

THE COMMON TEACHING UNIT: IMPROVING AGRICULTURAL TECHNOLOGY
MANAGEMENT LABORATORY INSTRUCTION DURING STUDENT TEACHER
PRESERVICE TRAINING

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INTRODUCTION/NEED FOR INNOVATION OR IDEA

A challenge of preparing student-teachers to be successful instructors in the agricultural technology management laboratory is determining what instructional units student teachers need to prepare and deliver during their student teaching field experience. Johnson and Schumacher (1989) report that teacher educators need to provide prospective teachers with experiences to develop and enhance secondary agriculture mechanics laboratories. This leads to the challenge of providing student-teachers with the experience of creating an instructional unit composed of lesson plans that combine both informational lessons, operational lessons, job operation sheets (JOS), (McCormick, 1994) and provide the student-teacher with the opportunity to present effective hands-on demonstrations to their students.

How can university faculty teach the concept of curriculum development and effective demonstrations when each student-teacher has a different and unique curriculum need? A solution is the assignment of a common instructional unit for all student-teachers. The common unit must provide the student-teacher with experience in developing both informational and operational lesson plans, as well as the opportunity to experience and teach hands-on demonstrations. The common unit allows the university faculty to plan hands-on activities and lessons that are relevant to all student-teachers. As each student-teacher would be teaching the same concepts, the idea was conceived of having student-teachers work cooperatively to create one instructional unit which could be used by all student-teachers at their respective centers.

HOW IT WORKS/METHODOLOGY/STEPS

As a condition of serving as a cooperating center for hosting a student-teacher, each cooperating master teacher agrees that one of the instructional units their student-teacher will deliver during their 13-week field experience is a “common operational unit” selected by the faculty of the University of [State]. A characteristic of the common instructional unit is its application to a wide variety of high school agricultural education programs. The unit must have applications to urban as well as rural programs and ideally, cross several curriculum areas (i.e. Animal science, plant science, etc), and must have utility. The supplies must be readily available, and equipment costs needed to be reasonable.

The faculty at [University] selected a plumbing unit as the common instructional unit. Plumbing is a content area found to be offered by a majority of agricultural mechanics preparation programs (Burris, Robinson, & Terry, 2005). The plumbing unit will include several hands-on demonstrations, and culminate with the construction of a simple sprinkler project that combines several assembly skills. A sprinkler project has utility and value. Students can test their agricultural technology management skills in several areas including material identification, measuring, cutting, assembly preparation, flux application, propane soldering, priming, gluing, threading, etc. The unit could be taught with an emphasis in animal science, plant science, home improvement, or agricultural technology management. Student teachers were encouraged to take

digital pictures of the step-by-step process of their sprinkler assembly. Photos are used for completion of their Job Operation Sheets (JOS), and to create powerpoint[®] presentations on tool and material identification. The use of digital photos over sketch drawings enhances the JOS, and creates a visually-appealing teaching tool for student use.

RESULTS TO DATE/IMPLICATION

The Department of Agricultural Education at the University of [State] has a prescribed method for student-teachers to develop their instructional units. The goal is to develop instructional units which will help student-teachers become effective classroom educators. Within each instructional unit is (1) a list of objectives (2) informational lesson plans, (3) bellwork activities, (4) operational lessons, (5) job operation sheets (6) rubrics, (7) unit assessments with keys. Additional items include powerpoints, and student skill sheets. The unit is collected, evaluated, and revised so it may be placed on a CD for easy use by educators.

FUTURE PLANS/ADVICE TO OTHERS

For teacher-educators charged with training secondary teachers to teach in agricultural systems technology management, the adoption and use of a common instructional unit serves as a successful method to teach specific instructional competencies. Student-teachers learn to work together to create curriculum units, learn to plan and conduct effective three-step demonstrations, produce individual JOS for skill activities, and adopt assessment rubrics to successfully evaluate student achievement. The use of the common instructional unit permits the university faculty to plan for a teaching experience that applies to all student teachers working in both the rural and urban agricultural education classroom. As an assignment, have the student-teachers “test drive” the unit at their respective school sites and report the results. Data from student tests could be collected to determine reliability of the exam.

COSTS/RESOURCES REQUIRED

Costs will be dependant upon the number of student-teachers and the type of material used. Our estimated cost/per student to produce a sprinkler is approximately \$4.00. Variables to consider are kinds and number of tools available in the laboratory (such as propane torches, flux, brushes, solder, pvc primer & cement, and cutting & threading tools) for copper pipe, pvc, and steel pipe.

REFERENCES

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