Integrating Educational Technologies
into the Culinary Classroom and Instructional Kitchen
The integration of educational technologies has and will continue to change the nature of education. From the advent of the printed word to the current use of computer assisted teaching and learning, the use of technology is an integral part of modern day realities and approaches to education. The purpose of this paper is to review some of the educational technologies which have been integrated into the culinary classroom and instructional kitchen.

According to Walden (2005), educational technology, is “a systematic, iterative process for designing instruction or training used to improve performance [and] encourage wise use of systems, environments, tools, products, and strategies that can enhance human learning and competence” (p.1). Cuban (as cited by Hunter, 1998) contends that:

Educational technology is any device available to teachers to use in instructing students in a more efficient and stimulating manner than the sole use of the teacher’s voice. Hardware and software, the tools itself, and the information the tools conveys define the technology (p.3).

The question arises then as to how does the integration of educational technology relate to the culinary classroom and instructional kitchen? When answering this question, it is first important to understand the relationship between cooking, technology, and education.

Cooking is as old as the advent of fire. The application of fire “completely transformed food from raw to cooked, which allowed humans to eat otherwise
indigestible foods and made food preservation possible” (Civitello, 2004, p.3). Cooking has come a long way from that simple roasted animal, using one of the earliest technologies known to man, that being the rubbing of sticks or stones to create a spark which resulted in fire. Over the millennia, cooking technologies have changed, and with those changes, the demand for skilled cooks, able to use those technologies, has increased.

Historically, most cooks learned through an apprenticeship system (VanLandingham, 1995), in which they worked under the tutelage of a qualified chef. The apprentice learned through practical experience, not always understanding the theory. Over the past century, the practice has changed, with the introduction of professional cooking schools. Nowadays, most aspiring cooks learn the theory of cooking prior to facing and experiencing the reality of the culinary world. It is in both culinary classrooms and teaching kitchens where educational technologies are now being integrated as part of the educational process.

But why use technology or integrate it into the culinary curriculum? According to Herndon (2002), society has become dependent on technology and technological literacy has become imperative. Herndon (2002) further asserts that:

Educators are responsible for teaching the necessary skills to become not only successful employees, but also productive members of our society. For educators to accomplish this task, they must provide opportunities for students to use technology during the process of learning at the elementary level and continue through middle and secondary school (p.1).

The usage and learning of technology should not stop at the secondary school level. It should continue at the post-secondary or tertiary level. This argument is supported by the Government of Ontario’s requirement that students enrolled in Culinary Arts programs in
community colleges achieve basic levels of computer proficiency prior to graduation (Ministry of Education and Training, 1997).

The introduction of educational technologies into the culinary classroom and instructional kitchen must come with a caveat, that being the temptation of replacing an inexperienced culinary educator with a video tape or entirely replacing classroom instruction with a computer based tutor (Spector, 2001) or other types of technology. Computers, being one form of technology, according to Gross-Davis (2001), “can transform course notes into overheads, create high-quality complex illustrations, do real-time calculations and processing, engage students in interactive collaborations, and bring text, graphics, animation, sound and video into the classroom” (p.334). Even so, Gross-Davis (2001) cautions the use of high end technology for low end instructional practices.

Technology, if used improperly, can propagate poor educational practice and in some instances, impede learning (Spector, 2001); however, when used properly, technology can help promote learning (Spector, 2001), transform learning, and, according to Imel (1998), technology should never be seen as an add-on. Rather, it should compliment the human instructor, creating an environment of hybrid instruction.

Hybrid instruction is described as a course that combines face to face instruction with computer based learning (Murphy, 2003). It is also referred to as blended learning, mediated learning and web-enhanced instruction. According to Landau, (as cited in Glass, 2003) in some ways, it is the middle ground between our society’s adolescent love affair with technology and the ancestral need for human contact and a sense of belonging. Spector (2001) states that “hybrid or mixed-delivery solutions can offer a path for
graceful growth and development while retaining the best features of proven solutions” (p.35).

Before integrating technology of any sort into a learning environment, it is important to have a plan. According to Anderson & Perry (1994):

> Just as a cookbook has recipes that, if followed generally, will lead to delicious cuisine, a technology plan has the potential for providing directions to success [and that] the optimum plan will embody the dreams, aspirations and visions of individuals involved and interested in the maximally-effective education for that community (p.2).

The challenge in integrating the plan is twofold: identifying which stakeholder’s vision is correct and alleviating the fears of those who are resistant to the integration of technology. This resistance may be due to a lack of understanding the technology, possible obsolescence as a teacher, and perhaps the greatest of all, a fear of the unknown and change. Bitner and Bitner (2002) identify eight areas of consideration for successfully integrating technology into the classroom, those being:

1. Fear of change
2. Training in basics
3. Personal use
4. Teaching models
5. Learning based
6. Climate
7. Motivation
8. Support (p.96)

First and foremost on that list is the fear of change, and under that umbrella, the integration of new teaching and learning technologies, which based on personal observation seems to be prevalent among long serving faculty members at two local community colleges currently offering culinary arts programs. Robertson (1998) contends that long serving teachers who avoid the integration of computers are showing
their technological inadequacies or low-tech preferences, while Bitner and Bitner (2002) assert that:

Change of any kind brings about fear, anxiety and concern. Using technology as a teaching and learning tool in the classroom does so to an even greater extent since it involves changes in classroom procedures and the use of often –unfamiliar technologies’ (p.96).

Culinary arts, and the teaching of it, has become very ‘hi-tech’, and unless teachers are prepared to embrace change, veiled as technology, they will quickly fall behind and continue to live in the past.

There will always be a demand for a fundamental ‘lo-tech’ approach to the teaching of culinary arts through transmission or apprenticeship. Those models are built on the integration of kinaesthetic skills and the usage and development of the human senses of smell, taste, and touch which are not easily replicated or replaced via technologies readily available at this time. This approach is supported by Franklin (1995), who states:

Every tool shapes the task…once a kitchen acquires a Cuisinart, suddenly every dish calls for speedy slicing and dicing and the cook sets aside old recipes…learning about the tool is important, while the new technology may help to achieve it, traditional tools will sometimes be of more tangible benefit (¶14).

According to Boshier (1999), “the degree and form of mediation is a useful way of summarizing technology and research issues. It can be summarized in three types: Low mediation environments (Type 1), medium mediation settings (Type 2), and high mediation situations (Type 3)” (p.7). In a Type 1 environment, the use of technology acts a supplement to traditional modes of instruction. In a Type 2 setting, the technology will often allow for asynchronous interactions. In a Type 3 situation, “technology is an essential part of the educational delivery [and may] lead to new ways [of] organizing teaching and learning” (Boshier, 1999, p.7). An extension of the Type 3 situation could
be *knowledge building*, in which ideas are produced and continual improved upon, adding value to the community (Scardamalia & Bereiter, in press). Culinary education, at this time, is either a Type 1 or Type 2, although it could be argued that anytime a new recipe is created, it is Type 3, since a shared intellectual property had been contributed to a community knowledge base (Scardamalia & Bereiter, in press), that community being the culinary world.

Computers are an integral part of the integration of technology into the culinary classroom and instructional kitchen. According to Mandabach and Harrington (2004), “computer use is considered essential for culinary graduates and that a variety of applications should be integrated into the information system of the culinary programs” (p.4). Graduates of culinary arts schools are now expected to be computer literate, being able to use inventory, word processing, food costing, spreadsheets, recipe, and other industry-specific software programs.

It is the author’s contention that technology is not all about software, hardware and computers. Technology can be as simple as a pencil, or even chalk and a blackboard. Other technologies can include film, radio, and television, with the oldest and most elementary educational technology being the printed word (Hunter, 1998).

Translated into the modern culinary classroom, that *printed word* is the text book. Most culinary textbooks are cumbersome and are not practical for use in the teaching kitchen since they take up so much of a very limited workspace. So then, what options are available?

One option is the use of personal digital assistants (PDAs). A PDA is far less cumbersome than a textbook and in some instances costs less than the textbook.
According to Brown (2001), one of the challenges in using PDAs is the lack of suitable software. That being said, a search of the Internet located several software programs that can be used on a PDA as part of a culinary education program. One such program is PDACookbook™, which among its features includes a recipe book/database, companion software and the ability to import recipes from MasterCook, another software title which has been integrated into several culinary textbooks. Integrating this technology into the culinary classroom or instructional kitchen has the potential for facilitating a more collaborative approach to culinary education. Students could now beam recipes to each other and work in a collaborative manner. Even so, collaborative learning must be facilitated and supported in an adequate manner by the teacher, (Volman & Eck, 2001) or in this case, the chef-educator.

Another manner in which technology is being integrated into culinary education is distance education. According to VanLandingham (1995), culinary education is becoming a virtual reality in which students will watch their instructors on television or webcam after picking up their school supplies (i.e. food) and follow along in the luxury or privacy of their own home kitchen. This utopian idea is far from practical, because of the kinaesthetic and sense oriented nature of cooking. Where this virtual reality might be of benefit is in offering distance education for the theoretical components of culinary arts curriculum.

Complementary to distance education is online learning. According to Carr (as cited in Patten, 2001) “the advantage of learning together in a collaborative online environment is the level of asynchronous contributions from students and professors” (¶ 5). According to Santich, Whyte, Shannon, and McHolm (2002) there is a demand for
flexible delivery of curriculum in post secondary education. Santich et al. (2002) are currently monitoring the progress of an online gastronomy program offered by Le Cordon Bleu cooking school and Adelaide University. Hopefully, the MA in Gastronomy will meet the expectations of a collaborative learning experience combined with flexible delivery and meet the demands of those ‘just for me learners’ as identified by Santich et al. However, there are problems with online learning in a culinary arts program.

According to Jarvis (2004), one of the problems facing online delivery is the attrition rate. Only eleven of twenty students in his online course completed it. He also found online courses to be very time consuming, especially at a developmental level. Yet, Jarvis (2004) points out that teaching the theory component of culinary courses online will allow for the freeing up of physical resources, such as the lab (instructional kitchen), with improved economy and facility usage.

Streaming video is another technology, which, according to Strom (2002), is a low resource, cost effective and easily delivered manner of instruction. Streaming video allows for images to be sent to a computer without needing to be downloaded. In most instances, there is no sound attached to the video images. The streaming video can be repeated in a loop, constantly played, or upon demand. At Manchester Metropolitan University’s School of Food, Consumer, Tourism and Hospitality Management, and as part of the Click and Go Video project, streaming video with recipes and instructional information are being integrated into the kitchen classroom. According to Strom (2002):

Reactions from students have been mixed, particularly in terms of getting to grips with new technology and a new way of working. Keyboard interaction was also seen as a problem in a kitchen area when students have their hands immersed in food! Interestingly, all the students strongly requested to have audio instructions added to the video clips, to help then focus their attention during the video (p.3).
Using a streaming video allows for the lesson to be taught and reviewed a multitude of times without fatiguing the instructor. What is of concern here is the lack of a ‘live’ chef/culinary educator. With so many variables or ‘what if’ scenarios in cooking, questions will and do arise. A streaming video does not have the capability of responding to those questions. Watching a streaming video over and over again is akin to learning by rote, and pedagogically speaking, it is not always the best method, since it does little to develop the critical thinking skills of the learner. A hybrid model, in which a streaming video is played, with a qualified instructor to monitor and facilitate the skills being taught is a possible solution.

On the cutting edge of technology with the potential for educational applications is haptics, which is the experience of touching and manipulating objects or environments. (Glass, 2003). According to the Human Performance Centre (as cited in Glass, 2003), a haptic interface is a force reflecting device, which allows a user to touch, feel, manipulate, create and/or alter simulated three-dimensional objects in a virtual environment. Most of these interfaces are geared towards surgeons and astronauts, allowing them to practice in risk free environments. There has been some research into applications that could be of benefit to culinary students. According to Iwata, Moriya, Uemura, and Yano (2003), “the Food Simulator is a haptic interface that displays biting force. It is designed to fit to the user's mouth, where it delivers the captured force of real food and auditory and chemical sensations associated with eating” (¶ 1). This technology is both cost-restrictive and years away from mass usage, but has the potential to revolutionize culinary education by allowing students to build on their senses of taste and texture in a virtual manner.
The integration of educational technology into the classroom is a reality which cannot
be ignored (Pea & Cuban, 1998). Educational technology has become part of the fabric of
current educational practice, one which educators should now accept and use. In the
culinary classroom and instructional kitchen, the role of educational technology is and
should continue to be one of a complimentary nature, which supports kinaesthetic
experiences, collaborative learning, and face-to-face encounters, (Pea and Cuban, 1998)
rather than replacing it. In both the culinary classroom and instructional kitchen,
technological changes and innovations are a reality. As with educators, aspiring
culinarians must be aware of current technological advances in order to remain
competitive and current (Cullen, 2000). Both educational technologies and recipes
contain several ingredients and directions, which, when used correctly can result in a
wonderful creation, be it knowledge or food. Here’s hoping that recipe is properly
researched, developed, and adhered too.
References:


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