trainees to watch, review, and revisit training materials as needed. Additionally, it is a convenient option for working professionals, such as CNP professionals, whose demanding schedules and staff shortages make attending in-person or live virtual training unreasonable (Clarke et al., 2023; Cotwright et al., 2020; Hazard et al., 2021). The flexibility of virtual training also benefits trainers, as it provides more freedom and greater reach than in a traditional face-to-face classroom environment. Trainers save travel time and money, citing the efficiency, convenience, and consistency of virtual training.

The key informants reported that the innovative and interactive features of IT are considered beneficial and essential to providing effective training. The interactive features of IT are important for training and the learning process. Participant engagement is enhanced when the material is made as interesting as possible and provides opportunities for engagement between trainers and participants. Interaction is a key component of online education and a good predictor of learning (Picciano, 2002).

The interactive features of IT can also assess the trainees' comprehension of the material. Training can be planned to include quizzes, evaluations, and activities that can serve as a gauge to determine the need to review materials that are important for training. An example of an IT tool is Kahoot!, the free online learning platform that gives real-time feedback and allows trainers to tailor their instruction based on students' understanding of quizzes (Plump & LaRosa, 2017).

In addition, IT can help ensure accessibility to content and educational activities for all learners. Web accessibility refers to the design of websites, tools, and technologies that support and enable learners with disabilities access to content and educational activities (Henry, 2022). Web accessibility also benefits people without disabilities, for instance, people whose first language is not English. An example of the availability of Spanish-language closed captioning and Spanish subtitles provided an expanded audience for virtual training. Furnishing training to a group of child nutrition employees who previously did not have access to much-needed instruction similar to their English-speaking peers significantly impacts accessibility and inclusion.

Challenges

Technical issues related to IT training can limit the trainer's ability to deliver instruction. Some learning management systems can be difficult to use and present a hardship to participants who need to learn the system before getting access to training. Participants unfamiliar with IT or lacking basic computer knowledge may be unable to operate certain functions, such as the chat function. They may have difficulty addressing issues with microphones and speakers if available. User errors sometimes delay training and can impact the entire group if training is interrupted to address IT issues. This is consistent with literature that discusses technical problems and lack of technical skills presenting barriers to online training (Gordon et al., 2022; Regmi & Jones, 2020; Verawardina et al., 2020).

The lack of availability and accessibility of the Internet were reported as hurdles to participant involvement, especially in rural areas. Lack of bandwidth may limit educational tools such as videos or other tools requiring greater data transmission rates. Power failure or lost signals can also disrupt virtual training, particularly in weak Internet areas. This is reflected in the literature that reported rural school districts struggle to access the Internet due to limited bandwidth and inadequate Internet broadband connections (Cornish et al., 2016; Hoffman et al., 2018; Redding & Walberg, 2012).

Another challenge was providing meaningful engagement when participants did not engage in the training. When participants fail to engage, either by declining to offer feedback during instruction, when placed in breakout rooms or simply turning off cameras, it is not easy to assess their interest and involvement and to monitor if they are even in attendance.

Trends and Best Practices

Based on the results, instructor preparation should be prioritized, with adequate time invested in the process. Superior quality virtual training must be delivered as participant expectations have increased. Instructor preparation promotes the consideration of desired outcomes before developing training. Successfully designing online training does not simply transfer face-to-face content and activities to an online format but requires rethinking and redesigning (Dennen, 2013).

Incorporating adult learning principles is essential for developing effective online training. Focusing on keeping instruction relevant and up to date based on current needs and trends while acknowledging a growing competition for virtual training is considered an emerging trend. The literature discusses integrating adult learning principles when developing effective training (Bryan et al., 2009; Claxton, 2007; Gitlin & Hodgson, 2016; Gordon et al., 2022). Adult learning takes place when they know why they are learning, when there is the need to solve problems, when relating new learning to previous experience, when using the learning approaches that match their background and diversity, and when they need to be actively involved in the learning process (Bryan et al., 2009).

Effective training includes balancing screen time with interactive activities. Built-in breaks and the awareness and avoidance of screen fatigue are needed to keep participants

engaged and attentive. Planning training that includes participant engagement was stressed; otherwise, the effectiveness of instruction is diminished. This is consistent with researchers who reported that effective training should be interactive and engaging to avoid losing learners' attention (Croxton, 2014; Finn, 2022; Gordon et al., 2022). In addition, interaction is considered a key factor in online training and is a good predictor of learning (Picciano, 2002). Instructors need to make training more interesting by utilizing more IT tools, a variety of instructional approaches, and engagement through games and frequent activities. Instructional technology offers an opportunity to interact more via tools (e.g., discussion and chat) offered by online learning environments (Kim et al., 2005).

Advances in technology have allowed more training styles to accommodate participants who want a greater degree of interactivity. Hybrid approaches, in which part of the training occurs in person and some in the virtual environment, may be particularly suitable for certain training topics such as culinary, which is more effective with direct training. This is supported by research that examined the training preferences of school food service staff and found that hands-on activities were highly preferred (Flure et al., 2021).

No assumptions should be made about participants' familiarity with virtual training, with a best practice of reviewing how to use the IT tool at the beginning of a class or course. Implementing clear steps in applying online learning, such as training with current technology and providing guidelines for trainers and students, assists in overcoming technical issues (Verawardina et al., 2020). Developing an instructional video on how to use the IT and having technical support on standby were suggestions for helping those who needed extra assistance. When developing training materials, trainers should clarify which formats are most suitable given trainees' access to and ability to operate technologies and which educational modalities are most compatible with other demands on trainees' time and attention (Gordon et al., 2022).

There is an anticipation of more virtual training opportunities. Training sessions and schedules should be satisfactory for trainers and participants who do not want to leave their workplace or home. Since virtual training can be delivered to a wider audience and not depend as much on work schedules and other limitations, a timelier training delivery based on current needs can occur. Training schedules impact participation in virtual instruction, so classes or courses must be provided at a time that works best for most participants. However, not all interested parties can participate at the appointed time, so the best practice is to offer recorded, asynchronous training to reach a broader group of participants. The training length can impact participation in training. Preferred training lengths have been reported to be "determined by topic" and from 30 minutes to 1 hour (Gordon et al., 2022), while another study reported the most preferred training duration was 1–2 hours (Flure et al., 2021).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Findings from this study illustrate that virtual training offers several benefits to the CNP professional, including accessibility, schedule flexibility, and cost savings. A wide variety of IT is utilized to develop and deliver virtual training for CNP professionals. It is anticipated that virtual training will continue to be a method of training due to the many advantages it offers for a busy working CNP professional. The results from this study suggest that effective virtual training incorporates adult learning principles that ensure the training is relevant, concise, and based on current needs. Activities that promote interaction and engagement can ensure better learning outcomes. The length of training is an important consideration for their busy schedule and attention span for learning. Additionally, when developing training, no assumptions should be made about participants' familiarity with virtual training, with a best practice of reviewing how to use the IT tool at the beginning of a class or course. Developing an instructional video on using IT and having technical support on standby were suggestions.

Recommendations

The finding from this study revealed that further research is needed to explore potential strategies to overcome the challenges of virtual training, including utilizing the appropriate IT for the training and ensuring participant engagement. Further research should expand on best practices to offer skill-based training and discuss potential solutions for maintaining effectiveness in the virtual environment.

LIMITATIONS

Due to the nature of the purposive, non-random sample with unequal distribution of participants in the subgroups, the findings cannot be generalized to the larger population. Additionally, purposive sampling may introduce sampling bias, as some key informants were known to the SMEs. The analysis of qualitative data was guided by a coding system and inter-coder reliability; the analysis of data is more interpretative and subjective than technical and objective, which may introduce researcher bias.

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APPENDIX A
Key Informant Interview Questions

1. To start, I'd like to hear a little about you. Can you tell me about what you do in your job?
2. What is your job title/position?
3. Who is your primary training audience for the services you provide?
4. Please provide an overview of how you use educational technology to deliver virtual training to child nutrition professionals.
5. Is the training synchronous or asynchronous, or both? (Synchronous means you are live with the trainees as they are being trained. Asynchronous means trainees access the training on their own time.)
6. Does the educational technology tool provide interaction opportunities with participants, such as activities, breakout rooms, partnering with another individual, etc.? Please tell us about any opportunities for interactivity that we didn't mention.
7. How do the participants respond to educational technology? Are the participants familiar with this teaching tool? Do they find it easy to use or difficult to use?
8. What are the benefits of the specific educational technology you use for virtual training?
9. What challenges, if any, have you encountered using this technology?
10. Have you discovered any limitations to the educational technology or missing features that would be helpful?
11. What factors influenced the selection of educational technology you use to conduct virtual training?
12. What trends have you identified when using educational technology to provide training?
    Probing questions:
    a. Approximately how many courses have you virtually trained in the past six months?
    b. Approximately how many individuals do you have in your sessions?
    c. Have you observed a change in the number of participants taking virtual training? Please explain.
    d. How has training frequency changed using educational technology for virtual training?
    e. Do you feel training effectiveness has changed using educational technology for virtual training? If so, how has it changed training effectiveness*?*
13. How do you measure the effectiveness of virtual training?
14. Are there any other trends you have observed using educational technology for virtual training?
15. What best practices have emerged from virtual training using educational technology?
16. Do you have any other comments you would like to share?

APPENDIX B

Instructional Technology	Definition
Adobe Captivate	E-learning authoring tool For delivering interactive, device-independent content through simulations, software demonstrations, and quizzes. https://www.adobe.com/products/captivate.html
Adobe Illustrator	Graphic Design Tool Software for crafting vector graphics, intricate designs, and artistic masterpieces. https://www.adobe.com/products/illustrator.html
Articulate 360	Creator platform for workplace learning A suite of interconnected apps for developing eLearning. Includes creator tools to build interactive training activities, quizzes, and live and on-demand training. https://articulate.com/360
Articulate 360 Storyline	Learning Management system (LMS) Feature within Articulate 360 Used to build interactive courses with features such as slide-based content, multimedia integration, and animations. https://articulate.com/360
Audacity	Open-source digital audio editor and recording application software https://www.audacityteam.org/
Black Board	Learning Management System (LMS) Offers educators a comprehensive platform to create, manage, and deliver course content that engages and empowers learners. https://www.anthology.com/about-us
Blue Sky	Cloud Based Learning Management system (LMS) Used to create, manage, and deliver online training. https://www.blueskyelearn.com/

Brightspace	Learning Management system (LMS) Provides a platform for delivering online courses, facilitating communication between users, and conducting assessments. https://www.d2l.com/brightspace/
Camtasia	Screen Recording/Video editing software To capture screen activity, create a video tutorial and interactive presentation. https://www.techsmith.com/camtasia.html
Canva	Graphic Design Platform Canva is a web-based graphic design platform that allows users to create designs for social media, presentations, marketing materials, and more. https://www.canva.com/
Canvas	Learning Management Software Canvas is a web-based learning management system (LMS) that allows educators to create and manage courses, assessments, and other learning activities. https://www.instructure.com/canvas
Cengage Resources	E-Learning Platform An educational resource offering students and educators a vast array of resources, from textbooks to interactive materials, to enhance learning journeys. https://www.cengage.com/
Cisco Webex	Collaboration Platform For video conferencing, online meetings, webinars and screen sharing https://www.webex.com/
Cvent	Event Management Software Cvent is an event management platform that helps organizations plan, promote, and execute events of all sizes. https://www.cvent.com/
Excel	Data management tool

	Allows users to analyze, visualize, and organize data. https://www.microsoft.com/en-us/microsoft-365/excel
Google Classroom	Virtual Classroom Evolution A virtual platform for educators to create, manage, and engage with students, fostering interactive and collaborative learning experiences. https://edu.google.com/intl/ALL_us/workspace-for-education/classroom/
Google Jamboard	Digital Visual Thinking Tool A digital tool that facilitates visual brainstorming, sketching, and collaboration, enabling teams to express ideas visually and enhance communication in a virtual environment. https://workspace.google.com/products/jamboard/
Google Meet	Virtual Connection Nexus Allows seamless video meetings, collaborative discussions, and interactive engagements that bring people together, no matter the distance https://workspace.google.com/resources/video-conferencing/
Google Quizzes	Interactive Assessment Google Quizzes within Google Forms help in creating assessments, enabling educators to craft interactive quizzes that engage learners and provide valuable insights into their understanding. https://support.google.com/docs/answer/7032287?hl=en
GoTo Webinar	Webinar Platform Allows webinar hosting, providing creators the means to orchestrate captivating online seminars, interactive presentations, and engaging virtual events. https://www.goto.com/webinar
JIRA Service Desk	Service Management Software Enables organizations to provide efficient customer support, manage IT service requests, and track issues and incidents. https://www.atlassian.com/software/jira/service-management/features/service-desk
Kahoot!	Game-Based Learning Platform Used to create interactive quizzes, surveys, and

	discussion for engaging learning experiences. https://kahoot.com/what-is-kahoot/
Kaltura	Video Platform Cloud-based media capture and storage application Provides a tool to manage, upload, and distribute engaging video content online. https://corp.kaltura.com/
Mentimeter	Interactive Presentation Tool Mentimeter enhances presentations with interactive elements such as live polls, quizzes, and surveys, promoting audience engagement and participation during discussions and presentations. https://www.mentimeter.com/
Microsoft Forms and Flows in Microsoft Power Automate	Interactive assessment Microsoft Forms and Flows, coupled with Microsoft Power Automate, allows users to craft interactive forms and automate workflows with precision. https://www.microsoft.com/en-us/power-platform/products/power-automate
Microsoft Office	Server Software Offers a suite of versatile tools, Word, Excel, and PowerPoint, empowering individuals to create, collaborate, and communicate seamlessly. https://www.office.com/
Microsoft Teams	Cloud-based team collaboration software, including business messaging, calling, video meetings, and file sharing. https://www.microsoft.com/en-us/microsoft-teams/group-chat-software
Microsoft Teams Webinars	Virtual Event Platform Used to host impactful virtual events, share knowledge, and engage audiences on a global scale. https://www.microsoft.com/en-us/microsoft-teams/webinars
Miro Board	Virtual Collaboration Canvas A virtual canvas for teams to collaborate, brainstorm, and

	visualize ideas, enabling efficient remote collaboration and creative problem-solving. https://miro.com/
Moodle	Learning Management System (LMS) Used to facilitate online learning and training. https://moodle.org/
Moodle Workplace	Learning Management System (LMS) Feature within Moodle Create a collaborative workspace to share resources. https://moodle.com/solutions/workplace/
Narrasys Videoplayer/Learning Tool Interoperability	Video Platform Narrasys Videoplayer/Learning Tool Interoperability (LTI) is a standard that allows learning management systems (LMS) to integrate with video players. This allows instructors to embed videos from Narrasys or other video providers into their LMS courses and to track student engagement with the videos. https://narrasys.com/
One Button Studios	Simplified Recording Studio One Button Studios (OBS) is a self-service video recording studio that allows users to create high-quality videos with minimal effort. OBS is typically used to create training, presentations, and other videos. https://onebuttonstudio.info/
Panopto	Video Platform Panopto is a video platform that allows you to record, share, and manage videos. It is used to create and deliver training videos, lectures, and other types of video content. https://www.panopto.com/
Path Learning Management	Learning management platform Path Learning Management (Path LMS) is a cloud-based learning management system (LMS) that allows organizations to create, deliver, and track online learning. https://www.blueskyelearn.com/solutions/path-lms

PowerPoint	Presentation Software Empowers creators to deliver impactful slideshows that engage, educate, and inspire. https://www.microsoft.com/en-us/microsoft-365/powerpoint
PowerPoint Captions	Accessibility tool within PowerPoint Adds accessibility enchantments to presentations, ensuring inclusivity and understanding for diverse audiences. https://www.microsoft.com/en-us/microsoft-365/powerpoint
PowerPoint with Audio	Accessibility tool within PowerPoint Presentations are infused with narrations, music, and sound effects https://www.microsoft.com/en-us/microsoft-365/powerpoint
PowerPoint with Voiceover	Accessibility tool within PowerPoint Presentations are enhanced with narratives. https://www.microsoft.com/en-us/microsoft-365/powerpoint
Pressbooks	Open-Source Content Management System To create and publish digital and print-ready books. https://pressbooks.com/
Rise	Learning Management System (LMS) Rise is a cloud-based learning management software (LMS) that allows you to create and deliver interactive and engaging online courses. https://rise.com/
Rise 360	An authoring tool and a part of Articulate 360 Rise 360 is a cloud-based authoring tool in the Articulate 360 suite of products. It allows you to create interactive and engaging online courses that are responsive and mobile-friendly. https://articulate.com/360/rise
Scratchpad	Text editor Used for creating surveys and documents. https://forstaprofessionalauthoring.zendesk.com/hc/en-us/articles/4416883533979--Scratchpad
Skype Business	Communication Platform

	Skype Business is a cloud-based communications platform that allows businesses to make and receive calls, send and receive text messages, and hold video conferences. It is a replacement for the older Skype for Business Online platform. https://support.skype.com/en/skype/all/everythingelse/sfb/
Canvas Studio	A communication tool that actively allows instructors and students to collaborate through video and audio. https://www.instructure.com/higher-education/products/canvas/canvas-studio
SwapCard	Virtual Event Platform Offers a virtual and hybrid solution for organizing and hosting events and attendee engagement options. https://www.swapcard.com/
Talent LMS	Cloud-based Learning Management System (LMS) Allows organizations to deliver transformative learning experiences, fostering skill development and knowledge acquisition. https://www.talentlms.com/
Top Hat	Active Learning Platform Used to create interactive presentations, quizzes, polls with instant feedback to promote interaction. https://tophat.com/
VoiceThread	Interactive Multimedia Platform online discussion, assignment, and presentation tool https://voicethread.com/
WebEx	Webinar Platform A collaboration platform redefines webinars, offering advanced features for video conferencing, online meetings, webinars, and seamless screen sharing. https://www.webex.com/
Wellsaid	Text-to-speech solution Used to convert text to high-quality voices. https://wellsaidlabs.com/

Wikis	Collaborative Knowledge Universe Allows individuals to co-create, edit, and share content, fostering a dynamic space for learning and information exchange. https://www.techtarget.com/whatis/definition/wiki
Wondershare Filmora	Video Editing Software Wondershare Filmora is a software program that can create and edit videos for personal and professional use. https://filmora.wondershare.com/
YouTube	Visual Discovery Odyssey Offers a boundless realm of videos that span education, entertainment, and exploration. https://www.youtube.com/
Zoom	A communications platform that allows users to connect with video, audio, phone, and chat. https://zoom.us/
Zoom Webinar	Allows hosts to deliver impactful webinars with interactive features, engaging presentations, and seamless participant interaction. https://explore.zoom.us/en/products/webinars/

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