Artificial Intelligence and Applications in Family & Consumer Sciences

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Definition and History

ChatGPT states, "Artificial intelligence, or AI, is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning, reasoning, problem-solving, perception and language understanding. AI can be categorized into narrow AI, designed for a specific task, and general AI, which can perform any intellectual task that a human can do. AI technologies include machine learning, natural language processing, computer vision and robotics" (ChatGPT, September 1, 2024).

The earliest references to artificial intelligence are in Greek myths, such as Pygmalion's idea of the intelligent automaton and sacred mechanical statues in Egypt and Greece (McCorduck, 2004). Other notable dates include:

- **1637:** Philosopher and scientist Rene Descartes proposed that one day machines would think and make decisions.

- **1890:** Spanish engineer Leonardo Torres y Quevedo developed the first chess-playing machine (Britannica, 2024).

- **1937:** H.G. Wells predicted that human memory would soon be accessible to every individual.

- **1951:** Marvin Minsky and Dean Edmunds created the first artificial neural network using 3000 vacuum tubes.

- **1961:** Unimate, the first industrial robot, was deployed on a General Motors assembly line.

- **1970s:** Takeo Kanade perfects facial recognition software.

- **2011:** Apple launches Siri.

- **2011:** IBM's Watson beat two former champions on Jeopardy.

- **2014:** Microsoft launches Cortana.

- **2022:** Chat GPT debuts as an AI chatbot developed by Open AI (Scharth, 2022; Thompson, 2022).

Uses in Family & Consumer Sciences (FCS)

Artificial intelligence (AI) platforms are used in all FCS content areas as tools to expedite work, but caution should be used not to replace the human element of the FCS professional with AI tools. Making personal connections and building relationships with clients are hallmarks of the FCS profession, which no app or computer program can replace. Each FCS content area has specific AI tools and platforms that support the work of professionals in those fields. What follows are a few examples of the use of AI tools in the FCS content areas. These examples show the wide variety of applications in the FCS field of study and are not intended to serve as an exhaustive list of all FCS-related AI uses. Interestingly, AI includes technology that recognizes AI-generated writing apps.

Culinary Arts, Hospitality, & Tourism

Culinary arts professionals use AI in recipe standardization and analysis, meal planning, recipe modification, beverage pairings, supply chain management, quality and audit management and food supplier compliance. AI can create recipes on demand based on ingredients you have on hand or ideas you provide the application. The hospitality industry uses AI to streamline services, enhance guest experiences, create custom media posts and advertising designs and generate images from language descriptions. The tourism industry has evolved from simply planning and booking trips to managing travel logistics with real-time updates and personalizing experiences.

Education & Training

The FCS education and training content area is exploding with AI applications to help write essays and correct grammar, yet this barely scratches the surface of AI's use in this area. Interactive software can help with volunteer management, including recruitment, engagement, scheduling, training and tracking with customizable calendars and databases. Survey development and polling platforms can be used in live or virtual meetings and events. Curriculum development, participant and program outcomes, mentorship program

development and implementation applications are customizable and intuitive using AI platforms.

Family Life & Technology

Protecting against identity theft and cyberbullying alerts are two examples of how AI can guard individuals from those who might exploit them. Other uses of AI in this content area include family calendars to coordinate busy schedules, apps to send reminders and grocery list updates and programs that protect work-life balance.

Financial Management

FCS professionals in financial management utilize AI to educate clients about financial literacy, debt reduction, spending, saving, investing and business management. A few AI tools in this content area include receipt scanners, spending trackers, online banking apps, debt payoff calculators and amortization tables help clients make wise financial decisions.

Food Science & Nutrition

Registered Dietitian Nutritionists and food science professionals use AI platforms in various ways. AI tracks crops, explores alternative protein sources, plans menus, performs nutritional analysis and reduces food waste. It is used in malnutrition screening, predicting clinical outcomes, identifying potential drug interactions, estimating nutrient intakes and applying precision nutrition in a clinical setting.

Health Management & Wellness

Corporations, consumers and professionals use AI to support health management and wellness goals. Corporations use artificial intelligence applications to support research and development, education and applications for personalized, precision medical interventions. Consumers use these devices daily to track their steps, how far they walk or bike and their blood glucose levels. Health and wellness professionals use AI to more accurately analyze X-rays and other radiologic images.

Housing & Interior Design

Computer-assisted design software and programs have long been used to create commercial

and residential designs. As systems have advanced, applications have been developed to calculate building projects' carbon and environmental costs and guide designers to achieve Leadership in Energy & Environmental Design (LEED) certifications. Other examples include intuitive rendering software for universal design, floor plans and ideation workflows.

Textiles, Apparel & Retailing

Apparel construction and design professionals use AI-assisted applications to create 3-D patterns when designing clothing. Other examples of how professionals in this industry may use AI-supported software include cotton production, precision farm management, retail design and development and turning sketches into 3-D images.

What Does this Mean for Me?

1. **Gather information and make informed decisions.** As with anything you use as a consumer, be informed and make choices that fit your and your family's needs. You can often play around with the free version of various AI platforms and apps before deciding whether to pay for a full version. Read reviews and ask your friends if they have used that platform or app and what they think about its pros and cons.

2. **Determine to use AI responsibly.** This means taking a use but verify approach. For example, you may use generative AI to start an essay but verify the content to make sure it is accurate for yourself. Once you place your name on it, you take responsibility for every word on the paper. Also, be careful what you put into the AI prompt and don't use personal information like a social security number.

3. **Determine to use AI ethically.** The code of ethics for FCS professionals specifies using evidence-based research in written and oral communications. This is why Cooperative Extension Service (CES) information can be trusted. Information from your county extension office comes from researchers at Arkansas' land-grant universities and FCS Extension Specialists using evidence-based

practice. Additionally, ethics and professional practice codes address the use of AI when developing educational programs. It violates these codes to use AI to create materials without verifying that the material is accurate. Taking what is generated by AI as a starting point for a project, checking the accuracy against evidence-based sources and citing all the sources accurately ensures that FCS professionals are functioning within the code of ethics for their profession. Knowing this reassures the public that FCS professionals protect the public and promote only evidence-based best practices in all programs and communications. Consider the following professional codes of conduct.

CODE OF ETHICS	PRINCIPLE/STANDARD
American Association of Family & Consumer Sciences (AAFCS) (Roubanis, 2016)	**Integrity:** AAFCS members think and act in ways that reflect honesty and integrity. They make sound ethical decisions and avoid making misleading or inaccurate communications. **Professional Competence:** AAFCS members assure accurate presentation of their work by organizations with whom they are affiliated.
Academy of Nutrition & Dietetics (AND) (COE, 2024)	**Competence and professional development in practice (Non-maleficence):** Nutrition and dietetics practitioners shall practice using an evidence-based approach within areas of competence, continuously develop and enhance expertise and recognize limitations. Make evidence-based practice decisions, taking into account the unique values and circumstances of the patient/client and community, in combination with the practitioner's expertise and judgment.

Bottom Line

Artificial intelligence has been around for a long time and is becoming more commonly used in all fields, including FCS. All content areas in FCS use AI to make their work more efficient. The human element, building relationships and making personal connections for which FCS is known, is not replaced by apps and computer programs.

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