PRE-AND POST-ASSESSMENT IN OCCUPATIONAL COURSES

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Index: Competency approaches, assessment, standards

Abstract: In the United States, demonstration of a vocational education teacher’s ability to teach academics (reading, writing, math, etc.) is essential in many states. Vocational teachers need to show students’ learning gains within their content areas along with how they contribute to the teaching of academics. This session will present how to use a pre-post test system to document academic and content learning gains. Examples of academic skill documentation and teacher-made pre-post assessments will be shared.

INTRODUCTION

Assessment is a part of a student’s or teacher’s every day life. In the United States, state departments of education are developing tests to determine academic levels of their students based on state-developed standards. This charge was in response to the U.S. Secretary of Education’s call for higher education standards for all students as well as parents, legislators, and the general public wanting schools to be accountable for students’ learning. The hoped for end result is that with U.S. students meeting higher standards, they will be able to successfully compete within global educational and work environments.

Data indicates problems with the current system of education in providing a base level of academic skill suitable for success in the U.S. workplace. According to the National Institute for Literacy (NIFL) (2000), American businesses are estimated to lose over $60 billion in productivity each year due to employees’ lack of basic skills. Of the American companies polled by the NIFL, 47% reported that their workers lacked basic math skills and that 71% reported that basic written communication training was critical to meeting their workplaces’ skill demands.

With the increasing focus on academics, students have started to complete fewer vocational or occupational education credits at the high school or secondary level. According to statistical information summarized from U.S. Department of Education’s Vocational Education in the United States: Toward the Year 2000, from 1982 to 1994, high school students completed fewer vocational credits (down to 4.0 in 1994 versus 4.7 in 1982) and the number of students completing a concentration of vocational courses in an occupational area had also declined (“Statistical Abstract,” 2000). As to academic preparedness of vocational students, the study found that in 1994 only 33% of vocational students completed the basic core academic standards in high school (four years of English and three years each of math, science and social studies.) The preliminary data indicates that in 1998 approximately 45% of vocational students were meeting these standards. Even though the percentage of vocational students completing basic academic requirements seems to be increasing, all vocational students need to demonstrate basic reading, writing, math, and science (as necessary) competencies.

An important fallout of the increasing emphasis on academics is the narrowing of the curriculum, i.e. elimination of courses that don’t contribute to a student’s academic competence. This reaction could be particular potent in smaller schools with limited resources. To maintain
vocational courses and programs in high schools, teachers need to demonstrate how they contribute to students’ academic skill development as well as their vocational competence through appropriate assessments.

**ASSESSMENT**

Assessment is defined as “a process of collecting data for the purpose of making decisions about individuals and groups” (Salvia and Ysseldyke, 1998, p.5). Assessment instruments range from standardized tests to classroom tests. The instrument used is only part of assessment process. When students are assessed, teachers and educational institutions consider the way students perform a variety of tasks in a variety of settings or contexts, the meaning of their performance in terms of the total functioning of the individual student, and the likely explanations for those performances. When students are assessed, their competence is being measured.

The focus of this paper is the need to access academics and vocational content in the context of the vocational classroom or in the workplace. Considerations in the construction of possible teacher-made assessments to demonstrate meeting academic and vocational content standards will be highlighted.

**ASSESSMENT CONSIDERATIONS**

In the U.S. Vocational Education Performance Standards and Assessment Techniques report (McCaslin and Headley, 1994), high school proficiency exams were the commonly used technique for assessing basic academics while portfolios and program completion were used more frequently to assess advanced academics. About two-thirds of the states at the secondary level used something other than nationally developed techniques for assessing academic skills. Work skill attainment was assessed by locally selected or developed techniques at both the secondary and post-secondary levels.

Most academic assessments utilize an objective-analytic approach. With this approach, teachers systematically assess the key components of performance and the key elements within each component. For example, a teacher requires that a student develop a resume. The key components and elements the teacher might look for could include the following:

1. Gather information on work experience, education, and awards.
   a. List places where worked, supervisor’s name, dates of employment, job title, and duties
   b. List education experiences including special courses of study, majors, and graduation dates.
   c. List awards and honors received.
2. Use appropriate layout and grammatical rules for resume.
   a. Resume format uses bold, indents and fonts in a consistent manner.
   b. Resume includes the categories of personal information (name, address, phone number), education, work experience, and awards.
   c. Resume content is organized in an effective, understandable manner.
   d. Resume uses phrases versus complete sentences.
   e. Resume is one page long.
   f. All material is spelled correctly.
g. The resume is typed.

After identifying the key elements in the task, the teacher can then develop objective scoring standards to assess student performance. Scoring is based on observable performance or products with criteria that applies to all students. Students (and the teacher) will then know what mistakes have been made and how to improve performance.

Often teacher-made tests are not held in high regard. However, teacher-made tests can be better suited to evaluate student achievement than commercially prepared norm-referenced tests. A teacher-made test can match the curriculum being taught and be sensitive to individual student differences. Teachers who are concerned with pupil mastery of specific concepts and skills are in a position to test a narrow range of competencies directly and frequently through teacher-made tests. A teacher’s test is the key to understanding the teacher’s curricular intentions.

For a teacher-made test to be useful as an assessment, the assessment must “standardized.” For a teacher-made test to be standardized, tests should use consistent directions, criteria for scoring, and procedures. Competencies and outcomes need to be clearly specified along with what level of performance is acceptable.

Tests also need to be reliable and valid. For a test to be reliable, the test should consistently measure whatever it is suppose to measure from administration to administration. To aid reliability, precise scoring guides should be used. Validity looks at whether the test is measuring what it is suppose to measure. The most important type of validity for a teacher to consider is content validity. A test has content validity if the test measures the specified competencies and provides scores that tell whether the student has mastered the competencies or not.

To help teacher-made tests meet these characteristics, Salvia and Ysseldyke (1998) suggest the following:

1. the test covers on specific, important content information,
2. the questions asked are relevant to the content,
3. the way that the questions are asked are familiar to the student,
4. questions are sequenced in a logical manner, i.e. easiest to hardest or by competency,
5. test items are group by similar types (multiple choice, short answer, demonstration, etc.),
6. directions are clearly written,
7. systematic procedures are development for scoring responses, and
8. criteria are established to interpret student performance, i.e. weighting of questions and assigning of mastery levels.

WHY CONDUCT PRE- AND POST-ASSESSMENT IN VOCATIONAL CLASSES

Assessment of the academics in vocational classes is imperative. Historically many students have shunned vocational courses and programs because of the perception that they will not prepare them for admission to four-year colleges and universities. Today vocational programs tie vocational classes and work experience to non-vocational subjects, including math, English, science and social sciences (Stern and Rahn, 1995).

Literacy of workers is an important issue for businesses. Students need to understand the information presented in text and graphic format similar to those found in the workplace. They need writing skills to report observations and data collected, complete forms, and write memos and
Conducting pre- and post-tests allows teachers to show learning gains within their content areas along with how they contribute to the teaching of academics.

**PRE-TESTS**

A pre-test is a snapshot. A pre-test will provide information about what students know and don’t know. With that knowledge, a teacher can develop appropriate learning strategies. According to Camp (2000), several small pre-tests that are specific to a content area are better than standardized tests in aiding teacher’s teaching. By practicing assessment in the classroom, teachers will better able to understand and promote learning and increase their ability to help students to become effective, self-assessing students (Angelo and Cross, 1993).

The pre-test and post-test should be equivalent. That is they should cover the same objectives, use the same test directions, cues, and testing formats. Pre- and post-testing of content to determine learning gains can both be formative in nature. An additional summative evaluation of content via a performance or authentic assessment as a portfolio or completed project can be used at the end of a unit with pre- and post-tests being used through the unit instruction.

The pre-test should be evaluated on its reflection of the competencies to be tested, scorability, and feasibility. The pre-test that is difficult to grade (either by type of questions or type of assessment as a performance-based assessment with a class of 30) or takes too long to complete is not useful to the teacher. The pre-test sets the stage for the documentation of learning gains in content and academic areas.

**THE PROCESS OF ASSESSMENT FOR LEARNING GAINS**

The first step in documenting academic skill growth is to identify the academic skill requirements for your state or country and look at how these skills can be documented. Possible assessment strategies include observation (as with oral presentation skills) and teacher-made tests (to assess writing, math, and reading comprehension skills). Of course, performance or authentic assessments as portfolios, product-based learning, and demonstrations can be used but may be too time consuming to be used as formative evaluation in a pre-test. However these assessment strategies are appropriate for summative evaluation.

In the state of Colorado, three levels of standards exist: (1) academics, (2) general occupational skills (SCANS skills), and (3) specific occupational skills. Students can be pre- and post-tested on any appropriate subset of these standards every week. Pre-tests will inform teachers on what to teach and provide the benchmark for learning gains.

Effective pre- and post-test procedures need to be established. A suggested procedure to be followed is:

1. identify the standards/competencies that you wish to pre-post test,
2. develop an instrument that allows one to determine the student’s level of skill or competence,
3. establish an effective administration procedure,
4. analyze the results, looking for gains and areas of low mastery, and
5. report the results in an understandable manner.
SUMMARY

By using pre- and post-tests to document learning gains in academics along with gains in vocational content areas, vocational teachers show how they contribute to students’ learning of academic subjects and support the general education mission at the secondary level. This documentation should help build a case of maintaining vocational courses at the secondary level and thereby prevent the narrowing of the high school curriculum. The documentation of academic skills will also indicate to businesses how the schools are meeting basic skills through vocational programs.

Note: Session participants will receive examples of pre-post procedures for one week and teacher-made pre- and post-assessments in various academic areas.

REFERENCES


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