

**Clemson Thinks<sup>2</sup>**  
**Clemson University**

# ANNUAL REPORT 2014



**thinks<sup>2</sup>**  
**CLEMSON**  
*prepare to engage*

# TABLE OF CONTENTS

**Executive Summary .....2**  
**Mission & Goals.....5**  
**Outcomes .....6**  
**Use of Results .....13**  
**Summary & Conclusion.....16**

Clemson Thinks<sup>2</sup> (CT<sup>2</sup>) was developed as the Quality Enhancement Plan (QEP) portion of the University's reaccreditation by the Southern Association of Colleges and Schools (SACSCOC) in 2012. CT<sup>2</sup> was created through an extensive process that included grassroots input from teams across the university who submitted proposals for Members of the Steering Committee examined assessment data that pointed to areas where Clemson's students were not making the kinds of gains that would be expected of students who complete their degree at a top-25 public university. A survey of the literature suggested that the sophomore year was often a lost year between the excitement of the first-year experiences and the focus and depth of study students experienced in their junior and senior years. All three sources of information - campus input, assessment data, and the literature review - were an important part of the early review process.

After considering a large number of proposals and reviewing the vast literature on student achievement and engagement, the steering Committee decided that a focus on the development of critical thinking skills during the second year of college would have the most significant impact on student development. The core feature of the proposal took the form of a second-year critical thinking seminar that would build student critical thinking skills and serve as a gateway for greater engagement in learning throughout the junior and senior years. Included in this plan was a comprehensive and extensive program of faculty development to improve curricular design and critical thinking pedagogy.

In order to teach a CT<sup>2</sup> seminar a faculty member must successfully complete the Clemson Thinks<sup>2</sup> Faculty Institute. The Institute is an intensive 5-day program covering all aspects of teaching critical thinking skills. The keynote presenters at each annual Institute are prominent figures in the field of teaching and improving critical thinking skills. Some of the outcomes for the Faculty Institute are:



- design and develop a communication-intensive CT<sup>2</sup> seminar on the topic or subject the faculty member chooses and that integrates targeted student learning outcomes related to critical thinking
- redesign and redevelop existing faculty members' course(s) to integrate the targeted student learning outcomes related to Clemson Thinks<sup>2</sup>
- develop and integrate activities and assignments into faculty members' courses that will develop the targeted CT<sup>2</sup> skills in their students and enhance academic and engagement experiences
- develop strategies for engaging students and ensuring they comprehend assignments and are achieving CT<sup>2</sup> learning outcomes
- identify alternatives for assessing student CT<sup>2</sup> skills.
- monitor and assess students' competency in CT<sup>2</sup> skills using multiple assessment instruments.

Another important aspect of having a course designated as CT<sup>2</sup> is the requirement that the class adhere to a standardized assessment procedure. An important exercise at the Faculty Institute is the development of a syllabus for the CT<sup>2</sup> seminar that encompasses the stated CT<sup>2</sup> student learning outcomes:

Students will demonstrate the ability to:

- Explore complex challenges.
- Analyze multi-dimensional problems.
- Extrapolate from one conceptual context to others.
- Synthesize alternative solutions to multi-dimensional challenges.
- Communicate effectively complex ideas.

The CT<sup>2</sup> program has completed a year of growth and development. There were 32 classes in 15 disciplines with a total of 886 students offered in the 2013-14 academic year under the aegis of CT<sup>2</sup>. The first CT<sup>2</sup> Faculty Institute was a success. Thirty-two faculty members from 20 disciplines attended. Stephen Brookfield of the University of St. Thomas was the keynote presenter.

In addition to the above, CT<sup>2</sup> is also responsible for the administration of the ETS Proficiency Profile to all incoming freshmen and a large sample of seniors (eventually all seniors). By bookending the administration of the test in this manner, the progress of individual students can be tracked. In addition, the critical thinking section of the PP provides another measure of the progress of students in CT skills. In Fall 2013, the CT<sup>2</sup> office (with the assistance of several of the CT<sup>2</sup> Faculty Scholars and personnel from Institutional Research) tested 3288 incoming freshmen. In Spring 2014, 421 seniors were tested.



Quality Enhancement Plan (QEP) Committee



# MISSION & GOALS

*“I most liked the practical suggestions that could be implemented directly into my classes.”*

## MISSION

Clemson Thinks<sup>2</sup>, the University's Quality Enhancement Plan, is an ambitious experiment in critical thinking that will transform learning and teaching through second-year Critical Thinking (CT) Seminars, a cohort of CT faculty scholars, faculty development, rigorous assessment and scholarly research.

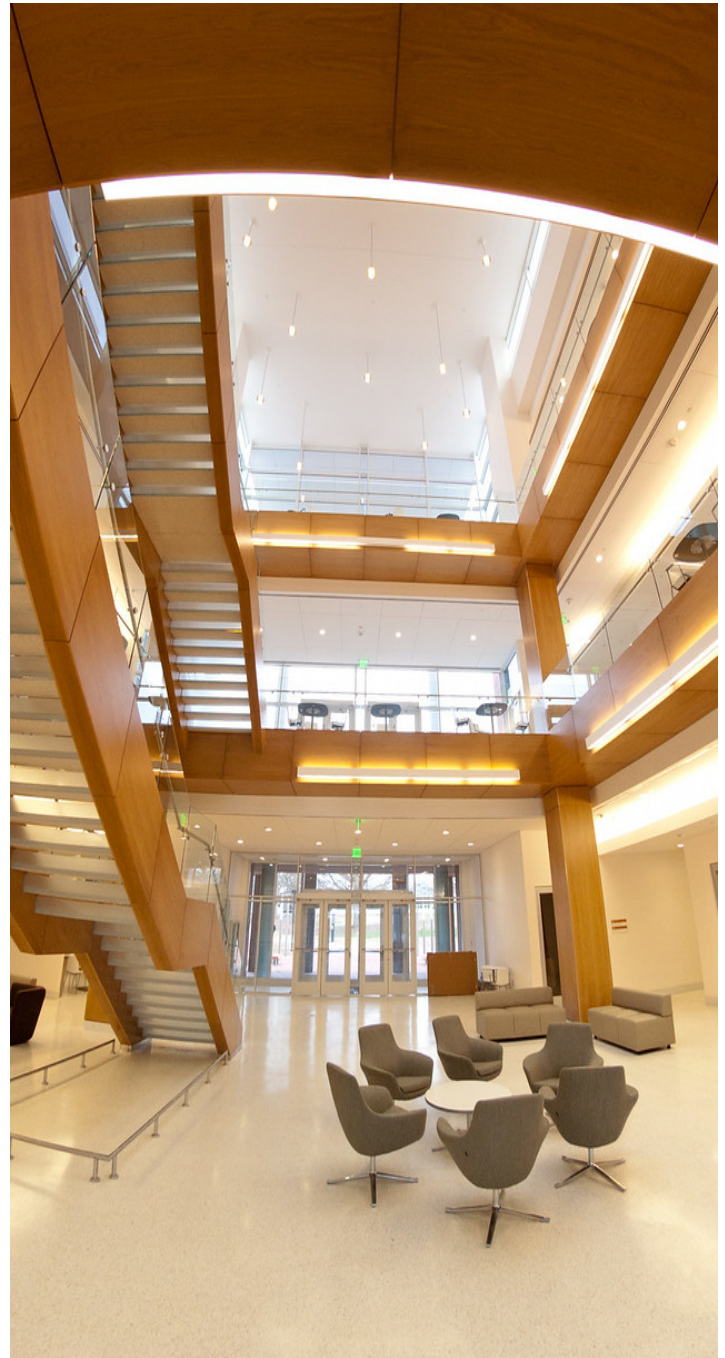
## GOALS

### 1. Student Critical Thinking Skills

To increase the critical thinking skills of Clemson University students.

### 2. Faculty Critical Thinking Skills

To increase the critical thinking pedagogical skills of faculty.



# OUTCOMES

## *Clemson University CAT Test Institutional Score: 2013-14 Academic Year*

	<b>N</b>	<b>MIN.</b>	<b>MAX.</b>	<b>MEAN</b>	<b>STD. DEV.</b>
<b>PRETEST</b>	203	5	33	17.64	5.4
<b>POST-TEST</b>	203	3	31	18.47	5.86

## *Clemson University CCTST Institutional Scores: 2013-14 Academic Year Pre-Test\**

<b>Skill/Attribute Name</b>	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>Standard Deviation</b>	<b>SE Mean</b>
<b>OVERALL</b>	272	19.1	19	4.9	0.3
<b>Analysis</b>	272	4.2	4	1.5	0.1
<b>Inference</b>	272	9.8	10	2.6	0.2
<b>Evaluation</b>	272	5.0	5	2.0	0.1
<b>Induction</b>	272	10.2	10	2.7	0.2
<b>Deduction</b>	272	8.9	9	2.9	0.2

# OUTCOMES

## *Clemson University CCTST Institutional Scores: 2013-14 Academic Year Post-Test\**

<b>Skill/Attribute Name</b>	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>Standard Deviation</b>	<b>SE Mean</b>
<b>OVERALL</b>	209	20.0	20	5.2	0.4
<b>Analysis</b>	209	4.2	4	1.6	0.1
<b>Inference</b>	209	10.4	11	2.6	0.2
<b>Evaluation</b>	209	5.4	5	2.2	0.2
<b>Induction</b>	209	10.6	10	2.8	0.2
<b>Deduction</b>	209	9.4	9	3.1	0.2

\* Students who spent less than 15 minutes or completed less than 60% of the test are excluded from these calculations.



# OUTCOMES

In our first official semester, Fall 2013 the following were offered:

<b>PSYC</b>	3100	003	Advanced Experimental Psychology
<b>BIOL</b>	2000	002	Biology In The News
<b>STS</b>	215	001	A Critical Approach to Scientific and Technological Revolutions
<b>MATH</b>	3010	002	Statistical Methods I
<b>MATH</b>	3010	003	Statistical Methods I
<b>PRTM</b>	229	001	Distributed Competency Integration in PRTM
<b>GEOL</b>	2700	001	Experiences in Sustainable Development: Water
<b>PSYCH</b>	3101	009 & 010	Advanced Experimental Psychology
<b>HORT</b>	3080	001	Sustainable Landscape Garden Design
<b>MATH</b>	3010	002	Statistical Methods I
<b>THEA</b>	2100	005	Theatre Appreciation

An overall enrollment of 412 students. Thus, 9 disciplines were represented.

# OUTCOMES

In Spring 2014 the following were offered:

<b>ANTH 3510/BIOL 3510</b>	001	Biological Anthropology
<b>BIOL 2000</b>	003	Biology in the News
<b>BIOL 2000</b>	002	Biology in the News
<b>CE 4910</b>	001	Civil Engineering Special Projects
<b>CSM 1500</b>	001	Construction Problem Solving
<b>CSM 1500</b>	002	Construction Problem Solving
<b>CU 2010</b>	001	Sustainability Leadership
<b>CU 2010</b>		Educational Technology
<b>ENGL 4400</b>	001	Literary Theory
<b>ENSP 2000</b>	001	Introduction to Environmental Science
<b>HLTH 2020</b>	002	Introduction to Public Health
<b>MATH 3190</b>	001	Introduction to Proof
<b>PHIL 1010</b>	003	Introduction to Philosophic Problems
<b>PSYC 3100</b>	700	Advanced Experimental Psychology
<b>PSYCH 3100</b>	600	Advanced Experimental Psychology
<b>SOC 2020</b>	001	Social Problems
<b>SOC 2020</b>	002	Social Problems
<b>SOC 4600</b>	001	Race and Ethnicity
<b>STS 2150</b>	001	A Critical Approach to the Global Challenge of Technological Revolution
<b>THEA 2100</b>	005	Theatre Appreciation
<b>THEA 2100</b>	008	Theatre Appreciation

# OUTCOMES

## Student Class Evaluations

TERM	QUESTION	Average of Score	Count of Answers
<b>Fall 2013</b>			
1308	The course provided me an opportunity to explore complex challenges.	4.18	142
1308	This course provided me an opportunity to analyze multi-dimensional problems.	4.16	140
1308	I have gained skills in extrapolating data and information from one conceptual context to others.	4.10	140
1308	I had an opportunity to synthesize alternative solutions to multi-dimensional challenges proposed during the course.	4.07	142
1308	I received feedback on my written and verbal communication throughout the course.	4.30	143

<b>Spring 2014</b>			
1401	The course provided me an opportunity to explore complex challenges.	4.23	233
1401	This course provided me an opportunity to analyze multi-dimensional problems.	4.32	235
1401	I have gained skills in extrapolating data and information from one conceptual context to others.	4.03	234
1401	I had an opportunity to synthesize alternative solutions to multi-dimensional challenges proposed during the course.	4.10	233
1401	I received feedback on my written and verbal communication throughout the course.	4.06	235

# OUTCOMES

## Student Class Evaluations

<b>Summer 2014</b>			
1405	The course provided me an opportunity to explore complex challenges.	5.00	5
1405	This course provided me an opportunity to analyze multi-dimensional problems.	5.00	5
1405	I have gained skills in extrapolating data and information from one conceptual context to others.	4.80	5
1405	I had an opportunity to synthesize alternative solutions to multi-dimensional challenges proposed during the course.	4.80	5
1405	I received feedback on my written and verbal communication throughout the course.	4.80	5

## Critical Thinking Tests

The assessment model for the  $CT^2$  seminars is based on multiple sources of data collection. One of the most important data collection methods is the pre- and post-testing of students enrolled in the  $CT^2$  seminars. The students are tested during the first week of class and again during the final week. Based on our research, we determined that two instruments: The Critical Thinking assessment Test (CAT) developed by Tennessee Technical University and the California Critical Thinking Skills Test (CCTST) developed by Insight Assessment were best suited to our needs.

Clemson University administered the CAT test to half the pilot courses in the fall semester of 2012 and the CCTST to the other half. We followed this same procedure for the pilot courses during the spring 2013 semester. During Fall 2013, we compared our results in: ease of administration, ease of scoring, quality of data, amenability to students, faculty buy-in, and other factors to determine a final assessment instrument for the program.

Although the CAT is an effective instrument for measuring critical thinking skills it has two major drawbacks in the context of  $CT^2$ : it is a paper and pencil test to which the instructor must devote two class periods (pre and post-test) and it must be scored manually by faculty members. One of the core principles of  $CT^2$  is that the progress of individual students must be tracked. Thus, scoring a sample of the CAT tests would not be acceptable. Further, the time and effort needed to score the tests manually would be prohibitive and would only increase as the program expanded. The CCTST, on the other hand, is automatically scored when the student completes the test. The student receives a report showing their performance in various aspects of critical thinking. The CCTST may be done in the classroom environment or as a homework assignment.

The CAT exam, in the context of  $CT^2$ , has not been found appropriate for our uses of



pre and post testing as described above. We are instituting two action plans to address this issue:

1. We will use the California Critical Thinking Skills Test (CCTST) exclusively in the 2014-15 academic year and thereafter. The CT<sup>2</sup> office will provide the CAT test instrument to instructors but it will not be used for the purposes of program assessment and the instructor is responsible for scoring the test.
2. A test scoring workshop will be formed in Fall 2014 from approximately 20 CT<sup>2</sup> faculty members to score the 2013-14 CAT tests. (O/O 1: Effective Testing and Artifact Collection)

## **Faculty Institute:**

Comments and responses from the survey of the 2013 Faculty Institute, discussions with attendees, and our observations have suggested to us improvements for the 2014 Institute. Some of the suggestions:

1. Spend more time on discussions among faculty to brainstorm ideas. Also use more time to discuss concrete strategies for the classroom and examples of good critical thinking assignments. Contrast good vs. bad (or not as good) assignments for teaching and assessing critical thinking.
2. I would give more breaks and provide active learning opportunities interspersed with lecturing.
3. Spread it out a bit more, invite fewer speakers, and allow for more dialogue. I felt like we were being rushed or cut off to get to the next speaker.

# USE OF RESULTS

4. Location more amenable to work and collaboration.
5. More teaching strategies and more chances to develop course materials. I also found the constant interruptions of the speakers was very distracting and made it difficult to follow their presentations.
6. I think the organization could have more effectively outlined the goals of institute from the beginning. I would have liked more teaching strategies and more chances to work on my syllabus and work with others at the institute.
7. Not enough opportunity to share ideas in small groups.

## Contributions to the Institution

Thirty-two faculty members from 20 disciplines received training in critical thinking pedagogy at the 2013 CT<sup>2</sup> Faculty Institute.

## Highlights

1. In the inaugural academic year of CT<sup>2</sup>, 2013-14, there were 32 classes in 15 disciplines with a total of 886 students offered under the aegis of CT<sup>2</sup>.
2. In the inaugural year of the CT<sup>2</sup> Faculty Institute, thirty-two faculty members from 20 disciplines received training in critical thinking pedagogy at the 2013 CT<sup>2</sup> Faculty Institute.

## Teaching Activities

There were 32 classes in 15 disciplines with a total of 886 students offered in the 2013-14 academic year under the aegis of CT<sup>2</sup>. Students in CT<sup>2</sup> classes get an additional set of 6 questions related to their perceived gains in critical thinking skills in the Student Evaluation of Instructors. The average of students responding to each of the six questions was 4 (out of 5) or better.

## **Research and Scholarly Activities**

Data collection of effective critical thinking pedagogy is being collected from the pre and posttest performance and artifact collection.

## **Challenges**

1. Move to 100% pre and post testing with the California Critical Thinking Skills Test (CCTST) instrument.
2. Develop an effective and efficient system for scoring the critical thinking artifacts.
3. Score the 2013-14 CAT tests.
4. Incorporate suggestions/findings from 2013 Faculty Institute into 2014 Institute.
5. Keep up enthusiasm and energy and grow program.



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