

Chapter X: JUNIOR TESTING

Who takes it?

Students when they earn 75 credit hours. Normally, half of the students take the critical thinking modules of the CAAP test combined with the CSEQ and the remaining half take the Measurement of Academic Proficiency and Performance (MAPP).

For the 2007-8 academic year, half of the juniors took the CAAP modules for scientific and quantitative reasoning (N=575), while the other half (N=649) took a quantitative/scientific reasoning instrument designed by the assessment faculty and staff at James Madison University, Virginia. This was part of a larger NSF research grant hosted by JMU investigating the efficacy of use of their instrument over a wide range of institutions with varying mission statements. Included in the study were JMU, Truman State University, Michigan State University (East Lansing, MI), St. Mary's University (San Antonio, TX) and Virginia State University (Petersburg, VA).

When is it administered?

Either in the fall or spring semester at specially arranged times by the Assessment and Testing Office.

How long does it take for the student to complete the test?

2 ½ hours for the MAAP and 1 ¼ hours for the CAAP & CSEQ. The JMU test and the two modules of the CAAP took 90 minutes.

What office administers it?

The Assessment and Testing Office, Violette Hall 1130.

Who originates the tests?

The CAAP comes from ACT and the MAPP from ETS. The JMU test comes from James Madison University.

When are the results typically available?

For the individual student and the student's advisor, results are available near the end of the semester the test is taken. University reports for the fiscal year are typically available in late June. The JMU results are available from the Truman Research Team (Philip Ryan, Karen Smith, Ian Lindevald and Glenn Wehner) at the end of the academic year in which the test was taken as analysis is done in-house.

What type of information is sought?

Information about the skills used in the liberal arts based general education curriculum. The CAAP can provide measurement in: writing, mathematics, reading, critical thinking, and science. The MAPP tests students in all of these areas: natural science, social science, mathematics, humanities, reading, writing and critical thinking. The JMU tests students' reasoning skills without content base for scientific and quantitative reasoning.

From whom are the results available?

Assessment and Testing Office for the CAAP and the MAPP, and from the Truman Research Team for the JMU test.

Are the results available by department or discipline?

Yes for the CAAP and MAPP. Not to date for the JMU.

To whom are the results regularly distributed?

Individual results are communicated to students and their advisors. University and discipline averages are sent to the Provost, Deans, Assessment Committee and selected administrators. University-wide results are also available through this *Almanac*.

Are the results comparable to data of other universities?

Both the CAAP and the MAPP provide comparative data norms. The CAAP has nationally normed scores for each test module, while the MAPP provides norms for the total score and subscores. The JMU instrument appears to have wide range efficacy, but to date, the results are only comparable to Truman students.

Junior Testing Summary for the 2007-8 Academic Year:

All Juniors (N=1224) were assessed for Scientific Reasoning and Quantitative Reasoning (SR/QR) skills and were randomly assigned to take either the ACT's CAAP mathematics and science modules together (N=575) or were administered a new instrument designed by James Madison University (N=649) in conjunction with their Center for Assessment and Research Studies' faculty and staff (JMU). This research was conducted in partnership with JMU as part of an NSF grant administered by JMU-CARS faculty. Prior to the administration of the JMU exam, learning outcomes for the Life Science, Physical Science and Quantitative modes were mapped to individual questions on the JMU test. Mapping of the CAAP questions were not possible due to the nature and the propriety of the exam. The JMU instrument (items=66) contained additional items written by the Truman Research Team (items=10) to address learning outcomes that did not have standard JMU questions mapped to them. In particular, Life Science outcome 4 concerning the students understanding of the role of evolution in science and Quantitative outcome 4 concerning the historical nature of mathematics in society needed to be addressed. Internal consistency as measured by Cronbach alpha was 0.828 for the JMU test and the Kuder-Richarson Formula 20 consistency measure for the CAAP was obtained from their website which reported values of .84 for mathematics and .86 for science modules. These methods of reliability are similar, although not directly comparable, and of equal strength in analysis of the data. Both exams were administered over a 90 minute period.

Performance of the JMU test and on the CAAP were in general positively correlated with grades in science and quantitative courses including agricultural science, biology, chemistry, economics, mathematics, physics, political science, psychology, sociology/anthropology and statistics, although correlations were small. Correlations between these courses and the number of courses taken in these areas were less clear, perhaps due to the effect of a number of courses being nonlinear in nature. Students majoring in mathematics and science did score significantly higher on the JMU exam and on the CAAP modules than students with other majors as might be expected. Preliminary data obtained during the fall of 2007 with a sample of first-time students (N=130) does indicate an improvement of performance from the freshman to the junior level testing on the JMU exam, indicating that advancement is being made in satisfying the modes outcomes in reference to scientific and quantitative reasoning abilities. This is important in that it is possible for students to have taken only a minimal number of courses (1-5) to fulfill mode requirements at Truman with advanced placement and dual credit transfers and with the N-1 consideration for the fulfillment of the modes while at Truman. High School math ACT subscores, science ACT subscores and ACT composite scores were significantly and positively correlated to performance on both the JMU and the CAAP at the junior level. Possible explanations are that higher ability students may tend to have introduction to similar course material in high school or that higher ability students tend to do better in the Truman classes and so have a positive association with expected outcomes of these courses.

The patterns of results for measures of reliability, correlations with grades, correlations with the number of courses and difference between majors were reasonably similar for the JMU and the CAAP. However, the JMU offered the advantage of direct mapping of items to Truman learning outcomes.

Data on the juniors will continue to be collected throughout the 2008-9 academic year with the same experimental design.