

## **Enjoying Our Healthy Harvest**

### **Introduction**

Public school curriculum has undergone many changes in methods and assessment in the last two decades. Much of the reform has taken place in the academic arena by integrating subject matter, and developing project-based assignments that allow students to construct their own learning. The lower grades have been able to adapt to these strategies because one teacher usually has the same students for all of the academic coursework during the day. However, with the pressure to do well with the public recognized standards of English and math more time is devoted to lessons that focus on these subjects other subjects have less time devoted to them. Teachers have to use creative planning to be able to integrate curriculum and projects for the academic subjects. Every minute of class time now needs to reinforce the core academic subjects of reading, writing and math. Curriculum that integrates the needs of the classroom teacher and is ready to use has more value to the teacher and the learner.

Now that the teachers of traditional academic courses have made these theories the cutting-edge of teaching it is time to examine the role of elective teachers who teach professional-technical (formerly known as vocational) classes. In the traditional format, high academic achievers in high school took electives that were advanced academic content (such as chemistry) while students who were less successful in the academic courses were encouraged to pursue a vocational schedule. Vocational teachers have known for many years that the best way to teach students is to teach in a manner consistent with the way they best learn. Many students who were deemed unable to learn at a higher level showed remarkable success in the vocational classroom. Learning styles

of these students often are less visual and more kinesthetic. Give a vocational student a problem to solve with his or her hands – a project - and the reading, the math, the science and the history become more meaningful. Project-based learning and integrated curriculum have been the core of vocational learning for many years. A downfall in some elective classes has been that traditional assessment strategies were used. The selected-response format for testing offered a quick way to evaluate students and was combined with the student project grade.

With the adoption of the contemporary theories in the academic classroom, a change also happened: Students could leave school with a portfolio in hand. Students, excited about the relevant, contextual learning could share their knowledge and experiences with their families. Empowered learners can help their families make important changes for their collective health and well-being.

It is my intention to design a curriculum that integrates state standards of the Oregon Department of Education and the national standards of the USDA Dietary Guidelines.

### **Statement of the Problem**

When the USDA Dietary Guidelines were revised in 2005 curriculum also needed a major overhaul. States jumped to the task and funded through the USDA Food Stamp Nutrition Education Program strong efforts were made throughout the country to provide the curriculum needed to teach the new USDA Dietary Guidelines. At every grade level students learned about the food groups and which foods fit into each one. As we developed and grew our USDA Food Stamp Nutrition Education Program in Central Oregon I became concerned that returning students needed to have content that took us

beyond those basic concepts. I felt it was imperative that we be able to offer lessons that were new and fresh, and focused not on the food group identification but other aspects of nutrition too. I felt strongly that our returning students needed challenging new opportunities to learn about the USDA Dietary Guidelines from a different context.

There has been an increase in awareness of food borne illness by the public. Numerous national food recalls are reported in the media for many reasons throughout the year. By properly washing produce, consumers and gardeners can reduce the risk of foodborne illness.

In my literature review of current curriculum I could not find one that focused on selection strategies of fruits and vegetables and proper cleaning. Selecting and cleaning the produce properly is at the core of each of the *Enjoying Our Healthy Harvest* lessons. In developing the lessons I added a preparation and tasting component to increase knowledge of a variety of fruits and vegetables and to provide an opportunity to learn how to safely prepare these foods at home. This also provided the learner-centered activity that helps engage students for a more memorable experience that can be put into practice.

These concepts could be useful to 4 years through seniors, but I chose to focus on the 4<sup>th</sup> grade because this is the age that is generally recognized by 4-H as ready to learn food preparation, food preservation and food safety. 1<sup>st</sup> year 4-H curriculum focuses on basic skills and tool safety techniques. The 4<sup>th</sup> graders in Oregon learn about our state: counties, agricultural commodities, and occupations. It also naturally pairs with Farm-to-School activities and efforts because selecting produce can happen anywhere that food is grown or sold. While this curriculum works well with older classes and adults, it is

focused on 4<sup>th</sup> grade because it complements the Oregon Department of Education Academic Content Standards in core subject areas including Social Studies.

### **Research Questions**

Using state curriculum standards, USDA Dietary Guidelines, interviews, and classroom observations, a hands-on, learner-centered curriculum for 4<sup>th</sup> graders has been developed.

In this project the following issues will be considered:

1. Before I touch or eat food, I wash my hands...
2. I help pick out fruits or vegetables at the store...
3. When I prepare fruits and vegetables to eat, I clean them...
4. I eat different kinds of fruits...
5. I eat different kinds of vegetables...
6. I like to try new foods...
7. I prepare fruits or vegetables for myself or others...
8. What fruits or vegetables do you like to prepare for yourself or others?

### **Implications**

It was reported by Anne Hoisington, OSU Extension Faculty, to the Oregon Food Stamp Summit in 2006 that:

- 2/3 of premature deaths are due to poor nutrition, physical inactivity, and tobacco use.
- Diet and inactivity are interconnected risk factors, contributing significantly to 4 of the 6 leading causes of death (heart disease, cancer, stroke, and diabetes).
- Every 24 hours, 3,600 people are diagnosed with diabetes.

*Center for Disease Control, 2003 and Boyle et al., Diabetes Care, 2001*

And, that:

- According to the U.S. Department of Agriculture, **healthier diets could prevent at least \$71 billion per year** in medical costs, lost productivity, and lost lives.
- The Centers for Disease Control and Prevention (CDC) estimates that **if all physically inactive Americans became active, we would save \$77 billion** in annual medical costs.

Students will share their learning with their friends and families to improve fruit and vegetable consumption at home. Students will help with shopping and simple preparations and will help their families try new or unfamiliar foods. These changes can have long term effects on improving eating patterns and can result in fewer health-related costs to local families, health care industries and government agencies.

Students will have opportunities to learn fruit and vegetable selection, proper cleaning, safe use of tools to prepare fruits and vegetables, simple preparations or variety sampling in the context of core academic subjects, and health education and the national standards of the USDA Dietary Guidelines.

## **Rationale**

### **Introduction**

To support an investigation into curriculum development in nutrition education, specifically for 4<sup>th</sup> grade students, a review of the literature was conducted in the following areas: 1) State Standards, 2) Integrating Curriculum, 3) Constructivist Theory, 4) Food Choice and Dietary Change and 5) Assessment.

### **State Standards**

In an effort to focus on leadership, accountability and school improvement the Oregon State Standards were developed by the Oregon Department of Agriculture for the use by teachers, administrators and other education leaders. This curriculum had been developed with a distinct effort to work collaboratively with local schools to support academic and elective content.

The Oregon Department of Education's Academic Content Standards for Reading, Writing, Science, Math, Art, Physical Education and Social Studies were reviewed. An effort to meet Common Curriculum Goals, Content Standards and Benchmarks in at least one of the academic areas was addressed and met. Designing the lesson content and activities with the end in mind – meeting one or more standard for each of the academic and elective Common Curriculum Goals – has allowed the development of richer, more relevant lessons.

Collaborative education efforts continue to grow. As long as nutrition education can be combined with the main academic content standards there will be time allowed in the classroom to teach it. The proactive approach for teacher and guest trainer to work collaboratively to achieve state standards and national dietary guideline standards results

in exciting new learning models. These state and national standards benefit students, teachers, schools, families and communities.

### **Constructivist Theory**

To understand constructivist theory it is first necessary to examine control theory. “Control theory holds that all human beings have five basic needs: love, power, freedom, fun and survival. These are built into our genetic structure, and from birth we must devote all our behavior to attempt to satisfy them. Quality, therefore, is anything we experience that is consistently satisfying to one or more of these basic needs” (Glasser, 1993, p. 19). To examine *learning* from a control theory perspective leads one to view the classroom differently. When learning can be accepted as a social experience, the “classroom chatter” can take on an aura of discovery and wonder. When students have some responsibility for their learning they have some power over their lives; the need for power lends to engagement of the most unwilling participant. “Children want to pursue their own goals.” “Children are willing to struggle for what satisfies them” (Glasser, 1984, p. 183). If the learning can be fun, it will lead to new questions and explorations with enthusiasm and excitement. Survival can take on a new meaning in the classroom. Instead of trying to “survive” an interminably boring hour, students can focus on a future that will have a strong educational base: a good way to survive in the adult world.

Constructivist theory in education follows these principles: Knowledge and beliefs are formed within the learner; learners personally imbue experiences with meaning; learning activities should cause learners to gain access to their experiences, knowledge and beliefs; learning is a social activity that is enhanced by shared inquiry; reflection and metacognition are essential aspects of constructing knowledge and

meaning; learners play a critical role in assessing their own learning; and the outcomes of the learning process are varied and often unpredictable (Walker and Lambert, 1995 p. 17). “There is nothing inherently wrong with most of our curriculum. What is wrong is the boss-manager approach we use when we present it to the students. If we cannot figure out how to present what we teach in a way that students will easily see that it is worth making the effort to learn, we should not teach it. More often than not, to try to force learning on the unwilling is to promote ignorance” (Glasser, 1992, p.120-1).

Integrating the constructivist theory principles with national standards for nutrition suggests that a dynamic classroom will be successful. Once the basic structure is identified students can help lead and assess their own learning. Providing short-term rewards for completing modules in a social environment energizes the instruction and activities. “Cooperative learning allows students to share knowledge and experience, problem-solve together, and arrive at more complex solutions collectively than they could have individually” (Walker and Lambert, 1995, p. 22).

Quality is important in constructivist theory. Glasser (1993) describes six conditions of quality schoolwork that need to be integrated in the design of curriculum and assessment: “1. There must be a warm, supportive classroom environment” (p. 22), “2. Students should be asked to do only useful work” (p. 22), “3. Students are always asked to do the best they can do” (p. 23), “4. Students are asked to evaluate their own work and improve it” (p. 24), “5. Quality work always feels good” (p. 24), and “6. Quality work is never destructive” (p. 25).

This curriculum identifies and uses the structure needed to integrate constructivist theory with state education standards and the national Dietary Guidelines for Americans.

## **Food Choice and Dietary Change**

Isobel Contento, in her book, Nutrition Education: Linking Research, Theory and Practice (2007) recognizes the development of food preferences that come from *flavor-flavor* learning. This occurs when new flavors are paired with an already preferred taste. In some of our communities this could be a sweet taste, but other communities spicy could be the preferred taste. She also describes the *flavor-nutrient* learning that helps people adapt to new flavors from nutrient-rich foods that are paired with a high-calorie food. Once children and adults learn that they can achieve satiety (fullness) before their plates are empty, they can comfortably reduce the higher calorie foods by eating smaller portions or by changing to lower calorie alternatives. This allows an increase in nutrient-rich foods in the daily diet. Researchers that Contento cites (Birch & Deysher, 1985; Johnson, McPhee & Birch, 1991; and Birch & Fisher 1995) caution that this is a learned behavior that must be repeated to discover that reduction of high calorie and low nutrient foods can be replaced in whole or partially with nutrient-rich options.

## **Integrating Curriculum**

Traditional teaching methods include topical, thematic, and process integration. For these methods curriculum stands alone. A new method, contextual learning integrates curriculum because of its nature. Contextual learning means that students are able to build their learning from the context presented. For example, students have the task of baking a product for twice as many people described in the recipe. Math is used to make the calculations and measurements, technical reading is used to determine how to prepare the recipe and science is used to evaluate whether a change in the size of the baking pan is needed along with changes in time and temperature of the baking.

Integrated curriculum offers opportunities to look for connections. “Meaningfulness involves a sense of connectedness. Ideas, events, feelings, impressions come together as a whole or a series of wholes. Technically we could call these *gestalts*. In effect, they are patterns. Natural knowledge consists of very rich patterns, of connections at multiple levels.

Of course, these patterns involve the experiences, predispositions, and prior knowledge of the person. Hence the patterns are unique, which is why we must give students space to come to their own understandings in their own ways, even if some of the actual outcomes are specified. It may be important for every student to understand what an equation in math is. But every student will personalize that understanding in a very unique way” (Caine, 1994, p. 101)

Another type of integrated curriculum that embodies constructivist theory is the Narrative Curriculum. In this style of teaching, teachers determine the overarching goals to be achieved (across curriculum lines) and select a narrative (such as a children’s story) to be the context of the learning. Teachers then list a number of inquiries that students might find interesting to anticipate what the student input will be. From their list of inquiries, teachers assemble resources that students might need. After the story is shared with the students, questions about the characters, place and problem are solicited. Students then are guided to inquiries within the overall goals. Research begins, teachers may present mini-lessons, and hands-on projects are created. Students share their learning and return to the story with their teachers to resolve the inquiries. (Lauritzen and Jaeger, 1997).

This type of organization, found in the integrated curriculum, will be important in this project.

To live in a quantum world, to weave here and there with ease and grace, we will need to change what we do. We will need to stop describing tasks and instead facilitate *process*. We will need to become savvy about how to build relationships, how to nurture growing, evolving things. All of us will need better skills in listening, communicating, and facilitating groups, because these are the talents that build strong relationships. It is well known that the era of the rugged individual has been replaced by the era of the team player. But this is only the beginning. The quantum world has demolished the concept of the unconnected individual. More and more relationships are in store for us, out there in the vast web of universal connections (Wheatley, 1994, p. 38).

Recognizing that relationships contribute to the learning process is an important concept to adopt.

...Power in organizations is the capacity generated by relationships... It is a real energy that can only come into existence through relationships... Now I look carefully at how a workplace organizes its relationships; not its tasks, function, and hierarchies, but the patterns of relationship and the capacities available to form them. Because power is energy, it needs to flow through organizations; it cannot be confined to functions or levels. We have seen the positive results of this flowing organizational energy in our experiences with participative management and self-managed teams. What gives power its charge, positive or negative, is the quality of relationships. Those who relate through coercion, or

from a disregard for the other person, create negative energy. Those who are open to others and who see others in their fullness create positive energy. Love in organizations, then is the most potent source of power we have available (Wheatley, 1994, p. 38-9).

The organizational patterns need to not only integrate the curriculum, but also show respect for the participants. The resulting flow of energy will charge the learning environment in a positive way.

### **Assessment**

There are two types of frameworks of assessment approaches and methods. The first is the familiar and recognizable selected-response format that includes multiple-choice, true-false, matching and enhanced multiple-choice tests. The second is the constructed-response format, which includes brief constructed response and performance-based assessment. The brief constructed response includes “fill in the blank”, “short answer”, and “label a diagram”. These are also familiar in the traditional assessment. Performance-based assessment has three categories: product, performance and process-focused assessment. The product is traditionally an essay, poem, and portfolio or lab report. The performance assessment can be a presentation, demonstration, athletic skills performance or a recital. The process-focused assessment includes observation, interview, or learning log. (McTighe and Ferrara, 1998)

“The term *authentic assessment* popularized by Grant Wiggins...is used to describe performance-based assessments that engage students in applying knowledge and skills in ways that are used in the ‘real world’” (McTighe and Ferrara, 1998, p. 15).

It is more and more common to see curriculum development and assessment strategies linked together. The evaluation is linked to the project, and through that evaluation, the project can be continued and improved. “The reform movement calls for teachers to make learning meaningful and relevant for students. And to this end, as the school staff worked to define the primary skills and desired competencies, they realized that some important outcomes are difficult to realize in a traditional classroom. Service learning is a proven teaching strategy to achieve performance-based outcomes” (Kinsley, 1995, p. 55).

The variety of authentic assessments gives students opportunities to enjoy - and revise - their culminating “real world” activity with a new enthusiasm. A variety of assessments allow students to hold a deeper understanding of the content.

In Enjoying our Healthy Harvest students are assessed by their teachers and their peers. Objectives of the lessons are demonstrated in the lessons with products as a result of the food activities; performance by demonstrating proper and regular hand washing; and process-focused assessment by observing safety demonstrations and creating learning logs in the form of journals such as the Kettle of Good Nutrition that can be used as a bulletin board to transfer the activity and the student assessment to a service learning event.

Traditional statistical evaluation is used to assess the current behaviors and to measure the changes in behaviors regarding food safety, produce selection and food preparation techniques.

## Summary

After completing the Literature Review, some important findings are worth noting. National and state standards are an important part of the curriculum design and will serve to hold up the context of the lessons.

Practical application of Constructivist Theory is right at home with food activities. The dynamic nature of a classroom supported by Constructivist Theory encourages students to ask questions and continue exploring. Students take ownership in their questions and find ways to answer them in learning activities.

Curriculum, goals and assessments that are integrated across subject lines offer relevant learning opportunities for students. Problems introduced can be real rather than taken from narratives. Feedback from students that taste the will then be included in the resolution of the problem.

Students are willing and interested to engage in assessment strategies that help them find relevance in the curriculum. New meanings are discovered when students are able to contribute to the process.

This project will be both helpful and useful to other teachers to meet both national skills and state academic standards. Furthermore, this paper will be useful in that it will provide a model for other regional programs. This model can show how to “do more with less.”

Ultimately, this project is about integration of a student’s educational program to make learning exciting, relevant, more meaningful and memorable, and fun. Today’s classroom needs empowered students who are engaged in their learning and evaluation to be successful. This project will show a model that integrates curriculum, national and

state standards with contemporary assessment that will involve student participation in the evaluation and documentation. Creating a contemporary, dynamic model will realign existing resources to produce an exciting place to learn and a rewarding place to teach.