

# The Case for the CASE Model: Curriculum for Agricultural Science Education

By

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The National Council for Agricultural Education is currently in the development phase of The CASE Model – The Curriculum for Agricultural Science Education. The CASE Model is the result of a Council taskforce that reviewed a national curriculum framework. Much of the taskforce's work centered on Project Lead The Way (PLTW) and the success they have had in the area of developing students prepared to enter post-secondary education in the engineering field. The Council and PLTW have entered into a cooperative agreement for the CASE model.

PLTW provides educational leadership through unique curriculum development that is primarily based on an activities, project, product-based approach towards teaching and learning. Started in the mid-1990s, PLTW offers highly stimulating courses in engineering and bio-medical

sciences for high school students. The hands-on project and problem-based approach adds rigor to traditional technical programs and relevance to traditional academics.

The goal is to develop a national Agricultural Science student curriculum and teacher training course materials based on the PLTW's proven, project-based method. For agriculture students and agriculture in America to remain competitive in the world, agricultural education needs to be held to the same standards as other academic subjects being taught in our high schools today.

## **Our Opportunity (Dr. Ed Osborne)**

Secondary agricultural education programs have evolved over the past 25 years, in particular, toward more comprehensive programs effectively serving all student groups in terms of achievement and post-high school plans. The PLTW model offers a unique opportunity to broaden our current thinking about what constitutes a high quality, effective secondary agricultural education program. With a new/enhanced program



*The eagle was a problem child, always doing things his own way...*

delivery model for secondary agricultural education, we have the opportunity to:

- ❖ Reach more total students, more non-white students, and more students enrolled in larger suburban and urban schools.
- ❖ Provide a stronger science-based instructional program that enhances student achievement in science (and perhaps other core areas).
- ❖ Provide a new Agricultural Science program that is complementary to our current program delivery approach.
- ❖ Attract high achieving students into a science-based agriculture program that is parallel to the PLTW pre-engineering program with the goal of channeling academically talented students into science-oriented majors in colleges of agriculture.
- ❖ Respond to the shortfall of scientists for the agricultural industry by stimulating greater interest in the Agricultural Sciences for undergraduate and graduate study.
- ❖ Increase the value of secondary agricultural education programs to local school districts and colleges of agriculture.
- ❖ Combine the power of current student leadership development, experiential learning, and problem-based learning programs in agriculture with an enhanced delivery model that has greater potential for 1) increasing the number of agricultural education programs, and 2) advancing student

achievement.

- ❖ Enhance the leadership, teamwork, and problem solving skills of future scientists in the agricultural industry.
- ❖ Provide a more realistic and suitable model for supervised agricultural experience programs for students living in larger suburban and urban settings.
- ❖ Attract more Agricultural Science teachers from new, less traditional populations.
- ❖ Provide an advanced placement (AP) credit opportunity for academically talented students enrolled in secondary agricultural education programs.

### ***Opportunities That the CASE Model Can Provide for Agricultural Education***

1. ***Teacher Level of Expertise:*** Teachers often express that their technical agriculture training is not sufficient to deliver the wide range of academic and technical knowledge and skills contained in state and national curriculum standards. A highly structured professional development initiative, closely aligned to the approved courses, could be of great assistance in helping teachers close their knowledge gap.
2. ***Teacher Retention:*** It could be speculated that teachers who are more confident in their knowledge should be

stronger and therefore less inclined to leave the profession due to job dissatisfaction.

3. ***Aligning Content Standards with Instruction:*** Teachers and other educators working with curriculum have difficulty using national or state curriculum content standards to develop aligned instructional materials/activities and assessments.
4. ***Ongoing Professional Development:*** This model provides for a comprehensive system of professional development that assesses teacher needs and includes an ongoing series of professional development opportunities rather than one-shot events.
5. ***Assessment:*** In this era of increased accountability, this model provides for the development of end-of-course assessments that are aligned to instruction and national content standards. With students participating around the country, we would have access to state and national level data that could be used to demonstrate progress on performance goals.
6. ***Instructional Materials:*** Instructional materials will facilitate a teacher's job in preparing for day-to-day instruction. These materials will carry the additional benefit of being aligned with national

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academic standards and the Agriculture, Food and Natural Resources content standards and the end-of-course assessments.

7. **New Markets for Program:** It is anticipated that a move to focus strongly on the science and the business of agriculture should promote program growth in school districts that have been reluctant to have an agricultural education program.
8. **Improving Supervised Agricultural Experiences:** The capstone experience, which is part of the PLTW model, has the potential to address issues related to the implementation and quality of Supervised Agricultural Experiences.
9. **Leadership:** The integrated curriculum model sets the stage for modeling all aspects of a quality program design.
10. **Equipment and Facilities:** Agricultural education program laboratories can benefit from more stringent "requirements" related to the equipment and facilities needed for preparing students for the agriculture careers of tomorrow.

## **Implementation**

Working with the National FFA, a business plan was developed for The CASE Model. It follows the business model used by PLTW. State Directors of Career and Technical Education were offered the opportunity to fund the development of The CASE Model. Pilot states were asked to invest in the curriculum development phase

with the opportunity to field test The CASE Model first and to have their investment returned through rebates as schools sign on. Twelve states took advantage of the opportunity to pilot the curriculum.

The National Council has authorized the hiring of curriculum development staff and a project manager. The Council has hired Dr. Robert Clark, Pennsylvania, to lead the development of the foundation course – Principles of Agricultural Science – Animal. Daniel Jansen, Oregon, has been hired to lead the development of the second foundation course – Principles of Agricultural Science – Plant. Brad Schloesser, Minnesota, has been hired as project manager to coordinate efforts of the CASE Model and the Pilot States

## **Next Steps**

Working with PLTW in the development of the two foundation courses in September, pilot states will be bringing together Kernel Development teams for Animal and Plant Sciences. These teams will begin the development of the project-based concepts that will be incorporated into the courses. These "Kernels" are the key concepts – the essential learning that will be the outcomes of each lesson, unit, and course.

Curriculum development staff, Jansen and Clark, will develop the project-based lessons. It is anticipated that the two foundation courses will be completed in time for pilot school training during the summer of 2008. The foundation course will be field tested in the 2008-2009 school year. Pilot state schools will have the first

opportunity to sign on as CASE Model schools with professional development training to occur in the summer of 2009 and implementation of the foundation courses in the 2009-2010 school year.

## **Beyond the Foundation**

Specialization Courses that are on the table for development include the following options:

- Animal and Plant Biotechnology
- Bio Systems Engineering and Technology
- Food Science and Safety
- Natural Resources Environmental Sciences
- Agricultural Sciences Research and Development (Capstone)

## **The Goal**

The CASE Model provides the opportunity for world class opportunities for young people in the dynamic fields of Agriculture, Food and Natural Resources.

## **Credits to The National Council for Agricultural Education Curriculum Taskforce Members:**

- Dr. Ed Osborne, University of Florida,
- Dr. Ike Kershaw, Ohio Department of Education,
- Dr. Larry D. Case, US Department of Education