JMU Assessment Progress Template

Interdisciplinary Liberal Studies (IdLS) - BS

PART I. Objectives

Description of process for developing objectives: More than a decade ago, a small group of administrators assembled 31 minutely detailed Student Learning Objectives. These were largely defined by the Virginia SOL's and teacher licensure competencies in each of the major subject areas. While fairly detailed, these objectives were largely unassessable. As such, a recommendation was made in the 2008-2009 IdLS Assessment Progress Template to revise the list of IdLS Goals and Objectives. In Spring of 2010, representatives from IdLS met with Dr. Keston Fulcher from CARS and discussed the development of new, assessable, program Goals and Objectives that fulfill the IdLS Mission. The Mission of IdLS is:

- To support the university's mission to produce educated and enlightened citizens.
- To help students embrace wisdom, inspire learning, and enhance living.
- To meet Virginia teacher competencies by providing breadth and integration across the content areas of English and language arts, history, social sciences, mathematics, natural sciences, and technology.
- To work collaboratively with the Education Unit to reach its goals as articulated in its Conceptual Framework, particularly as they relate to developing a deep understanding of content.

Starting with the 2009-2010 APT the following learning objectives serve as APT Program Goals and Objectives for the IdLS program*.

Goals	Objectives	Measures and Rationale
IdLS students completing General Education will demonstrate knowledge central to the university's mission, and relevant to the Virginia teacher competencies.	IdLS students will, as a group, match other JMU students on General Education learning outcomes, specifically in technology, information literacy, scientific reasoning, quantitative reasoning, and the global and American experiences.	IdLS vs non-IdLS data from Clusters 1 (MREST* test), 3 (Scientific Reasoning & Quantitative Reasoning sub-scales), and 4 (Global & American Experience tests). General Education is the base upon which JMU aims to fulfill its mission to produce educated and enlightened citizens, and the specific content areas measured are teacher competencies required by the Virginia Department of Education.
IdLS seniors will demonstrate content-area proficiency on teacher licensure	For all IdLS-related education programs having PRAXIS II content-area licensure exams (i.e., ElEd and MIED), each program	PRAXIS II scores and pass rates, reported by education program. Content-area proficiency is measured by PRAXIS II tests, and an 80% pass rate on

exams.	will have at least an 80% pass rate on those exams.	PRAXIS II is a minimum pass rate required by NCATE for accreditation. For ELED and IECE, required content-area knowledge is covered by the IdLS core, taken by all ELED and IECE students. For MIED students, required content-area is covered by the IdLS MIED core and upper-level concentrations. SPED students do not have a content-related exam.
IdLS graduates will apply content-area proficiency in pK-8 classroom settings.	For current JMU MAT students who completed the IdLS major, more than 80% will get confirmation that they appropriately applied content-knowledge during their student teaching assignments.	ST-9 data (item A2, "Identifies key principles and concepts of subject matter") completed by student teacher supervisors and JMU instructors. While the 80% pass rate is not required by any accrediting body, this content-related pass rate mirrors the PRAXIS II pass rate required by NCATE and is therefore an appropriate minimum expectation for content proficiency.

Table 1. IdLS Goals, Objectives, and Measures

*As discussed in the following text, starting with the 2013-2014 reporting year, the ISST (Information Seeking Skills Test) test has been replaced by the MREST (Madison Research Essential Skills Test).

Part II. Course/Learning Experiences

Virginia requires all of its teacher candidates to be prepared to teach the material in all of the SOL for the area of licensure, therefore the IdLS program goals and objectives must mesh with the state and federal requirements for teacher education. In 2005-06, IdLS faculty conducted the following alignments of our curriculum.

	Math/Science		**Humanities/Social Science**	
	Core	**Concentration**	**Core**	**Concentration**
VA – SOL Elementary	X		X	
VA Licensure Standards – Elementary Education	Math Only	Math Only	X	X
VA Licensure Standards – Middle Education	X	X	X	X
SPA Standards	Science Only	Science Only		

Table 2. Alignments conducted for IdLS curriculum and accreditation/licensure standards, 2005-06.

Results of these alignment studies revealed that our core curriculum in both math/science and humanities/social sciences includes nearly all of the essential components for teacher licensure. A few

specific subject areas in science have little or no coverage (weather, plants, soil, technology for example) and in language arts students are exposed to one or at most two of the 4 literature areas (American, British, World, Ethnic) but overall the core curriculum provides an excellent foundation in all 4 subject areas.

The concentration curriculum was evaluated in two ways. First, transcripts of all recent Middle Education graduates were analyzed. Since students have many choices in their concentration coursework, it was felt that direct evaluation of transcripts would give the best information of what is actually covered in students' programs. These data are found in the Appendices of the 2009-2010 report. Second, the courses themselves were analyzed for the SOL or licensure areas that the instructors cover in the course. These data are also found in the Appendices of the 2009-2010 report. Transcript evaluations showed that most of the MIED humanities/social sciences students choose courses that cover less than half of the required licensure competencies. Particular weaknesses were in civics/economics and world history. World history is covered extensively in the core, but civic/economics coverage appears weak in both core and concentration.

Math/science MIED concentrators' transcripts were not evaluated in the same way, because the science component of this concentration has changed significantly in the past several years. This evaluation showed that students are choosing courses which fall into one or two science disciplines (as the old guidelines recommended). The new concentration guidelines are more restrictive of course selections and require a broader choice of discipline areas. Future evaluations need to be done to determine if coverage is improved. The individual alignments are found in the appendices associated with the 2005-06 report.

Part III. Evaluation / Assessment Methods

IdLS assessment is very complex. Evaluating students with two distinct upper division concentrations, for their mastery of knowledge, skills / attitudes in each of 4 subject areas poses a challenge. Thankfully several faculty and departments have been extraordinarily helpful in assembling data for our evaluation. CARS staff have done analyses of General Education data (Clusters 1, 3, and 4) that identify IdLS students and calculate their scores separately. The Educational Support Center in the CoE has provided database queries and provided student information regarding PRAXIS II test results and ST-9 results. (See Table 1 for a description of each of the instruments used (Clusters in GenED, PRAXIS II, and ST-9) and why IdLS chose to use them).

Table 3 below indicates the current status of assessments for candidates' knowledge and skills / attitudes in each of the four core subject areas.

Subject Area	Instruments Used to Evaluate Candidates'	
	Knowledge	Skills/Attitudes
Science	Cluster 3, PRAXIS II	ST-9
Math	Cluster 3, PRAXIS II	ST-9
Language Arts	Cluster 1, PRAXIS II	ST-9
Social Studies	Cluster 4, PRAXIS II	ST-9

Table 3. IdLS assessment methods grouped by subject area versus knowledge or skill / attitude

General Education Instruments

The Core component of the IdLS curriculum includes all GenEd requirements and allows us to compare performance of IdLS students to non-IdLS students using the following General Education assessment tests: Madison Research Essential Skills Test (MREST), Natural World (NAW) quantitative reasoning, Natural World scientific reasoning (NAW), Global Experience (GLEX), and American Experience (AMEX).

As was the case for academic years 2008-2009, 2009-2010, 2010-2011, 2011-2012, 2012-2013, 2013-2014, and 2014-2015, data for this year (2015-2016) were evaluated on the performance of IdLS students for the MREST, the Natural World QR & SR, the Global Experience, and American Experience tests. General description, data collection information, and desired results are provided for each of these general education tests below.

Madison Research Essentials Test (MREST) (old Information Seeking Skills Test (ISST))

Starting with the 2013-2014 year's APT the Madison Research Essentials Test (MREST) has been used to assess the students ability to: (http://www.jmu.edu/gened/infor_lit_general.shtml)

1. Recognize that information is available in a variety of forms including, but not limited to, text, images, and visual media.
2. Determine when information is needed and find it efficiently using a variety of reference sources.
3. Evaluate the quality of the information.
4. Use information effectively for a purpose.
5. Employ appropriate technologies to create an information-based product.

6. Use information ethically and legally.

Prior to 2013-2014, the exam used for this assessment was the Information Seeking Skills Test (ISST). According to DeMars, Cameron, and Erwin (2003), "the ISST is a web-based test of 53 multiple-choice items. Four content areas (Basic Reference, Database Searching, Internet Skills, Ethics) are crossed with two process areas (Knowledge, Application). Application questions require students to apply knowledge by finding answers in catalogs and databases and by evaluating web sites. Proctors administer the test in a computer lab". (http://muse.jhu.edu/journals/journal_of_general_education/v052/52.4demars.html)

Because first-year students must pass the test before enrolling in sophomore courses, students typically give a good effort on this test. Practically all IdLS students take this test (i.e., a census). The exact number of IdLS students who took the test is provided in the results section. Reliability analyses over the past several years (via item response theory) reveal that the reliability for the entire test is in the low to mid .70's, a reasonable level for making group decisions in higher education. Librarians developed this test and studies by CARS have indicated that students who have had more exposure to information literacy curriculum (e.g., in class work or practice with web modules) perform better on the test. These factors provide validity evidence that the scores on this test represent information literacy. The desired outcome is that IdLS students exhibit the same degree of competence as non-IdLS students on the MREST.

Natural World Test Version 9, Scientific Reasoning and Quantitative Reasoning Scores

The NW-9 test consists of 66 items, all of which contribute to the scientific reasoning (SR) score. Twenty-six of those items also contribute to quantitative reasoning and are totaled for a "QR" subscore. This test is delivered via paper and pencil and computer-based versions, both in the context of Assessment Day. It is typical that approximately one quarter of entering freshmen are randomly assigned (via the last two digits of a student's ID) to take the NAW-9 during a fall Assessment Day. Unfortunately, the Spring 2015 NAW-9 had an extremely small sample size due to some a flawed experimental data designs which resulted in only 4 IDLS students being matched from pretest to posttest. This unfortunately makes statistical tests inappropriate. As a result this year's report will not present NAW-9 test results for this year but will instead present the previous year's test results where a statistically significant number of IdLS students took the NAW-9 as entering freshmen and retook the test in the spring of 2014.

Prior years students self report that they are motivated to take this exam and give a reasonable effort on the NAW-9. The reliability of the SR and QR scores are typically in the .70s and .60s (Cronbach's alphas) respectively. This level of precision is respectable for higher education tests for group-level decisions. The test was designed by faculty content experts and these scores relate to both course exposure and course grades in science and math. These factors contribute to validity evidence that the scores do indeed reflect quantitative and scientific reasoning.

In terms of desired results, the IdLS program would like IdLS sophomores (post-test) to score the same as other JMU students. Additionally, the IdLS program would like IdLS students to make similar gains from pre-test to post-test as non-IDLS students. These criteria for desired results are based upon previous data provided by CARS.

Global(GLEX) and American Experience(AMEX) Tests

The GLEX instrument consists of 31 multiple choice items, AMEX consists of 81 multiple choice items. The tests are administered to incoming Freshmen during the August assessment day, and to students

with 45-70 credit hours during the Spring assessment day. Tests were developed by content area faculty. Scores on both tests are standardized to a mean of 500 and standard deviation of 100, set so they match the means of the norming groups for the tests (freshmen in 2000 or 2001). The reliability of the AMEX test is consistently in the range of 0.87, the GLEX is typically in the range or 0.75 (Cronbach's alpha). These reliabilities are sufficient to make group-level decisions based on aggregated scores.

PRAXIS II

All teacher licensure candidates must pass the relevant PRAXIS II exam(s) in order to be licensed. These exams are developed at Educational Testing Services (ETS) in consultation with teaching experts across the nation. In essence, the tests are designed to correspond directly with teaching licensure objectives. ETS provides reliability and validity evidence for this test: http://www.ets.org/s/praxis/pdf/validity.pdf. The reliabilities of these 5 tests range from 0.88 to 0.90 nationally. Because a passing score is required for licensure, students are assumed to provide a good effort on this test.

For the past several years, score reports and institutional summaries of JMU data have been available from ETS.

For the Elementary Education (ElEd) Content Knowledge test, scores are provided for each of the 4 subject area subscales. Starting with this years' APT report, IdLS students are required by the Virginia Department of Education (VDOE) to pass each of the four subject areas (Science, Math, Language Arts, and Social Studies) tests. In all prior reports IdLS students passed (or failed) the PRAXIS II exam based on an aggregation of scores for all four subject areas (Science, Math, Language Arts, and Social Studies) where each area contributed equally (25%) to the total score.

ElEd PRAXIS II data reported for this years' APT is somewhat confusing as a result of the entire examine being rewritten and scores being recalibrated. For each of the four subject areas there are two versions of the exam that will be reported. The breakdown of content on the exams is as follows.

From 9/14/14 to 6/30/15 **ElEd Reading and Language Arts Content Categories (Test 5032)**	**Approximate Percentage of Examination**
I. Reading	49%
II. Language, Writing, and Communication	51%

(source: https://www.ets.org/s/praxis/pdf/5031.pdf)

After 7/1/15 **ElEd Reading and Language Arts Content Categories (Test 5002)**	**Approximate Percentage of Examination**
I. Reading	47%
II. Writing, Speaking, and Listening	53%

(source: https://www.ets.org/s/praxis/pdf/5001.pdf)

From 9/14/14 to 6/30/15 **ElEd Mathematics Content Categories (Test 5033)**	**Approximate Percentage of Examination**
I. Number, Operations, and Algebraic Thinking	65%

II. Geometry, Measurement, Data, and Interpretation	35%

(source: https://www.ets.org/s/praxis/pdf/5031.pdf)

After 7/1/15 **ElEd Mathematics Content Categories (Test 5003)**	**Approximate Percentage of Examination**
I. Numbers and Operations	40%
II. Algebraic Thinking	30%
III. Geometry and Measurement, Data, Statistics, and Probability	30%

(source: https://www.ets.org/s/praxis/pdf/5001.pdf)

From 9/14/14 to 6/30/15 **ElEd Social Studies Content Categories (Test 5034)**	**Approximate Percentage of Examination**
I. United States History, Government, and Citizenship	45%
II. Geography, Anthropology, and Sociology	30%
III. World History and Economics	25%

(source: https://www.ets.org/s/praxis/pdf/5031.pdf)

After 7/1/15 **ElEd Social Studies Content Categories (Test 5004)**	**Approximate Percentage of Examination**
I. United States History, Government, and Citizenship	40%
II. Geography, Anthropology, and Sociology	30%
III. World History and Economics	30%

(source: https://www.ets.org/s/praxis/pdf/5001.pdf)

From 9/14/14 to 6/30/15 **ElEd Science Content Categories (Test 5035)**	**Approximate Percentage of Examination**
I. Earth Science	32%
II. Life Science	34%
III. Physical Science	34%

(source: https://www.ets.org/s/praxis/pdf/5031.pdf)

After 7/1/15 **ElEd Science Content Categories (Test 5005)**	**Approximate Percentage of Examination**
I. Earth Science	32%
II. Life Science	33%
III. Physical Science	34%

(source: https://www.ets.org/s/praxis/pdf/5001.pdf)

Table Set 4A. Content area coverage and exam breakdown for the four Elementary Education Praxis II content exams.

Each of the 4 Middle School subject area tests contains several discipline-related scales (see below). ETS publishes the list of content knowledge that is used to develop the test; this appears to match the IdLS learning objectives fairly well. ETS recommends that PRAXIS content be aligned with curriculum and learning outcomes before using it to make decisions about programs. The breakdown of content on the exams is as follows (NOTE: VDOE required students taking the Mathematics and Language Arts content exams to take different exams after Jan. 1, 2014, therefore breakdowns are provided for both of these exams):

Prior to Dec 31, 2013 **Middle School Mathematics Content Categories**	**Approximate Percentage of Examination**
I. Arithmetic and Basic Algebra	20%
II. Geometry and Measurement	17%
III. Functions and Their Graphs	13%
IV. Data, Probability, and Statistical Concepts; Discrete Mathematics	17%
V. Problem-Solving Exercises	33%

Process Categories (Distributed Across Content Categories)
Mathematical Problem Solving, Mathematical Reasoning and Proof, Mathematical Connections, Mathematical Representation, Use of Technology
(source: http://www.ets.org/s/praxis/pdf/0069.pdf)

After Jan 1, 2014 **Middle School Mathematics Content Categories**	**Approximate Percentage of Examination**
I. Arithmetic and Algebra	62%
II. Geometry and Data	38%

(source: http://www.ets.org/s/praxis/pdf/5169.pdf)

Prior to Dec 31, 2013 **Middle School Language Arts Content Categories**	**Approximate Percentage of Examination**
I. Reading and Literature Study	37%
II. Language Study	13%
III. Composition and Rhetoric	25%
IV. Short Essays 1. Textual Interpretation, 2. Teaching Reading/Writing	25%

(source: http://www.ets.org/s/praxis/pdf/5049.pdf)

After Jan 1, 2014 **Middle School Language Arts Content Categories**	**Approximate Percentage of Examination**
I. Reading	46%
II. Language Use and Vocabulary	11%

III. Writing, Speaking, and Listening	18%
IV. English Language Arts Instruction	25%

(source: http://www.ets.org/s/praxis/pdf/5049.pdf)

Middle School Science Content Categories	**Approximate Percentage of Total Score**
I. Scientific Methodology, Techniques, and History	8%
II. Basic Principles	11%
III. Physical Sciences	18%
IV. Life Sciences	15%
V. Earth/Space Sciences	15%
VI. Science, Technology, and Society	8%
VII. Short Content Essays:	
1. Physical Sciences, 2. Life Sciences, 3. Earth/Space Sciences	25%

(source: http://www.ets.org/s/praxis/pdf/0349.pdf)

Middle School Social Studies Content Categories	**Approximate Percentage of Examination**
I. United States History	19%
II. World History	15%
III. Government/Civics	14%
IV. Geography	14%
V. Economics	13%
VI. Short Content Essays	25%

(source: http://www.ets.org/s/praxis/pdf/0089.pdf)

Table Set 4B. Content area coverage and exam breakdown for four Middle School Praxis II content exams.

ST-9

ST-9 is part of the "Assessment of Student Teaching" conducted by the COE at JMU. This form (see Appendix 1), titled "PROFILE OF STUDENT TEACHING PERFORMANCE" is filled out by the cooperating teacher and university supervisor while the IdLS student is Student Teaching. Box A2 of this form pertains to the ability of the STUDENT TEACHER to IDENTIFY KEY PRINCIPLES AND CONCEPTS OF SUBJECT MATTER. A score of:

- **3.0** means that the student teacher explicitly references AND clearly aligns appropriate content standards with planned activities and assessments,
- **2.0** means that the student teacher explicitly references appropriate content standards in daily plans.
- **1.0** means that the student teacher inaccurately and vaguely references OR does not reference appropriate content standards.

The most recent data that is available from the COE is for the 2013-2014 Academic Year, and is what will be presented here.

PART IV. Objective Accomplishments/Results

GENERAL EDUCATION

Cluster 3 NW-9 Test Results:

As stated in Part III the Spring 2015 NAW-9 had an extremely small sample size due to some experiments missing data designs which resulted in only 4 IDLS students being matched from pretest to posttest. This unfortunately makes statistical tests inappropriate. Therefore the following presentation of results do not include data for the Spring 2015 IdLS cohort.

The Natural World (NW-9) instrument measures general scientific reasoning and analysis skills, independent of specific content. As such, it is a good test of students' overall science ability or skill, but not of their specific subject area knowledge. As shown in the last column of Table 4A, IdLS students (n=21), on average answered 73.88% (*SD* = 12.40) of NW-9 items correctly; whereas non-IdLS students (n-384) answered on average 72.81% (*SD* = 13.53) correctly. These differences (for Spring 2016) failed to be statistically significant $t(403) = 0.356$, $p = .700$, $d = .08$. However, the differences in Spring 2014 were statistically significant $t(973) = 3.12$, $p = .002$, $d = .20$. Stated differently, the average IdLS NW-9 score is approximately .20 standard deviations below non-IdLS students.

Note: Table 4A presents data for the last 4 NW-9 test results. Starting with the most recent reporting period (Spring 2014), CARS is presenting data as "Mean %" correct. In previous years, data is presented as "Mean correct responses".

NW-9 Descriptive Statistics for Total Score												
	Spring 2012			Spring 2013			Spring 2014			Spring 2016		
	Mean Correct	SD	N	Mean Correct	SD	N	Mean % Correct	SD	N	Mean % Correct	SD	N
Non-IdLS	49.21	7.62	943	49.08	7.63	1231	74.76	11.84	919	73.88	12.40	384
IdLS	48.03	6.73	66	46.49	7.08	74	69.59	11.61	56	72.81	13.53	21

Table 4A. Comparison of NW-9 Scores of non-IdLS and IdLS students Spring 2014 and the three previous years.

As implied by data shown in the last column of Table 4B, similar results are obtained with Quantitative Reasoning (QR) scores $t(404) = .049$, $p = .001$, $d = .01$.

Note: Table 4B presents data for the last 4 QR test results. Starting with the most recent reporting period (Spring 2014), CARS is presenting data as "Mean %" correct. In previous years, data is presented as "Mean correct responses".

NW-9 Descriptive Statistics for Quantitative Reasoning (QR)												
	Spring 2012			Spring 2013			Spring 2014			Spring 2016		
	Mean	SD	N	Mean	SD	N	Mean %	SD	N	Mean %	SD	N

	Correct			Correct			Correct			Correct		
Non-IdLS	18.55	3.73	943	18.49	3.79	1231	71.45	14.53	919	69.59	0.78	384
IdLS	17.92	3.43	66	17.31	3.72	74	64.22	14.67	56	69.43	3.08	21

Table 4B. Comparison of QR Scores of non-IdLS and IdLS students for Spring 2014 and the three previous years.

In order to determine if these differences were a function Cluster 3 coursework, this analysis was replicated when holding Cluster 3 coursework requirements constant. Table 4C provides descriptive statistics for performance on the NW-9 and QR **only for students who completed their Cluster 3 requirements.**

IdLS students who completed relevant coursework on average answered 70.48% (*SD* = 14.04) of the NW-9 correctly; whereas similar non-IdLS students answered 77.01% (*SD* = 11.10) of the NW-9 correctly. These differences were statistically significant $t(295) = 2.65$, $p = .009$, $d = .33$. These values indicate that the average IdLS student, who completed their coursework, is approximately 1/3 of a standard deviation below the average non-IDLS student on the NW-9. Once again, similar results were obtained for QR $t(295) = 2.38$, $p = .02$, $d = .29$.

Note: Data presented in Tables 4C-4E are not available for previous years.

	Spring 2014					Spring 2015 and Spring2016				
	NW-9			QR						
	Mean % Correct	SD	N	Mean % Correct	SD	Mean % Correct	SD	N	Mean % Correct	SD
Non-IdLS students	77.01	11.10	274	73.72	14.08	No Data	No Data	No Data	No Data	No Data
IdLS students	70.48	14.04	23	66.38	15.65	No Data	No Data	No Data	No Data	No Data

Table 4C. Cluster 3 Mean Scores and Standard Deviations for Students who Completed Relevant Coursework for Spring 2014

Of the 56 IdLS students who completed the NW-9 in February 2014, there were 23 who completed their Cluster 3 requirements. Of these, 18 completed a pre-test as entering freshmen. Descriptive statistics for these students, as well as similar non-IdLS students (n = 192) are reported in Table 4D for the NW-9. Both IdLS and non-IdLS students increased in NW-9 at post-test $F(1, 208) = 15.33$, $p < .001$. There is

currently insufficient evidence to indicate that this increase is a function of whether the student is an IdLS or non-IdLS student $F(1, 208) = 0.19$, $p = .67$. Stated differently, it appears that **both IdLS and non-IdLS who completed relevant Cluster 3 coursework show similar gains at post-test**.

	Pretest	Posttest	Difference
Non-IdLS students (N = 192)	48.33 (6.16)	51.31 (6.89)	2.98
IdLS students (N = 18)	44.83 (6.88)	47.22 (7.35)	2.39

Table 4D. NW-9 Pre-Post Comparisons for Students who Completed relevant Cluster 3 Coursework for Spring 2014 (Note. Values reported are based upon 66 total items)

A similar analysis was completed for QR scores (see Table 4E). Once again, IdLS students and non-IdLS students showed similar, though statistically insignificant, gains at post-test $F(1, 208) = 0.48$, $p = .49$.

	Pretest	Posttest	Difference
Non-IdLS students (N = 192)	18.50 (3.40)	19.37 (3.40)	0.87
IdLS students (N = 18)	16.94 (3.87)	17.28 (3.41)	0.34

Table 4E. QR Pre-Post Comparisons for Students who Completed relevant Cluster 3 Coursework for Spring 2014 (Note. Values reported are based upon 26 total items)

Cluster 4 Global Experience and American Experience Tests

These instruments are used to assess performance in Cluster Four of General Education. Of this year's IDLS students, 27 took the American Experience test and the Global Experience test in February 2016. Mean standardized scores are shown in Table 5A. The standardized scores were defined to have a mean of 500 and a standard deviation of 100 in the norming group of entering freshmen, so a 10-point difference is about .10 standard deviation units (comparable to Cohen's *d*, but with a constant denominator that doesn't change from year to year or group to group).

	Spring 2015				Spring 2016			
	American Experience		Global Experience		American Experience		Global Experience	
	N	Mean (sd)	N	Mean (sd)	N	Mean (sd)	N	Mean (sd)
IdLS students	45	526.9 (89.8)	42	572.7 (94.8)	27	520.6 (100.0)	27	517.4 (109.4)
Non-IdLS	864	529.1	897	583.9	604	520.5 (115.4)	463	578.5 (104.7)

students		(118.0)		(109.7)				

Table 5A. Standardized scores on the AMEX and GLEX for IdLS students and Non-IdLS students (Standard Deviation).

A higher proportion of IDLS students completed the American requirements (85% of IDLS vs. 69% of non-IDLS). In Global, about the same proportions of IDLS (70%) and non-IDLS (68%) students completed the requirement. A more reasonable comparison can be made between students who had completed the relevant requirement. These values are shown in Table 5B.

	Spring 2015				**Spring 2016**			
		American Experience		**Global Experience**		**American Experience**		**Global Experience**
	N	**Mean (sd)**	**N**	**Mean (sd)**	**N**	**Mean (sd)**	**N**	**Mean (sd)**
IdLS students	40	532.7 (90.3)	24	580.6 (98.9)	23	532.3 (99.8)	19	524.9 (102.3)
Non-IdLS students	608	543.7 (117.7)	503	596.3 (108.4)	417	535.6 (114.2)	317	586.0 (102.3)

Table 5B. AMEX and GLEX scores for students who had completed the American or Global Experience requirement.

From Table 5B, the non-IDLS students scored 3 points (approximately 0.03 standard deviation units) higher. This difference was not statistically significant ($t_{438} = 0.14$, $p = .893$), which means that a difference of this magnitude could be due to chance variation. The plausible range for the difference ranged from about -44.5 to 51.1, on the standard scale. In Global Experience, the non-IDLS students scored 0.60 standard deviation units higher. Although this seems like a large difference, due to the small sample size we have little confidence in the estimate of the difference; the plausible range of the difference is about 13.5 to 108.6 on the standard scale. Thus, although the difference between the IDLS student scores and the non-IDLS student scores was statistically significant ($t_{334} = 2.53$, $p = .012$), the difference could be quite small or very large.

Of the 27 IDLS students tested on the American Experience, 18 had scores from the fall 1.5 or 2.5 years before. Similarly, 21 of the IDLS students had earlier scores on the Global Experience test. 15 of these students had completed one of the American Experience courses at JMU, and 15 had completed one or more of the Global Experience courses (another 5 had transfer or AP credit). Fifteen students is a very small number, so unlike previous years the CARS program did no further analyses of pre to post differences.

Tables 5C and 5D show pre- and post-test difference analysis for the previous two years. For 2015 (the most recent year where this data is available) of the 45 IDLS students tested on the American Experience, 34 had scores from the fall 1.5 or 2.5 years before. Similarly, 34 of the IDLS students had earlier scores on the Global Experience test. 26 of these students had completed one of the American

Experience courses at JMU (another 5 had transfer or AP credit), and 21 had completed one or more of the Global Experience courses (another 4 had transfer or AP credit). The spring test served as a posttest for these students. Unlike Tables 2 and 3, the pre-post comparison does not include students who completed the requirement by AP or transfer credit before the pretest and did not take an additional course at JMU (these students would not be expected to increase their scores). Mean scores are shown in Tables 5C and 5D.

American Experience Pre-Post Comparisons								
	2014 Data				**2015 Data**			
	N	**Pretest (sd)**	**Posttest (sd)**	**Difference**	**N**	**Pretest (sd)**	**Posttest (sd)**	**Difference**
IdLS students	24	468.0 (107.7)	516.4 (103.0)	48.4	26	471.7 (90.3)	527.0 (92.6)	55.3
Non-IdLS students	273	491.9 (99.3)	522.5 (102.5)	30.6	307	495.1 (103.6)	532.1 (101.1)	37.0

Table5C. Pre- and Post-test comparisons for American Experience (Standard Deviation).

Global Experience Pre-Post Comparisons								
	2014 Data				**2015 Data**			
	N	**Pretest (sd)**	**Posttest (sd)**	**Difference**	**N**	**Pretest (sd)**	**Posttest (sd)**	**Difference**
IdLS students	23	522.8 (137.2)	587.9 (123.6)	65.1	21	520.8 (86.0)	584.3 (97.1)	63.5
Non-IdLS students	560	543.3 (109.3)	586.3 (117.5)	43.0	387	542.2 (106.1)	604.8 (103.8)	62.6

Table 5D. Pre- and Post-test comparisons for Global Experience (Standard Deviation).

On the American Experience test, the interaction between IdLS/not IdLS and pre/post test was not statistically significant this year ($F_{1,331} = 1.25$, $p = .264$). In other words, the non-IdLS increase was not significantly different from the IdLS increase. With such a small sample, the mean differences are unstable.

On the Global Experience test, there was not a significant interaction between IdLS/non-IdLS and pre/post test ($F_{1,406} = 0.00$, $p = .965$). In other words, the non-IdLS increase was not significantly different from the IdLS increase, as one would expect given that the differences were nearly equal.

Cluster 1 (MREST test)

Starting in 2014, the Cluster 1 exam is called the Madison Research Essential Skills Test (MREST). There are two forms of the MREST, so scores are again reported only on the standardized scale. Scores range from 100-200. The MREST contains items that were administered with the ISST in 2012-2013, so the scale was set with a mean of 150 and standard deviation of 15 for the 2012-2013 students. The passing score was set by a faculty committee at 148. Scores of 166 or greater receive an Advanced transcript notation. Students may repeat the test an unlimited number of times, and tutorials are available. Nearly all students pass by the end of the 1st year (those who do not probably did not bother repeating the test if they did not intend to remain at JMU).

This year (2016 Data) IdLS and non-IdLS students performed approximately the same on the MREST exam (see Table 6A). 100% of IdLS students pass and 99% of non-IdLS students pass, and 22% of IdLS students pass advance while 21% on non-IdLS students pass advance.

Percent Passing MREST (ISST) (of those who attempted the test at least once)

	2015 Data (MREST)					2016 Data (MREST)				
	N	# Pass	% Pass	# Advanced	% Advanced	N	# Pass	% Pass	# Advanced	% Advanced
IdLS	186	186	100%	49	26%	184	184	100%	41	22%
Non IdLS	3997	3949	98.8%	964	24%	4016	3980	99%	836	21%

Table 6A. Percent Passing either the ISST or the MREST (of those who attempted the test at least once)

IdLS students attempted the test an average of 1.83 times, almost the same as the non-IDLS students with 1.86 attempts on average. Scores from the 1st attempt and final attempt are in the table below (see Table 6B). For many students, the 1st attempt was also the final attempt; only those who did not pass repeated the test. Thus, scores increase and the standard deviation decreases for the final attempt.

	2015 Data (MREST)				2016 Data (MREST)			
	1st Attempt		Final Attempt		1st Attempt		Final Attempt	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
IdLS	153.1	13.6	159.9	10.2	149.2	13.1	158.9	8.52
Non-IdLS	152.8	14.6	159.6	10.1	150.4	14.3	158.8	9.43

Table 6B. Mean scores for 1st and final attempts for either the ISST or the MREST for IdLS students and others.

IdLS students scored nearly the same as non-IdLS students. The difference between non-IdLS and IdLS student scores was virtually zero and not statistically significant [first attempt: $t_{4198} = 1.13$, $p = .259$, final attempt: $t_{4198} = -0.10$, $p = .917$].

PRAXIS II

Elementary Education (ElEd) Content Knowledge

As of the writing of this report, the ElEd Content Knowledge tests are high-stakes assessments in which students must pass all four subject area exams (Reading& Language Arts, Mathematics, Social Studies, and Science) in order to receive licensure to teach in Virginia. The test generally matches the IdLS program core curriculum since this is content that all elementary teachers must teach.

For this reporting period there are two exams that were administered by PRAXIS and both of these exams are different than the PRAXIS II tests that were reported in previous APT's for IdLS. The result of this is that it is difficult to make direct comparisons between this and previous years' data, however for completeness data for three previous years of PRAXIS II test results (Tables I and J) and discussion of data are included at the end of this section for comparison.

-ElEd Reading & Language Arts

There are two versions of this exam that students may have taken during this reporting period. Table Set 4A of this report details the content areas covered for both periods exams. For exam #5032 the passing score is 165 and for exam #5002 the passing score is 157. A total of 168 students took exam #5032 and their scores ranged from 200-100 with a median score of 185. Most students taking this exam passed.

A total of 168 students took exam #5032 and their scores ranged from 200-100 with a median score of 185 (Table 7A). Most students taking this exam passed.

A total of 27 students took exam #5002 and their scores ranged from 190-157 with a median score of 174 (Table 7A). **All** students taking this exam passed. For both exams, the median score is higher than the national average.

Elementary Education: Reading & Language Arts 5032		
9/1/2014 to 8/31/2015		
	ALL	JMU
N	9,069	168
High	200	200
Low	100	100
Median	178	185
Average Range	170-187	180-191

Elementary Education: Reading & Language Arts 5002		
9/1/2014 to 8/31/2015		
	ALL	JMU
N	8,831	27
High	200	190
Low	100	157
Median	168	174
Average Range	159-179	166-183

Tables 7A. PRAXIS II scores for all test takers and JMU cohort for Elementary Education Reading & Language Arts Tests

Tables 7B show the quartile scores for both versions of this exam (Reading, and Language, Writing , and Communication or Writing, Speaking, and Listening). The weakest area of the exam is the portion dealing with writing for either version of the exam, with 37-53% of JMU students scoring in the lowest 2 quartiles.

Elementary Education: Reading & Language Arts 5032				
9/1/2014 to 8/31/2015				
	Number (Percent) of Scores in each quartile			
Subscale	1st (low)	2nd	3rd	4th (high)
Reading	11 (7%)	36 (21%)	56 (33%)	65 (39%)
Language, Writing, and Communication	12 (7%)	51 (30%)	55 (33%)	50 (30%)
N=168				

Elementary Education: Reading & Language Arts 5002				
9/1/2014 to 8/31/2015				
	Number (Percent) of Scores in each quartile			
Subscale	1st (low)	2nd	3rd	4th (high)
Reading	0 (0%)	7 (26%)	10 (37%)	10 (37%)
Writing, Speaking and Listening	2 (7%)	13 (48%)	5 (19%)	7 (26%)
N=27				

Table 7B. JMU quartile results for Elementary Education Praxis II Reading & Language Arts Test.

-ElEd Mathematics

There are two versions of this exam that students may have taken during this reporting period. Table Set 4A of this report details the content areas covered for both periods exams. For exam #5033 the passing score is 164 and for exam #5003 the passing score is 157. A total of 168 students took exam #5032 and their scores ranged from 200-179 with a median score of 179 (Table 7C). Most students taking this exam passed. A total of 30 students took exam #5002 and their scores ranged from 200-146 with a median score of 184 (Table 7A). Most students taking this exam passed.

For both exams, the median score is more than 10 points higher than the national average.

Elementary Education: Mathematics Subtest 5033		
9/1/2014 to 8/31/2015		
	ALL	JMU
N	11,598	168
High	200	200
Low	100	146
Median	168	179
Average Range	153-178	171-188

Elementary Education: Mathematics 5003		
9/1/2014 to 8/31/2015		
	ALL	JMU
N	9,428	30
High	200	200
Low	100	146
Median	171	184
Average Range	157-186	171-195

Tables 7C. PRAXIS II scores for all test takers and JMU cohort for Elementary Education Mathematics Exam.

Tables 7D show the content area quartile scores for both versions of this exam. For all content areas and test versions, more than 70% of the JMU cohort scored in the top 2 quartiles so identifying the weakest content area is difficulty. However, test version #5003 indicates that 27% of the JMU cohort scored in the second lowest quartile. However, with only 30 students taking this exam it would be difficult to make a programmatic change based on this result.

Elementary Education: Mathematics Subtest 5033				
9/1/2014 to 8/31/2015				
	Number (Percent) of Scores in each quartile			
Subscale	1st (low)	2nd	3rd	4th (high)
Number, Operations, and Algebraic Thinking	1 (1%)	25 (15%)	50 (30%)	92 (55%)
Geometry, Measurement, Data and Interpretation	5 (3%)	26 (15%)	81 (48%)	56 (33%)
N=168				

Elementary Education: Mathematics 5003				
9/1/2014 to 8/31/2015				
	Number (Percent) of Scores in each quartile			
Subscale	1st (low)	2nd	3rd	4th (high)
Numbers and Operations	1 (3%)	7 (23%)	12 (40%)	10 (33%)
Algebraic Thinking	0 (0%)	8 (27%)	5 (17%)	17 (57%)
Geometry and Measurement, Data, Statistics, and Probability	4 (13%)	4 (13%)	16 (53%)	6 (20%)
N=30				

Tables 7D. JMU quartile results for Elementary Education Praxis II Mathematics Exam.

-ElEd Social Studies

There are two versions of this exam that students may have taken during this reporting period. Table Set 4A of this report details the content areas covered for both periods exams. For both exams #5034 and #5004 the passing score is 155. A total of 168 students took exam #5034 and their scores ranged from 200-144 with a median score of 179 (Tables 7E). Most students taking this exam passed. A total of 29 students took exam #5004 and their scores ranged from 200-150 with a median score of 179 (Tables 7E). Most students taking this exam passed.

For both versions of this exam the median score is more than 10 points higher than the national average.

Elementary Education: Social Studies Subtest 5034		
9/1/2014 to 8/31/2015		
	ALL	JMU
N	10,071	168
High	200	200
Low	100	144
Median	163	176
Average Range	155-175	166-185

Elementary Education: Social Studies 5004		
9/1/2014 to 8/31/2015		
	ALL	JMU
N	8,927	29
High	200	200
Low	100	150
Median	163	179
Average Range	153-176	162-185

Tables 7E. PRAXIS II scores for all test takers and JMU cohort for Elementary Education Social Studies Exam.

Tables 7F show the content area quartile scores for both versions of this exam. Both test versions indicate that JMU students struggle with the areas "Geography, Anthropology, and Sociology" and "World History and Economics" with approximately 35% and 40% of scores in the bottom two quartiles respectively.

Elementary Education: Social Studies Subtest 5034				
9/1/2014 to 8/31/2015				
	Number (Percent) of Scores in each quartile			
Subscale	1st (low)	2nd	3rd	4th (high)
United States History, Government, and Citizenship	6 (4%)	18 (11%)	66 (39%)	78 (46%)
Geography, Anthropology, and Sociology	6 (4%)	51 (30%)	76 (45%)	35 (21%)
World History and Economics	14 (8%)	55 (33%)	55 (33%)	44 (26%)
N=168				

Elementary Education: Social Studies 5004				
9/1/2014 to 8/31/2015				
	Number (Percent) of Scores in each quartile			
Subscale	1st (low)	2nd	3rd	4th (high)
United States History, Government, and Citizenship	2 (7%)	5 (17%)	12 (41%)	10 (34%)
Geography, Anthropology, and Sociology	2 (7%)	9 (31%)	10 (34%)	8 (28%)
World History and Economics	3 (10%)	7 (24%)	6 (21%)	13 (45%)
N=29				

Tables 7F. JMU quartile results for Elementary Education Praxis II Social Studies Exam.

-ElEd Science

There are two versions of this exam that students may have taken during this reporting period. Table Set 4A of this report details the content areas covered for both periods exams. For both exams #5035 and #5005 the passing score is 159. A total of 166 students took exam #5035 and their scores ranged from 200-121 with a median score of 173 (Tables 7G). Most students taking this exam passed. A total of 30 students took exam #5005 and their scores ranged from 191-150 with a median score of 170 (Tables 7E). Most students taking this exam passed.

For both versions of this exam the median score higher than the national average.

Elementary Education: Science Subtest 5035		
9/1/2014 to 8/31/2015		
	ALL	JMU
N	10,036	166
High	200	200
Low	100	121
Median	167	173
Average Range	159-176	167-182

Elementary Education: Science 5005		
9/1/2014 to 8/31/2015		
	ALL	JMU
N	8,905	30
High	200	191
Low	100	150
Median	167	170
Average Range	156-177	164-181

Tables 7G. PRAXIS II scores for all test takers and JMU cohort for Elementary Education Social Studies Exam.

Tables 7H show the content area quartile scores for both versions of this exam. Both test versions indicate that JMU students struggle with the Earth Science area with approximately 45% of scores in the bottom two quartiles.

Elementary Education: Science Subtest 5035				
9/1/2014 to 8/31/2015				
Subscale	Number (Percent) of Scores in each quartile			
	1st (low)	2nd	3rd	4th (high)
Earth Science	16 (10%)	58 (35%)	38 (23%)	54 (33%)
Life Science	15 (9%)	37 (22%)	60 (36%)	54 (33%)
Physical Science	17 (10%)	34 (20%)	61 (37%)	54 (33%)
N=166				

Elementary Education: Science 5005				
9/1/2014 to 8/31/2015				
Subscale	Number (Percent) of Scores in each quartile			
	1st (low)	2nd	3rd	4th (high)
Earth Science	2 (7%)	12 (40%)	8 (27%)	8 (27%)
Life Science	1 (3%)	9 (30%)	13 (43%)	7 (23%)
Physical Science	1 (3%)	11 (37%)	8 (27%)	10 (33%)
N=30				

Tables 7H. JMU quartile results for Elementary Education Praxis II Science Exam.

-Previous PRAXIS II Test Results for Elementary Education (ElEd) Content Knowledge

The previous versions of the Elementary Content Knowledge exam covers basic content knowledge across all 4 subject areas in IdLS. In the 2013-2014 report, ETS provided data for both the paper exam version of this test as well as the **Computer Based Tests or Electronic** version of the exam . In the following text, scores that appear in black represent the paper exam scores and those that appear as **dark orange** represent the **Electronic** exam scores. JMU students continue to do extremely well on the elementary education content knowledge Praxis II test. The median score for the previous test period (9/1/2013 to 8/31/2014) is 177 **(178)**, which is 17 **(18)** points higher than the national average (Table 7A). This score is also higher than the pass score for VA licensure which is 143 (**143**). The lowest score among all JMU students who took the test during this year was 148 **(147)**, indicating that **all** scores for the PRAXIS II test are passing scores for the previous reporting period.

Elementary Education Praxis 2 results								
9/1/10 to 8/31/11			9/1/11 to 8/31/12		9/1/12 to 8/31/13		9/1/2013 to 8/31/2014	
	ALL	JMU	ALL	JMU	ALL	JMU	ALL	JMU (*Electronic*)
N	22,833	164	14,589	163	5,477	124	2,199	79 ***(115)***
High	200	198	200	199	200	200	200	195 ***(198)***
Low	100	143	100	134	100	143	100	148 ***(147)***
Median	162	177	163	174	163	177.5	160	177 ***(178)***
Average Range	149-175	168-185	150-176	168-182	149-176	168-184	146-173	170-181 ***(169-183)***

Table 7I. PRAXIS II scores for all test takers and JMU cohort for Elementary Education

ETS reports the distribution of scores for each institution relative to the national quartiles. For the previous reporting period, Science and Mathematics have 47% **(27%)** and 61% **(43%)** of scores in the top quartile, respectively, while Language Arts and Social Studies have 38% **(23%)** and 49% **(28%)**of the scores in the top quartile, respectively (Table 7B). It is interesting to note here that the number of students placing in the top quartile for all subject areas is SIGNFICANTLY lower for the **Computer Based Tests**.

Equally impressive are the very low numbers of students who scored in the lowest quartiles: 3% **(10%)** for Science, 3% **(4%)** for Mathematics, 6% **(2%)** for Social Studies, and 5% **(11%)** Language Arts (Table 7B). Again it is interesting to note that the number of students scoring in the lowest (4^{th}) quartile is higher for the **Computer Based Tests** for all areas other than Social Studies.

Elementary Education Praxis 2 results								
9/1/2012 to 8/31/2013					9/1/2013 to 8/31/2014			
	Number (Percent) of Scores in each quartile				Number (Percent) of Scores in each quartile			
Subscale	1^{st} (low)	2^{nd}	3^{rd}	4^{th} (high)	1^{st} (low)	2^{nd}	3^{rd}	4^{th} (high)
Language Arts	8 (6%)	39 (31%)	39 (31%)	38 (31%)	4(5%) **13 (11%)**	16 (20%) **18(16%)**	29(37%) **57(50%)**	30(38%) **27(23%)**

Mathematics	4 (3%)	9 (7%)	39 (31%)	72 (58%)	2 (3%) **5 (4%)**	7 (9%) **21(18%)**	22(28%) **39(34%)**	48 (61%) **50(43%)**
Social Studies	7 (6%)	25 (20%)	45 (36%)	47 (38%)	5 (6%) **2 (2%)**	10 (13%) **18(16%)**	25 (32%) **63(55%)**	39 (49%) **32(28%)**
Science	15 (12%)	24 (19%)	34 (27%)	51 (41%)	2 (3%) **11 (10%)**	15 (19%) **29(25%)**	25(32%) **44(38%)**	37 (47%) **31(27%)**
N=124					*N=79* ***N= 115***			

Table 7J. JMU quartile results for Elementary Education Praxis II.

Comparing the sum of the top two quartiles for each Subscale for the 2012-2013 data and the 2013-2014 data, we see that student scores stayed the approximately the same for the areas of Language Arts, and Social Studies. There was an improvement of 7% for Mathematics, and a sharp decline in (10%) for the Science area.

Middle School Content Areas

The Middle School Content Area tests are a high-stakes assessment of the concentration curriculum. Students must pass two of these tests, usually chosen to match their two areas of concentration.

Middle School Language Arts

There are two versions of this exam that students may have taken during this reporting period. Table 4B of this report details the content areas covered on this exam for both periods up to Dec. 31, 2013 and after Jan 1, 2014. For both exams, the passing score is 164. Twelve (12) JMU students took the Middle Ed Language Arts PRAXIS 2 exam this year and their scores ranged from 159 to 184 (Table 7K) and a median score of 169. Virginia's pass score for this test is 164. Most students taking this test passed.

Middle Ed Language Arts Praxis 2 results						
9/1/2012 to 8/31/2013			**9/1/2013 to 8/31/2014**		**9/1/2014 to 8/31/2015**	
	ALL	JMU	ALL	JMU	ALL	JMU
N	3,177	8	725	12	3,028	12
High	200	200	200	196	195	184
Low	100	169	120	156	114	159
Median	173	179.5	171	183	164	169
Average Range	160-184	172-188	158-184	166-190	153-171	163-178

Table 7K. PRAXIS II scores for all test takers and JMU cohort for Middle Ed Language Arts.

Tables 7L shows the quartile scores for the subgroups of this exam. The subscores categories changed in this years' ETS report, so two tables are included, one table for this year and a separate table for the previous two years data.

Table 7L shows that 83% of students scored in the top two quartiles in Language Use and Vocabulary. The weakest area is Writing, Speaking, and Listening with 50% of the students scoring in the lowest 2 quartiles respectively. However, with only 12 students taking this test, the number of students is too small to draw reliable programmatic conclusions.

Middle School English Language Arts 5047				
9/1/2014 to 8/31/2015				
	Number (Percent) of scores in each quartile			
	1st (low)	**2nd**	**3rd**	**4th (high)**
Reading	1 (8%)	4 (33%)	3 (25%)	4 (33%)
Language use and Vocabulary	0 (0%)	2 (17%)	3 (25%)	7 (58%)
Writing, Speaking, and Listening	1 (8%)	5 (42%)	1 (8%)	5 (42%)
English Language Arts and Instruction	2 (17%)	2 (17%)	7 (58%)	1 (8%)
Constructed Response	0 (0%)	5 (42%)	5 (42%)	2 (17%)
N = 12				

Middle Ed Language Arts Praxis 2 Results								
9/1/2012 to 8/31/2013					**9/1/2013 to 8/31/2014**			
	Number (Percent) of scores in each quartile				**Number (Percent) of scores in each quartile**			
	1st (low)	**2nd**	**3rd**	**4th (high)**	**1st (low)**	**2nd**	**3rd**	**4th (high)**
Reading and Literature Study	0 (%)	4 (50%)	1 (13%)	3 (38%)	NR	NR	NR	NR
Language Study	1 (13%)	2 (25%)	3 (38%)	2 (25%)	0 (0%)	5 (42%)	4 (33%)	3 (25%)
Composition and Rhetoric	0 (%)	2 (25%)	2 (25%)	4 (50%)	1 (8%)	3 (25%)	3 (25%)	5 (42%)
Short Essays	0 (%)	3 (38%)	2 (25%)	3 (38%)	NR	NR	NR	NR

Literature and Understanding Text	NR	NR	NR	NR	1 (8%)	4 (33%)	3 (25%)	4 (33%)
N = 8					*N =12*			

Tables 7L. Two tables showing three years of JMU quartile results for the Middle School Language Arts Praxis II exam. Note that subscore reporting changed this year. NR denotes that ETS did Not Report these scores to JMU.

Middle School Social Studies

This exam covers content in US History, World History, Government and Civics, Geography, Economics, and Sociology/Anthropology. Passing score in Virginia is 160. Six students took the test in 2014-15, with scores ranging from 155 to 184 (Table 7M). Most students taking this test passed on their first attempt.

It is unclear what the Behavioral Sciences category represented in last years' report that was generated by ETS since it is not a content category that is listed for this exam. Likewise, it is unclear why no Short Answer results were generated in the report provided to JMU as this content area counts for 25% of the total score students receive for this exam.

In all subscales except for Government/Civics, at least 50% of scores were in the highest two quartiles compared to the national average (Table 7N). US History and Government/Civics are the weakest areas for IdLS students with 50% or more placing in the bottom two quartiles compare to the national average. However, with only 6 students taking this test, the number of students is too small to draw reliable programmatic conclusions.

Middle Ed Social Studies Praxis 2 results						
9/1/2012 to 8/31/2013			**9/1/2013 to 8/31/2014**		**9/1/2014 to 8/31/2015**	
	ALL	JMU	ALL	JMU	ALL	JMU
N	NR	< 5	1,615	12	2,325	6
High	NR	NR	200	194	200	184
Low	NR	NR	122	146	122	155
Median	NR	NR	161	168	164	166
Average Range	NR	NR	152-172	158-177	152-177	162-181

Table 7M. JMU versus US results for Middle Ed Social Studies Praxis II. NR denotes that No Report was generated for this reporting period.

Middle Ed Social Studies Praxis 2 Results								
9/1/2014 to 8/31/2015					9/1/2014 to 8/31/2015			
	Number (Percent) of scores in each quartile				Number (Percent) of scores in each quartile			
	1st (low)	2nd	3rd	4th (high)	1st (low)	2nd	3rd	4th (high)
US History	0 (0%)	7 (58%)	3 (25%)	2 (17%)	1 (17%)	2 (33%)	1 (17%)	2 (33%)
World History	2 (17%)	3 (25%)	4 (33%)	3 (25%)	0 (0%)	2 (33%)	2 (33%)	2 (33%)
Government / Civics	0 (0%)	6 (50%)	4 (33%)	2 (17%)	2 (33%)	2 (33%)	2 (33%)	0 (0%)
Geography	3 (25%)	2 (17%)	6 (50%)	1 (8%)	2 (33%)	1 (17%)	2 (33%)	1 (17%)
Economics	2 (17%)	3 (25%)	4 (33%)	3 (25%)	0 (0%)	2 (33%)	3 (50%)	1 (17%)
Short Essays	NR	NR	NR	NR	1 (17%)	0 (0%)	3 (50%)	2 (33%)
Behavioral Sciences	0 (0%)	2 (17%)	5 (42%)	5 (42%)	NA	NA	NA	NA
N = 12					*N = 6*			

Table 7N. JMU quartile results for Middle School Social Studies Praxis II. NR denotes that No Report was generated for this reporting period or Content Area. NA denotes that No Analysis was performed on this content area because it did not exist during the reporting period.

Middle School Mathematics

As shown in Table 4B the mathematics exam changed this year. Thirty-two students took the middle school mathematics exam during the most recent reporting period. Their scores ranged from 119 to 20. The median score was 178, which is 9 points higher than the national average (Table 7O). The passing score for this exam in Virginia is 165. With the average range being 169-187 for this years' data most students passed this exam.

Tables 7P shows the quartile scores for the subgroups of this exam. The subscores categories changed in this years' ETS report, so two tables are included, one table for this year and a separate table for the previous two years data.

For the current reporting period, approximately 65% of scores were in the highest two quartiles. (Table 7H).

Middle Ed Mathematics Praxis 2 Results						
9/1/2012 to 8/31/2013			**9/1/2013 to 8/31/2014**		**9/1/2014 to 8/31/2015**	
	ALL	JMU	ALL	JMU	ALL	JMU
N	9,294	20	1,768	6	6,151	32
High	200	199	200	191	200	200
Low	100	152	118	164	118	119
Median	164	178.5	166	185	169	178
Average Range	151-178	165-184	153-180	170-189	154-179	169-187

Table 7O. PRAXIS II scores for all test takers and JMU cohort for Middle Ed Mathematics.

Middle School Mathematics 5169				
9/1/2014 to 8/31/2015				
	Number (Percent) of scores in each quartile			
	1st (low)	**2nd**	**3rd**	**4th (high)**
Arithmetic and Algebra	5 (16%)	6 (19%)	9 (28%)	12 (38%)
Geometry and Data	2 (6%)	38 (25%)	11 (34%)	11 (34%)
N = 32				

Middle Ed Mathematics Praxis 2 Results

9/1/2012 to 8/31/2013					9/1/2013 to 8/31/2014			
	Number (Percent) of scores in each quartile				Number (Percent) of scores in each quartile			
	1st (low)	2nd	3rd	4th (high)	1st (low)	2nd	3rd	4th (high)
Arithmetic and Basic Algebra	3 (15%)	3 (15%)	6 (30%)	8 (40%)	0 (0%)	1 (17%)	2 (33%)	3 (50%)
Geometry and Measurement	1 (5%)	4 (20%)	9 (45%)	6 (30%)	0 (0%)	3 (50%)	3 (50%)	0 (0%)
Functions and their graphs	1 (5%)	2 (10%)	9 (45%)	8 (40%)	1 (17%)	0 (0%)	3 (50%)	2 (33%)
Data, probability, statistical concepts, discrete math	2 (10%)	5 (25%)	6 (30%)	7 (35%)	1 (17%)	1 (17%)	3 (50%)	1 (17%)
Problem solving exercises	1 (5%)	6 (30%)	5 (25%)	8 (40%)	0 (0%)	1 (17%)	1 (17%)	4 (67%)
N = 20					*N=6*			

Table7P. Two tables showing three years of JMU quartile results for the Middle School Mathematics Praxis II exam. Note that subscore reporting changed this year.

Tables 7O-P continue to confirm that students continue to be very well prepared to take the Middle School Mathematics PRAXIS 2 exam.

Middle School Science

Seventeen students took this test during the year. The scores ranged from 141 to 184. The median score for JMU students taking the test was 158 compared to the national average of 156 (Table 7Q). The passing score for this test in Virginia is 150, which is a drop from last year where the passing score was 163. Most students who took this exam passed.

In 6 of the 7 subscales, the majority of scores were in the highest two quartiles compared to the national average (Table 7J). "Physical Sciences" and "Basic Principles" are the best performing subscales in the Sciences. "Science, technology, society" is the weakest performing subscales with 64% of students scoring in the lowest 2 quartiles. Of particular concern is that students have performed poorly on the "Science, technology, society" area for 7 consecutive years and it is believed that this is meaningful

result for the program. "Earth/Space Sciences" performed poorly 3 out of the last 5 years, but for the previous two reporting periods JMU students scored better than the national average.

Middle Ed Science Praxis 2 Results						
9/1/2012 to 8/31/2013			**9/1/2013 to 8/31/2014**		**9/1/2014 to 8/31/2015**	
	ALL	JMU	All	JMU	All	JMU
N	4,171	14	2,551	24	3,092	17
High	200	178	200	189	200	184
Low	100	140	109	133	100	141
Median	156	163	157	169	156	158
Average Range	146-169	155-173	146-170	163-174	141-170	154-169

Table7Q. PRAXIS II scores for all test takers and JMU cohort for Middle School Science Praxis II.

Middle Ed Science Praxis 2 Results								
	9/1/2013 to 8/31/2014				**9/1/2014 to 8/31/2015**			
	Number (Percent) of scores in each quartile				**Number (Percent) of scores in each quartile**			
	1st (low)	2nd	3rd	4th (high)	1st (low)	2nd	3rd	4th (high)
Scientific methodology, techniques, history	2 (8%)	7(29%)	11 (46%)	4 (17%)	1 (6%)	6 (35%)	5 (29%)	5 (29%)
Basic principles	0 (0%)	8 (33%)	9 (38%)	7 (29%)	1 (6%)	4 (24%)	6 (35%)	6 (35%)
Physical sciences	1 (4%)	6 (25%)	2 (8%)	15 (63%)	1 (6%)	4 (24%)	7 (41%)	5 (29%)
Life sciences	1 (4%)	5 (21%)	9	9	1 (6%)	8 (47%)	5	3

			(38%)	(38%)			(29%)	(18%)
Earth/space sciences	3 (13%)	8 (33%)	9 (38%)	4 (17%)	2 (12%)	7 (41%)	4 (24%)	4 (24%)
Science, technology, society	4 (17%)	9 (38%)	6 (25%)	5 (21%)	6 (35%)	5 (29%)	5 (29%)	1 (6%)
Short essays	1 (4%)	7 (29%)	9 (38)	7 (29%)	NA	NA	NA	NA
N = 24					*N =17*			

Table7J. JMU quartile results for Middle School Science Praxis II.

Using Data from Table 7I, there is perhaps little difference between the performance of the 2011-2014 groups of students as Median, Low, and High scores are all approximately the same (although there is perhaps a significant difference in the Low scores).

Analysis of PRAXIS II Data

-Elementary Education

In previous years' reports IdLS boasted a 100% pass rate for all ElEd IdLS majors for the PRAXIS II test. This was an artifact of the fact that previously the overall PRAXIS II score was an aggregation of scores for all four subject areas (Science, Math, Language Arts, and Social Studies) where each area contributed equally (25%) to the total score. This allowed students to perform poorly on a single portion of the exam and still pass.

For the current years' report the ElEd Content Knowledge tests are high-stakes assessments in which students must pass all four subject area exams (Reading& Language Arts, Mathematics, Social Studies, and Science) in order to receive licensure to teach in Virginia. The following table (Table 7K) shows pass rates of IdLS students for each of subject areas after their first test attempt and their final attempt. Additionally final notes are made as to how many times students have taken the test.

Section	Pass rate after 1st try	Final rate as of June 30 2015	Notes
Language Arts	99%	99%	1 student failed once 1 student failed twice

Mathematics	93%	97%	6 students passed on second try 3 students failed once 2 students failed twice
Social Studies	97%	99%	3 students passed on second try 2 students failed once
Science	95%	98%	5 students passed on second try 2 students failed once 1 student failed twice

Table7K. **Pass information for the ELEd PRAXIS II.**

It is important to note that while each of the ElEd preparation areas (Science, Math, Language Arts, and Social Studies) may have sub-area weaknesses, the fact remains that all area have at least a 97% pass rate. Therefore our IdLS students are very well prepared to take each subject area of this high stakes exam and qualify to become future teachers.

-Middle Education

In previous years ETS supplied data summarizing the number of attempts at taking the PRAXIS II test students needed in order to pass, however this data was not provided in this years' report to us. The following table summarizes the number of attempts that students needed to take individual PRAXIS II tests in order to pass from previous year's data. While this data is for the valid for the current year, we feel it is still accurate in the trends that it shows.

	2012-2013 Data				**9/1/2013-8/31/2014**			
Content Area	**Passed on 1st Attempt**	**Passed on 2nd Attempt**	**Passed on 3rd (or more) attempt**	**Not Passed <number of attempts>**	**Passed on 1st Attempt**	**Passed on 2nd Attempt**	**Passed on 3rd (or more) attempt**	**Not Passed <number of attempts>**
Mathematics	12	--	--	--	6	--	--	--

Science	6	1	2	1 <2> 2 <3>	14	3	3	2<1> 1<2> 1<3>
English/Language Arts	5	--	--	--	11(?)	?--	-?-	1<1>
Social Studies	2	1	--	--	5	--	--	--

Table 7K. Pass information for the Middle Ed PRAXIS II. There is some uncertainty with this years reporting of the Language Arts content exam. All that is known from the data that was received is that a total of 12 students took this exam and 1 student has yet to pass this exam.

This data shows that in the 2012-2013 cohort, 91% of the students who had taken the PRAXIS II tests had eventually passed the exams. In the current reporting period, 89% of middle education students eventually passed their PRAXIS II exams. Data suggest that Science continues to be the area that students have the most difficulty passing. However, a large majority of IdLS students taking PRAXIS II exams pass on their first attempt (74% in 2008-2009, 89% in 2009-2010, 83% in 2010-2011, 82% in 2011-2012, and 78% in 2012-2013). There is some uncertainty with this year's reporting of the Language Arts content exam. All that is known from the data that was received is that a total of 12 students took this exam and 1 student has yet to pass this exam. Therefore no calculation can be made on how many IdLS students passed the PRAXIS II exam on first attempt (excluding language arts from this calculation we can calculate that 72% of students from all other areas passed this exam on first attempt).

ST-9 DATA (Item A2, "Identifies key principles and concepts of subject matter")

ST-9 is part of the "Assessment of Student Teaching" conducted by the COE at JMU. This form (see Appendix 1), titled "PROFILE OF STUDENT TEACHING PERFORMANCE" is filled out by the cooperating teacher and university supervisor while the IdLS student is Student Teaching. Box A2 of this form, pertains to the ability of the STUDENT TEACHER to IDENTIFY KEY PRINCIPLES AND CONCEPTS OF SUBJECT MATTER. A score of:

- **3.0** means that the student teacher explicitly references AND clearly aligns appropriate content standards with planned activities and assessments,
- **2.0** means that the student teacher explicitly references appropriate content standards in daily plans.
- **1.0** means that the student teacher inaccurately and vaguely references OR does not reference appropriate content standards.

For Spring 2015, a total of 294 evaluations were made using the ST-9 instrument with the following statistical results (unfortunately data for Fall 2014 where not sent to us to include in this analysis). During this reporting period, candidates were rated by a supervisor and a classroom teacher, and typically do two placements per year, therefore there may be up to four ratings for any one candidate.

ST-9 Analysis							
	2009-10	**2010-11**	**2011-12**	**2012-13**	**Fall 2013**	**Spring 2014**	**Spring 2015**
Average Score	2.9	2.94	2.93	2.95	2.91	2.88	2.95
High	3.0	3	3	3	3	3	3
Low	1.5	1.5	1	1	2	1.5	1.5
Standard Deviation	0.26	0.22	0.22	0.17	.13	.18	.18
N	345	208	190	751	189	258	294

Table 8A. ST-9 scores for 2008-2009 to 2013-2014.

In 2008-2009 84% of students (ElED and Middle School) scored a 3.0 on item A-2 of the ST-9, meaning that 84% of the students demonstrated the highest level of mastery of content knowledge in their classrooms. In 2009-2010, 86% of ElED and MSED students achieved this highest level of mastery. For the Spring and Fall semesters of 2011, data is available that splits the ElED and MSED students into separate groups. For the time period of 2011 to 2012, 95% ElED met highest level of mastery, while 81% of MSED also met this highest level of mastery. For the reporting period (2012-13) 93% ELED met the highest level of mastery, while 78% of MSED also met this highest level of mastery as demonstrated in the classroom. For this reporting period (Spring 2015) 93% ELED met the highest level of mastery, and 100% of MSED also met this highest level of mastery as demonstrated in the classroom.

RESULTS

From the data presented here for the 2015-2016 reporting period, it appears the IdLS has met each of its program goals.

- From the Cluster 1, 3 and 4 data analysis it appears that there is no significant difference between IdLS and non-IdLS students. As a result, IdLS students have, as a group, matched other JMU students on General Education learning outcomes (specifically in technology, information literacy, and the global and American experiences).

- From PRAXIS II data, it appears that each area (ELED, Middle School Math, Middle School Science, Middle School English, and Middle School Social Studies) is performing better than the national averages. For this years' cohort, IdLS achieved a pass rate of 97% or better for ElEd in all 4 subject areas (Science, Math, Language Arts, and Social Studies). While data was not available to assess the pass rate for this years' cohort for the Middle School areas, we are confident that it is not significantly different from the previous years for which data is available. As a result, we believe that we have pass rate of ~90% or better for all Middle School areas. Both scores are better than the program target of 80%.

- From ST-9 data, 100% of students achieved an adequate level of content proficiency as demonstrated in the classroom. This is again better than the target of 80%.

While meeting these assessment goals is meaningful, there are other recommendations that we can make based on the combined results of these assessments. The following is a list of recommendations to be disseminated to the various constituencies in IdLS.

1. All PRAXIS II data for this reporting period needs to be cautiously examined and results need to be carefully interpreted. There are 3 different PRAXIS II exams used for ElEd assessment in the past 2 years, with the current test only being used since 7/1/15. The exam is still being normed meaning that specific results for this years' test may not give an accurate indication of absolute strengths and weaknesses of the program.

2. Sciences: Elementary Education PRAXIS II test results indicate that students are being adequately prepared to pass this exam (Tables 7G and 7H). In fact for the current reporting period 98% of students passed this exam (Table 7K) and more than 60% of JMU students who took this exam placed in the highest 2 quartiles in for Life and Physical Sciences comparison to the national average (Table 7H). However, barely over 50% scored in the highest 2 quartiles for Earth Science. For Middle Education, the content area of Science, Technology, and Society (STS) has continually shown to be an area of poor performance (Table 7J). This is the seventh year in a row that STS has been a low performer on PRAXIS II. It was hoped that a new class (ISAT 495) that was developed six years ago was going to help improve this area, but we are still seeing low performance numbers (51% of JMU students who took this test place in the lowest 2 quartiles). In Fall 2013, the IdLS Steering Committee considered this issue in the Fall of 2013 and began discussions with faculty and administrators who developed this class in hopes of finding ways to improve student performance in this PRAXIS II area. These discussions continued into summer of 2014 with the Dean and Department Head of CISE and ISAT. As a result it was determined that the Science, Technology, and Society content area would be a course whose content would be distributed across the IdLS Core.

Student performance in Earth and Space Science has varied considerably over the last few years. This year student performance in this area looks to be weaker than years past. We believe that the continued development of a new astronomy course started in AY 2012-2013 by Dr. Geary Albright (which took the place of ASTR 301 (Searching for Life in the Universe)) will continue to improve the curriculum for the Middle Ed Space and Planetary Science requirements. Also, Dr. Jennifer Mangan continues to develop a new Weather and Climate course for IdLS course that will take the place of the existing meteorology course, again address the Middle Ed learning objectives for this area. Additionally, during AY 2013-2014, discussions were started with faculty teaching the Earth Science for Teachers class to re-examine the content of this course and its alignment with PRAXIS II learning objectives. We are hopeful that these changes will conclude in AY 2015-16 and will ultimately improve this area.

Across all science areas the IdLS Steering Committee has actively met to discuss efforts to re-develop the IdLS core science classes (ISCI 171-173). A questionnaire was created and deployed in Spring 2016 and is currently being analyzed. Results will be used in AY 2015-2016 to realign the Core Science curriculum with new Next Generation Science Standards.

3. Social Studies: It appears students are being well prepared for Elementary Education in Social Studies with 99% of students passing this exam (Table 7K) and more than 60% of students placing in the top 2 quartiles nationally for all subareas of this exam (Table 7F). To improve the curriculum even more in this area, the IdLS steering committee is working with faculty in the Social Studies area to potentially modify the structure of the concentration to include "tracks" which would allow for a more focused concentration of curriculum for students.

4. Language Arts: It appears students are being well prepared for Elementary Education in Language Arts with 99% of students passing this exam (Table 7K) and more than 60% of top 2 quartiles nationally for all subareas (except for test #5002 area of Writing, Speaking, and Listening). Based upon PRAXIS II data there have never been any multiple year trends in the data that would indicate a consistently weak part of the Middle Education program for Language Arts. To improve the curriculum even more in this area, the IdLS steering committee is working with faculty in the Language Arts area to develop more courses focused on writing.

5. Mathematics: According to our assessment criteria, the math curriculum in IdLS has been the strongest content areas. All courses were designed from the NCTM standards, and the students all take the same core and concentration courses. It appears students continue to be well prepared for Elementary Education in Mathematics with 97% of students passing this exam (Table 7K) and that more than 70% of students who took the Praxis II Elementary Content test score in the top two quartiles nationally (Table 7D). There are no multiple year trends in the data that would indicate a consistently weak portion of the Middle Education program for Mathematics.

Part V. Dissemination

The Annual Assessment Report is provided to the program director (Fletcher Linder) and discussed with both representatives from Math/Science/Technology and Humanities/Language Arts who serve on the IdLS Executive Committee. Substantial progress has been made over the past several years and this is anticipated to continue until a mature assessment program has been developed. The IdLS Executive Committee receive and discuss this assessment information and specific instrument results are shared with relevant area coordinators and faculty.

Results are also shared with the CoE unit assessment committee and the CoE Assessment Director (Amy Thelk) as well as several other joint IdLS/CoE groups.

Finally, IdLS provides this report (or parts of the report) to any other program or individual who expresses interest in these assessment results. For instance in the past year we have provided this report to the Dean's office of CSM and CISE, Department Heads of ISAT and Geology, and several faculty teaching in the program.

PART VI. Uses of Evaluation/Assessment Results and Actions Taken

Several specific actions have been taken as a result of assessment results. Most of these are discussed in the previous sections. A few of the most significant actions are summarized here.

1. Data from all previous years APT's were extensively used in preparing the IdLS Academic Program Review materials. The IdLS external team visited this academic year and were impressed with our curriculum and our assessment program.
2. The IdLS steering committee is working with faculty in the Language Arts area to modify the curriculum to include more courses focused on writing.
3. The IdLS steering committee is working with faculty in the Social Studies area to potentially modify the structure of the concentration to include "tracks" which would allow for a more focused concentration of curriculum for students.
4. In response to multiple years of poor student performance on the PRAXIS II Middle Education Science, sub-area Science, technology, society, The Director of IdLS and the Coordinator of IdLS Mathematics/Science/Technology met with the Dean of the College of Integrated Science and Engineering and the Department Head of ISAT in Summer of 2014 to discuss IdLS assessment and it implications for course rigor and improvement of content focus for the course ISAT 495.
5. With attention paid to IdLS assessment, the Director of IdLS and the Coordinator of IdLS Mathematics/Science/Technology met with the faculty teaching the Science Core courses (ISCI 171, 172, 173) during the past two years. These meetings were aimed at redesigning and re-aligning these courses in preparation for new science learning objectives being developed by the VDOE. We anticipate that this work will conclude during AY 2015-2016.
6. The Director of IdLS and the Coordinator of IdLS Mathematics/Science/Technology met with the Deans of the College of Science and Mathematics in Fall of 2013 to discuss IdLS assessment and it implications for course rigor and improvement of content focus for Science and Math classes.
7. Middle Grades curriculum was, and continues to be, revised. Specifically, in response to low PRAXIS II scores for Middle Education Science, sub-area Earth and Space Science, a new Astronomy course was piloted in Fall 2012. Additionally in Fall 2011, a new course entitled Oceanography for Teachers was taught in place of a non-teachers Oceanography course. In 2013 a new course in Weather and Climate was developed and taught. Faculty teaching Earth Science for Teachers started evaluating curriculum and will revise course content during the 2015-2016 academic year.

8. Ongoing improvement in IdLS 400 based on annual faculty discussion of course design and implementation. This is especially useful to new faculty and guarantees consistency across sections and years.
9. Increased transparency of advising and scheduling, and enhanced cooperation between COE and IDLS to facilitate scheduling and sequencing of concentration courses based on formal and informal surveys of students and faculty.
10. Chemistry, STS classes, world history courses, and middle education science requirements were all changed in response to assessment results.
11. IdLS 400 piloted a section which includes science and mathematics content in 2009-10 and again in 2011-12 to provide a more fully integrative content course for students.
12. Goals, Objectives and Measures were modified in 2009-2010 based on previous years APT reports.
13. Improved cooperation between CARS and IdLS to assure data analysis in a timely manner.

APPENDIX 1. ST-9