

Assessment of Health and Wellness in General Education:

An Example from James Madison University

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Consider Sara, a student in her senior year of high-school contemplating whether or not she should apply to college. It is almost certain that Sara has asked herself, “What is the value of having a college degree?” The answer to this question is not just of interest to Sara, but also to her parents who are funding her college education. They need evidence that it will be beneficial for their daughter to have a college degree in order to justify their investment of, on average, \$11,354 for tuition, fees, room and board at a public four-year institution (College Board, 2004). Future potential employers of Sara are also interested in the value associated with a college degree. If Sara obtains her degree and applies for a job at the same time that an applicant with only a high-school diploma applies, the employer needs justification for hiring Sara instead of the high-school graduate and may also need justification in awarding Sara higher pay. The difference in pay for college graduates versus high school graduates is quite large: Baum and Payea (2004) report that in 2003, the median income (before taxes) of persons with a bachelor’s degree was almost \$20,000 higher than those with only a high-school diploma.

Above, the various stakeholders wanted to know what value a college degree would add to an individual. Stakeholders are also interested in what value higher education adds to society as a whole (Ewell, 1999). If having a larger proportion of college graduates in a society leads to a more knowledgeable, productive and economically competitive workforce, then taxpayers and state officials would be more likely to allocate resources to higher education. Without such evidence, however, taxpayers and state officials may be hesitant to invest in higher education, particularly in times of economic distress.

Assessment, which is the systematic collection, review, and utilization of data regarding student learning and development (Erwin, 1991), has been used increasingly by institutions of higher education to provide external stakeholders - such as potential students, parents and legislators - with information regarding the value of a college education. For example, James Madison University (JMU), a public university located in Harrisonburg, Virginia with an enrollment of about 15,000 undergraduate and 900 graduate students, provides assessment information regarding student competencies in selected areas (e.g., information literacy, written communication) in a Report of Institutional Effectiveness (ROIE) available to stakeholders through the internet by the State Council of Higher Education in Virginia (SCHEV)¹. The ROIE is used primarily for communication to stakeholders and although the ROIE has no formal link to funding, SCHEV does hint that the ROIEs could be used indirectly to make funding decisions.

By design, the Reports of Institutional Effectiveness will not be directly related to funding. The Reports are intended to be tool for quality improvement, accountability and informed decision-making. However, since the information contained in the Reports will reflect institutions' actual performance in meeting and fulfilling institution-specific goals and missions, it naturally follows that the Reports likely will prove to be a useful source of information for those making budget requests as well as those considering and making decisions about such requests.

(<http://roie.schev.edu/>)

In addition to providing external stakeholders with information, institutions may also engage in assessment because it is a requirement of their regional or professional accrediting bodies. For instance, beginning in 1984, the Southern Association of Colleges and Schools (SACS) included the assessment of expected outcomes of educational programs, including general education, as one of its accrediting standards. In order for JMU to receive accreditation from SACS, for instance, the institution must show evidence that it is complying with standard 3.5.1, which specifies that an institution identify general education competencies and provide evidence that graduates have attained such competencies (SACS, 2001).

The purposes given above for engaging in assessment are largely external to institutions of higher education. This is ironic given that it is the persons within the university, particularly the students, faculty and administrators, who are responsible for producing the assessment results. Although engaging in assessment to satisfy external stakeholders may increase institutions' adoption of assessment practice, it is not guaranteed to increase institutions' belief or ownership in assessment. The National Center for Postsecondary Improvement noted that institutions with the largest support for assessment, at all levels, are those that engage in assessment *primarily* for the purpose of internal improvement (1997).

With increasing external pressure to engage in assessment, what factors enable an institution to adopt internal improvement as its number one reason for engaging in assessment? It is the initial purpose of this paper to discuss the factors at JMU that have enabled the institution to have a mature assessment program, focused on internal improvement, that is characterized by substantial faculty involvement. The second purpose of this paper is to describe the five-step process at JMU used primarily for assessment in General Education. To this end, the General Education domain of health and wellness will be used to illustrate all phases of the JMU assessment process, including how results are reported to faculty and utilized by them to improve student learning.

Factors Enabling Assessment at JMU

When considering the factors that allow JMU to have a mature assessment program, one must consider the state-level influences on assessment in Virginia's institutions of higher education. As far as the assessment of student learning and development is concerned, SCHEV requires that institutions report in their ROIE the competency of their students in certain domains (e.g., information literacy), but lets each institution choose how to go about attaining such information. Allowing each institution to have greater control over the means by which assessment information is collected, including what objectives are assessed and which instruments are used, enables institutional ownership of the assessment process and increases the likelihood that the results will be used for internal improvement (Jones & Ewell, 1993). Also increasing institutions' support of assessment is the state's purpose in collecting assessment information; it is not SCHEV's intent to compare institutions to one another, but rather to allow the institution to compare itself to its own definition of competence.

An even more powerful influence of the state on assessment practice at JMU is the financial resources that have been provided by the state. Assessment at JMU became formalized in the mid-80s when a Director for Assessment was hired and shortly afterward, when funding was allocated by SCHEV for an Assessment Center at the university. The Assessment Center, formally called the Center for Assessment and Research Studies (CARS), has now been operational for almost two decades. Currently, CARS has eight faculty

members with doctorates in measurement and statistics who serve as assessment consultants. The consultants assist faculty and staff in all assessment endeavors (alumni, student affairs, majors) related to student learning and development, including those in General Education.

There are many ways in which the nature of CARS allows greater faculty participation and investment in the assessment process. First, faculty seeking assistance in assessment have highly trained consultants and graduate students that they can use as assessment resources. Second, faculty are more likely to relate to the consultants than to full-time administrators since the consultants are also faculty (consultants also serve as faculty in the Department of Graduate Psychology). Third, the assessment culture in CARS is one focused on internal improvement; more emphasis is placed on providing high-quality service to the clients, the faculty and staff, then on communicating the results to external parties.

Because the consultants do not serve as the assessment police, but instead as a resource for the faculty, they can remain “assessment neutral”. By remaining neutral, the assessment consultants have been effective in communicating to faculty that they should engage in assessment for the purpose of internal improvement, not solely for the purpose of external accountability. As indicated in a report by the National Center for Postsecondary Improvement (1997), engaging in assessment for the primary purpose of internal improvement is most likely to result in increased faculty involvement and utilization of the results. The report also indicates that the use of faculty-created instruments increases faculty involvement in the assessment process. At our institution 90% of the General Education assessments are faculty-developed, which is likely due both to the measurement expertise provided to the General Education faculty via the assessment consultants, as well as the factors that allow assessment consultants to maintain positive relationships with General Education faculty.

JMU's Assessment Process

The typical assessment process at our institution involves five steps: 1) establishing learning objectives, 2) designing instruments, 3) collecting data, 4) analyzing data and 5) utilizing the results. To illustrate these steps, we will describe the assessment process for our General Education Health and Wellness component.

1. Establish Learning Objectives

At our institution, all students (~3000) are required to fulfill their Health and Wellness component by taking one of three classes by the end of their sophomore year. These classes are GHTH 100: Personal Wellness, GKIN100: Lifetime Fitness & Wellness and GEIC 101: Individuals in the Human Community: The Individual Perspective. Twenty sections of these courses, each with 10-150 students, are taught by 12 different faculty members. In the fall of 2002, an interdisciplinary committee of ten of the aforementioned faculty members met every two weeks with their assessment consultant. That committee was charged with the task of developing learning objectives to state what students should know and be able to do as a result of completing their coursework in Health and Wellness. Rather than focusing on the specific knowledge a student should gain in any one particular course, the faculty focused on common themes that were being taught across the courses. The faculty also focused on how students' behaviors or understanding of themselves and others should change as a result of completing their General Education health and wellness course. This discussion resulted in a

list of 13 learning objectives classified into four learning goals. The fourth learning goal and its associated objectives are shown in Table 1².

2. Design Instruments

Three instruments were created by faculty in the 2002-2003 academic year for the purpose of assessing the Wellness domain's learning objectives. A 15-item questionnaire (HWQ; Health and Wellness Questionnaire) was developed based on a subset of items from the Youth Risk Behavior Surveillance Survey (YRBSS; Grunbaum, et al., 2002) to assess the extent to which students were attaining objective **c**. Faculty also developed a list of 33 health and wellness statements - some statements were facts, others were commonly held "myths". Students were asked to indicate whether or not they believed each statement to be true. This instrument is called the Health & Wellness Statement Identifier (HWSI).

In this paper, the instrument and the results from administration of the instrument that most thoroughly covers the objectives will be discussed. The "Knowledge of Health and Wellness" (KWH) is a 35-item scenario-based multiple-choice test is used to assess a student's understanding of health and wellness issues. An example of an item² on the KWH to assess objective **a** is: "If Randall decides to get serious about his wellness, the **BEST** way for him to change his health behaviors would be to: a) stop drinking immediately, b) gradually increase his exercise levels, c) take a course in health & wellness, d) eliminate his intake of carbohydrates." On average, it takes students about 20 minutes to complete the test. The number of items assessing each goal and objective is shown in the test specification table, or test blueprint, for the KWH in Table 2.

3. Collect Information

The university's commitment to assessment is perhaps most evident in the manner in which data is collected. Two days are set aside each year, in mid-August and mid-February, for assessment and students' course registration is blocked if they fail to participate. To obtain a sense of what students' knowledge and skills are coming into college, a representative sample of JMU incoming freshman were administered the Health and Wellness assessment instruments before classes started during Assessment Day in Fall 2003. In the Spring 2005 Assessment Day, a large sample of students having 45-70 credit hours (typically 2nd semester sophomores) were administered the same Cluster 5 assessment instruments. There were some students in Spring 2005 who had also taken the assessments in Fall 2003, allowing a repeated measures examination of results. This is the intended design of data collection at JMU and is possible since students on each Assessment Day are assigned to assessments based on the last several digits of their student identification number. This repeated measures sample, called Sample 1 for the remainder of the paper, consisted of 394 students who had complete data on the KWH for both the Fall 2003 and Spring 2005 administrations of the instrument.

There are assessment questions that only utilize the data from the second semester sophomores. For such analyses that used only the Spring 2005 data, all students who had complete data on the KWH were retained, even those without corresponding Fall 2003 data in order to have as large of a sample as possible. This sample of second semester sophomores, Sample 2, who completed the KWH in Spring 2005 consisted of 644 students.

4. Analyze Information

The KWH and Samples 1 and 2 are used to illustrate the typical analyses that are executed for all assessments at JMU. Results for analyses using Samples 1 and 2 are listed below as 1a through 1e and 2a through 2d, respectively.

1a. Overall KWH Results. For second semester sophomores, the average raw score ($M = 21.11$, $SD = 3.33$) on the 35-item test indicates that students answered ~60% of the questions correctly. The lowest score was a 4 and the highest score was a 31. A histogram of the scores showed that the scores were normally distributed with the majority of students obtaining raw scores between 19 and 25.

1b. KWH Results by Whether or Not Students Completed their Health and Wellness Requirement at JMU. Before exploring KWH score by number and type of Health and Wellness courses completed, it is important to determine if students who obtained credit for their courses in this domain through transfer or AP credits scored differently on the KWH than students who completed their courses at JMU. One would expect that students who obtained credit through transfer or AP credits would score lower on the KWH than students who completed their credit at JMU since the JMU courses are aligned with the Health and Wellness objectives. There were only 16 students that obtained transfer credit for their Health and Wellness course (14 for GHTH100, 2 for GKIN100 and 0 for GEIC 101) and no students who obtained AP credit. Although the KWH average of these transfer students ($M = 20.38$, $SD = 3.31$) was lower than those obtaining their credit through JMU ($M = 21.16$, $SD = 3.30$), the difference was not statistically, $t(560) = .93$, $p = .35$, nor practically significant ($d = .23$). Because the scores of transfer students on the KWH were not significantly different, these 16 students were included in the following KWH analyses.

1c. KWH Results by Number of Health and Wellness Courses Completed. The results of the KWH were broken down further by the number of courses that students had taken in the Health and Wellness domain. These courses included GHTH 100, GKIN100 and GEIC 101. Because a student needed to have completed only one of these three courses in order to have fulfilled their general education requirement (such students will be called “completers”), we anticipated that scores for these students would be larger than students who had not completed any of these courses (“non-completers”). In addition to anticipating higher scores for “completers” versus “non-completers”, it was anticipated that the more health and wellness courses completed by a student, the higher their score on the KWH. Examining KWH performance by number of courses completed can be used to determine if the completion of only one course results in a level of performance considered acceptable by the Health and Wellness faculty, or if a larger number of courses is needed for faculty to feel satisfied that students have attained adequate skills and knowledge.

While the 555 wellness domain “completers” were scoring higher on average ($M = 21.14$) than the 82 “non-completers” ($M = 20.95$), the difference was negligible ($d = .06$). Because there were only 7 students in our data set who had taken 2 wellness courses, their data was not analyzed. However, it should be noted that their average score was identical to the students who had completed only one course.

1d. KWH Results by Type of Health and Wellness Course Completed. The KWH means by type of course completed by the student (GKIN100, GHTH100, GEIC101) was also examined to determine if students in the various courses differed in their health and wellness knowledge. There was little difference between the KWH average scores for the 335 students who took GHTH100 ($M = 21.41$) and the 217 students who took GKIN100 ($M = 20.74$).

While the GHTH100 average was higher, the difference was considered to be only of minor practical significance ($d = .20$). The average for GEIC101 was not reported since only 17 students in our data set had completed that course. The average for GEIC101, however, was similar to that of GKIN100.

1e. Relationship between Health and Wellness Course Grade and KWH Score.

For each course, the relationship between a student's grade and the KWH score was examined. It was anticipated that the relationship would be positive and small to moderate in size. These relationships were examined to provide evidence for the notion that the content of the courses matches the content of the KWH, since higher grades in the course should be associated with higher scores on the test and vice versa. There was a positive and moderate relationship between KWH total score and course grade ($r = .31$) in both GKIN100 and GHTH100. Again, we did not report the relationship for GEIC101 since only 17 students in our data set completed that course and there was little variation in their grades.

2a. Overall KWH Results for Fall 2003 and Spring 2005 Administrations. Next we examined the overall descriptive statistics on the KWH for the 394 students who took the assessment both in Fall 2003 (Pre) and Spring 2005 (Post). Overall, students increased over time in their knowledge of health and wellness with the Spring 2005 scores ($M = 21.13$, $SD = 3.24$) being higher than their Fall 2003 scores ($M = 19.00$, $SD = 3.07$). The difference between these means was of medium to large practical significance ($d = .67$).

2b. KWH Results for the Fall 2003 and Spring 2005 Administrations by Number of Health and Wellness Courses Completed. We then examined the Fall 2003 and Spring 2005 scores to determine if the change in knowledge regarding health and wellness differed for "completers" vs. "non-completers". We expected an increase in scores only for those students who had completed their health and wellness requirement (taken one course). The data for students completing 2 courses were not reported since the sample size was so small for this group in our data set ($N = 2$).

The Fall 2003 and Spring 2005 means differed by about 2 points for both the "completers" and "non-completers". The 16 "non-completers" had Fall 2003 and Spring 2005 means of 18.54 and 21.16, respectively; while the 355 "completers" had corresponding means of 19.05 and 21.14. This indicates that gains made on the KWH may simply be a function of maturation, not a function of having completed one's wellness domain requirement. Caution should be used, however, in interpreting the results of the "non-completers" since the means were based on only 16 students. As well, the lack of a sizable gain for the "completers" in comparison to the "non-completers" may be a function of the instrument used to assess the wellness domain goals and objectives.

2c. KWH Results for the Fall 2003 and Spring 2005 Administrations by Type of Health and Wellness Course Completed. The KWH change from Fall 2003 to Spring 2005 was examined by type of course completed by the student (GKIN100, GHTH100, GEIC101) to examine if students in the various wellness courses changed differently over time in their health and wellness knowledge. The same gains (~ 2 pt increase) were shown in average KWH scores for the 215 students fulfilling the requirement by taking GHTH100 (Fall 2003 $M = 19.19$; Spring 2005 $M = 21.43$) and the 135 students taking GKIN100 (Fall 2003 $M = 18.70$; Spring 2005 $M = 20.64$). We did not report the averages for GEIC101 since only 9 students in our data set had completed that course.

2d. KWH Proportion Correct (Item Difficulty) for Each Item for the Fall 2003 and Spring 2005 Administrations – "Completers" Only. The results above indicate that

there is a gain in knowledge in health and wellness between the Fall 2003 administration of the KWH and the Spring 2005 administration. To identify what particular knowledge was being gained, the proportion of the sample that obtained a correct response to each item in the two different administrations was compared. A sizable gain in the proportion of students obtaining the right answer to a particular item in Spring 2005 in comparison to Fall 2003 was interpreted as being indicative of a gain in knowledge for the goal/objective or content being assessed by that item. If such information had been computed for both the “non-completers” and “completers”, we could have determined what knowledge was being gained simply due to maturation (both non-completers and completers increase) and what knowledge was being gained as a result of completing one’s course (only completers increase). However, since we had such a small sample of non-completers in our data set, we decided to examine this information only for the completers.

Easy Items in Both Fall 2003 and Spring 2005. When comparing the proportion of students obtaining the correct answer to each item in Fall 2003 and in Spring 2005 (see Figure 1), we found that for items that were easy to begin with (items that ~85% or more of students as freshmen were answering correctly such as items 34, 22, 2, 12, etc.), there was little gain in the proportion of the sample obtaining the right answer. The fact that these items were easy for incoming freshmen indicates that either that: 1) students entering college already have the knowledge and skills that these items are tapping into indicating that little or no time should be spent on such concepts in the health and wellness courses or 2) that the item is so easy that even persons with no knowledge or skills in health and wellness could select the right answer. If the latter is the case, there could be a clue within the item that gives away the correct answer so that students could select the correct answer simply by utilizing their test-taking skills.

Difficult Items in Both Fall 2003 and Spring 2005. On the other end of the spectrum are the difficult items. There are 14 items that even as second semester sophomores, less than half of the students were obtaining the correct answer. For these items either: 1) the knowledge and skills being tapped into by these items is difficult, 2) the knowledge and skills are not necessarily difficult, but the item themselves are difficult or 3) the items are ambiguous and confusing. If the first or second reason provided is truly the case, then the health and wellness curriculum may need to focus more on the objectives that these items were written to assess. However, if the third reason is valid, then faculty should spend time revising those items or creating new items. Further analysis should also be conducted to determine if students who have about the same knowledge of health and wellness, but who completed different courses to fulfill their requirement, are performing differentially on the items. If this is the case, then individual courses in the domain may need to change their emphasis on certain objectives.

Items Reflecting Gains in Knowledge and Skill. Large increases were seen for items in the middle difficulty range as well as several items in the extreme difficulty range. There were 14 items in which 7% or more of the sample obtained the correct answer in Spring 2005 versus Fall 2003. Three of these items (5, 11, & 15) had sizable gains, meaning that ~20% or more of the students responded correctly to these items in Spring 2005 than in Fall 2003. The remainder of the items had gains between 8% - 14%. These items as a whole don’t seem to be related to any one goal or objective, but instead are quite dispersed among the various goals and objectives. It is quite possible that the increase in the percent of students obtaining the correct answer to these items is a result of completion of their health and wellness

requirement, but this conclusion cannot be made with certainty without further data collection.

Items Reflecting No Gains in Knowledge and Skill. There were 7 items of medium or extreme difficulty in which there was no change, or change in the wrong direction (less students obtained the right answer in Spring 2005 than in Fall 2003) between the two administrations. Again, these items as a whole don't seem to be related to any one goal or objective, they do seem to be related to the recall of specific information. The lack of improvement of the sample on these items may also be a function of the item being confusing or ambiguous and in need of revision. In fact, many of these items were either dropped or revised in more recent versions of the KWH. Of course, these items may also be indicative of objectives that require more emphasis in the health and wellness curriculum.

5. Utilizing the Results

To communicate these results to faculty and to the general education coordinator of the health and wellness component, a detailed report was provided that included the results above as well as the results for the two other assessment instruments. In August of 2005, the faculty, the coordinator and the assessment consultant (myself) will meet and I will present a powerpoint presentation of the results in graphical form. It is hoped that during this meeting, issues raised by the results presented in this paper will be discussed. These issues are described in the summary of the results presented below.

The analyses utilizing Sample 2, the sample of second-semester sophomores, indicated that on average, students were obtaining correct answers to 60% of the items. When presenting these results to faculty, I will encourage them to discuss how they feel about this average. Do they feel that an average of 60% indicates that students are mastering the objectives? If not, what percent correct score would convince them that students are mastering the objectives? At this point, I will recommend that our next efforts in assessment focus on using standard setting procedures to more formally set a standard on the test. Setting a standard on the test will make the assessment results more meaningful. For instance, we may find that students scores are increasing as a result of completing their health and wellness component, but the standard will help us decide if the scores are increasing enough.

Another result that emerged using Sample 2 is the lack of a difference in KWH average scores between students who completed their health and wellness requirement at JMU and students who used transfer credit for such a purpose. This is not necessarily what would be expected since the JMU curriculum is aligned with the objectives that the KWH is intended to measure. However, only 16 transfer students were available in the data set. It will be recommended that future assessments utilize a larger sample of students transferring in credit to further examine this issue. We will discuss possible ways to accomplish this, such as requiring students who transfer in credit for the courses to complete the KWH (but not requiring them to make a particular score).

Analyses utilizing both samples indicated no difference in the KWH scores of gain in the KWH scores for students taking either GHTH100 or GKIN100. These results are desirable in general education. The third class that students could take to fulfill their requirement, GEIC 101, had such a small sample that prohibited the use of this course in the analyses. Future assessments should ensure that students taking this course are better represented in the data. Again, a discussion will ensue as to whether or not completion of the KWH should be a requirement of students in GEIC 101.

Perhaps one of the most troubling results is the similarity in scores and in gains for students who have completed their health and wellness requirement “completers” and those who have not completed their requirement (“non-completers”). This suggests that perhaps it is simply maturation, not completion of the requirement, which is responsible for the gains on the KWH. Before making this conclusion, however, it is imperative to collect further data that captures a larger number of “non-completers”, particular when examining the repeated measures results.

Finally, the changes in the proportion of “completers” obtaining a correct response to the items will be evaluated in detail by the faculty. This information will help faculty decide if there are items in need of revision and more importantly, the kind of knowledge and skills that students are and are not gaining. Providing results at the item level is likely to result in improved instruction as well as an improved assessment instrument.

When presenting assessment results, I teach my students to focus on not only on the weaknesses of a program, but also its strengths. Now I will follow my own advice and present a weakness of the JMU assessment program since most of this paper has focused on its strengths. The final step in our assessment process, utilizing the results, is the step which “closes the loop” - where assessment findings are used for the purposes of program improvement. This step is overlooked many times in an assessment program and JMU is no exception. For instance, meeting with the faculty and coordinator to present the general education assessment results graphically and to ignite discussion is an infrequent practice at JMU. However, such meetings are imperative not only to utilize the information we work so hard to obtain, but also to keep faculty interest and investment peaked in assessment.

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Footnotes

¹It should be noted that in addition to assessment information, there are a variety of other performance indicators included in the ROIE.

²Goals, objectives and items presented in this paper cannot be used without permission from James Madison University.

Table 1
A Subset of the Learning Goals and Objectives for the General Education Health and Wellness Curriculum at James Madison University

Goal	Objectives
Students will identify and implement strategies to improve their wellness	<p>a. Identify a realistic and adjustable personal wellness plan</p> <p>b. Recognize how to use self-management skills relating to healthy lifestyle behaviors.</p> <p>c. Participate in a greater number of healthy wellness-related activities.</p>

Table 2
KWH Test Specification Table

Goal	Objective	KWH Items	# Items/Objective	% of Test
1	a	30, 16	2	5.71
	b	6, 24	2	5.71
	c	5,8,10,13	4	11.43
Total # Items for Goal 1:			8	22.86
2	a	14,20, 35	3	8.57
	b	22, 23, 18, 3	4	11.43
	c	25, 11, 26	3	8.57
	d	2, 12, 27, 19	4	11.43
Total # Items for Goal 2:			14	40.00
3	a	17, 28	2	5.71
	b	9, 29, 7, 4, 31	5	14.29
	c	1	1	2.86
Total # Items for Goal 3:			8	22.86
4	a	32, 33, 15	3	8.57
	b	21, 34	2	5.71
	c	<i>Assessed via HWQ</i>	0	0.00
Total # Items for Goal 4:			5	14.29
Total # Items			35	100.00

Figure 1. Differences in item difficulty between KWH Fall 2003 and Spring 2005 administration for “completers”.

