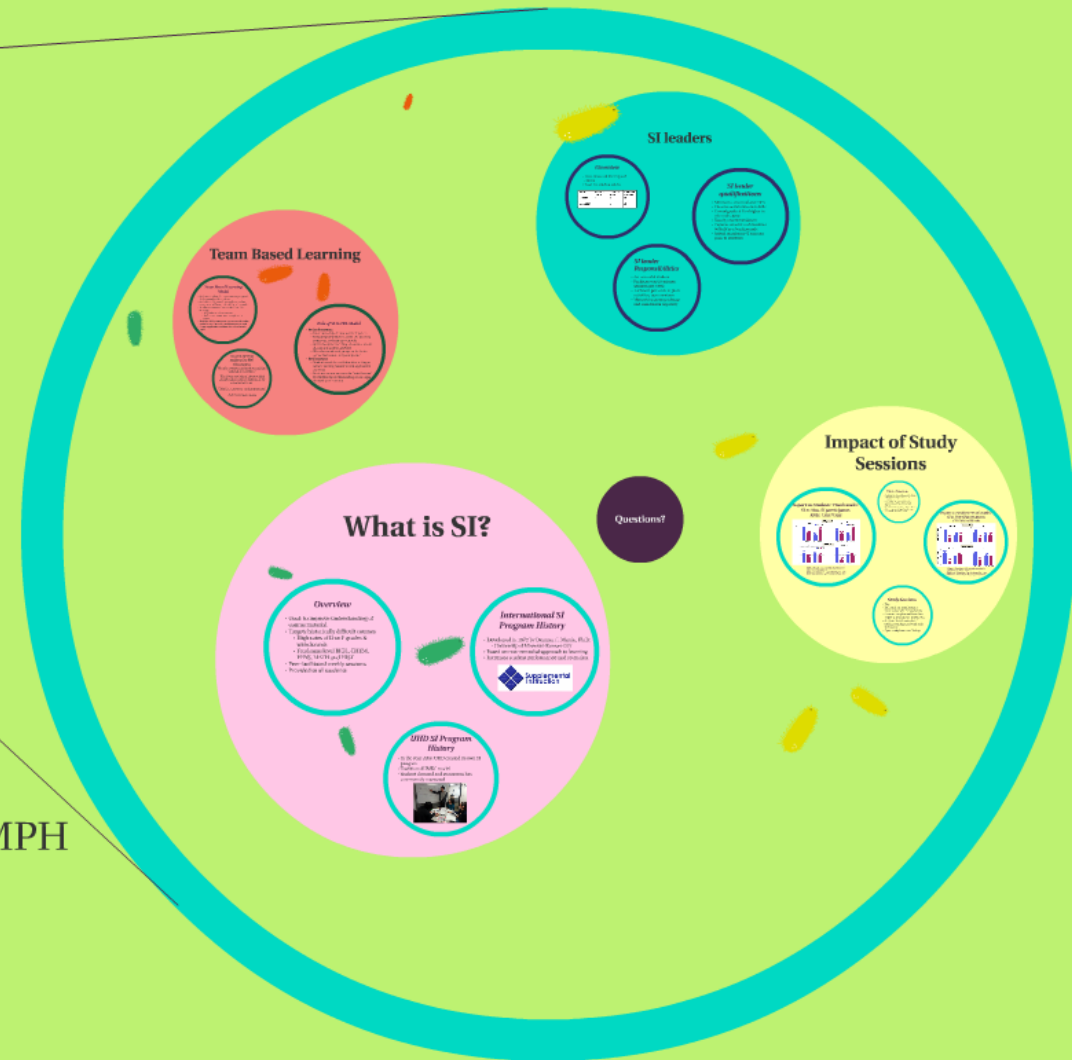# The Role of Supplemental Instruction in the Classroom and Its Impact on Student Engagement and Performance

Esmeralda Martinez, Evelyn Valdez, and Tanu Uppal, MPH
Innovative Teaching and Learning Symposium
UH Main Campus
April 15, 2016

What is SI?

Overview

- Goal: to improve understanding of course material
- Targets historically difficult courses
  - High rates of D or F grades & withdrawals
  - Freshman level BIOL, CHEM, PHYS, MATH and HIST
- Peer-facilitated weekly sessions
- Provided to all students

International SI Program History

- Developed in 1973 by Deanna C. Martin, Ph.D.
  - University of Missouri-Kansas City
- Based on non-remedial approach to learning
- Increases student performance and retention

Supplemental Instruction

UHD SI Program History

- In the year 2000, UHD created its own SI program
- Traditional UMKC model
- Student demand and awareness has consistently increased

International SI Program History

- Developed in 1973 by Deanna C. Martin, Ph.D.
  - University of Missouri-Kansas City
- Based on non-remedial approach to learning
- Increases student performance and retention

UHD SI Program History

- In the year 2000, UHD created its own SI program
- Traditional UMKC model
- Student demand and awareness has consistently increased

Overview

- Goal: to improve understanding of course material
- Targets historically difficult courses
  - High rates of D or F grades & withdrawals
  - Freshman level BIOL, CHEM, PHYS, MATH and HIST
- Peer-facilitated weekly sessions
- Provided to all students
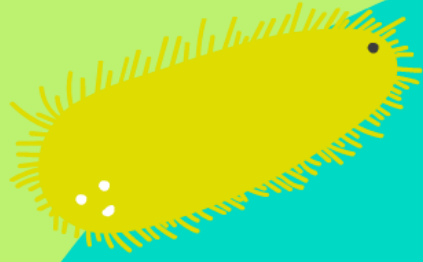
SI leaders

Overview

- Have mastered the targeted course
- Lead the study sessions

Semester	Number of Courses	Number of Sections	Number of SI leaders
Fall 2015	17	39	25
Spring 2016	20	41	27

SI leader qualifications

- Minimum 3.0 cumulative GPA
- Effective communication skills
- Earned grade of B or higher in selected course
- Faculty recommendation
- Capacity to work with students with diverse backgrounds
- Attend mandatory SI training prior to semester

SI leader Responsibilities

- Act as model student
- Facilitate two 60-minute sessions per week
- 1-2 hours per week to plan activities, exam reviews
- Meet with course professor and coordinator regularly

Overview

- Have mastered the targeted course
- Lead the study sessions

Semester	Number of Courses	Number of Sections	Number of SI leaders
Fall 2015	17	39	25
Spring 2016	20	41	27

SI leader qualifications

- Minimum 3.0 cumulative GPA
- Effective communication skills
- Earned grade of B or higher in selected course
- Faculty recommendation
- Capacity to work with students with diverse backgrounds
- Attend mandatory SI training prior to semester

SI leader Responsibilities

- Act as model student
- Facilitate two 60-minute sessions per week
- 1-2 hours per week to plan activities, exam reviews
- Meet with course professor and coordinator regularly

Team Based Learning

Team Based Learning Model

- Students are placed into permanent groups at the beginning of the semester
- Students are expected to complete a reading assignment following a detailed reading guide
- Readiness assurance process (RAP) in two sections:
  - iRAT: Individual assessment
  - tRAT: same assessment, completed as a group
- Based on RAP performance, lecturers will tailor a mini-lecture towards troublesome concepts
- Group application activities based on lecture topics

Role of SI in TBL Model

- **In the classroom:**
  - Extension of the instructor during class
  - Knowledgeable of class activities, learning outcomes, and course materials
  - Aid in the understanding of course content during application activities
  - SI leaders work with groups to facilitate active discussion and participation
- **In SI sessions:**
  - Students work in a collaborative setting to review learning outcomes and application activities
  - Sessions are not meant to be "mini-lecture" but further the understanding of concepts through peer learning

Impact of SI on Students in TBL classrooms

"The SI is awesome and made me feel like I could ask her anything"

"The SI was very helpful always walked around making sure we understood the concepts/activities"

"Helpful to answer my in class questions"

-Fall 2015 SI participants

Team Based Learning Model

- Students are placed into permanent groups at the beginning of the semester
- Students are expected to complete a reading assignment following a detailed reading guide
- Readiness assurance process (RAP) in two sections:
  - iRAT: Individual assessment
  - tRAT: same assessment, completed as a group
- Based on RAP performance, lecturers will tailor a mini-lecture towards troublesome concepts
- Group application activities based on lecture topics

Role of SI in TBL Model

- **In the classroom:**
  - Extension of the instructor during class
  - Knowledgeable of class activities, learning outcomes, and course materials
  - Aid in the understanding of course content during application activities
  - SI leaders work with groups to facilitate active discussion and participation
- **In SI sessions:**
  - Students work in a collaborative setting to review learning outcomes and application activities
  - Sessions are not meant to be "mini-lecture" but further the understanding of concepts through peer learning

Impact of SI on Students in TBL classrooms

"The SI is awesome and made me feel like I could ask her anything"

"The SI was very helpful always walked around making sure we understood the concepts/activities"

"Helpful to answer my in class questions"

-Fall 2015 SI participants

Impact of Study Sessions
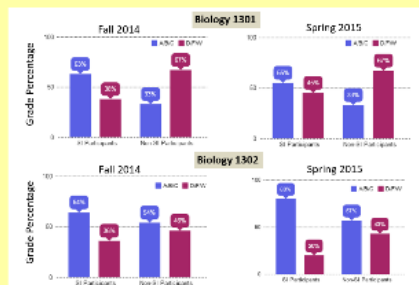
Future Directions
- Continue to increase grades and reduced withdrawal through collaborative learning
- Implement the TBL model in other courses such as Math, History, and Physics
- Expand the SI program to other courses
- Offer SI courses to upper level courses (Sophomore and Junior level)

Impact on Students' Final Grades: SI vs Non-SI participants BIOL 1301/1302
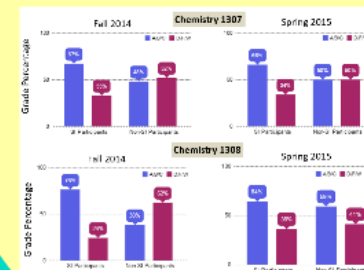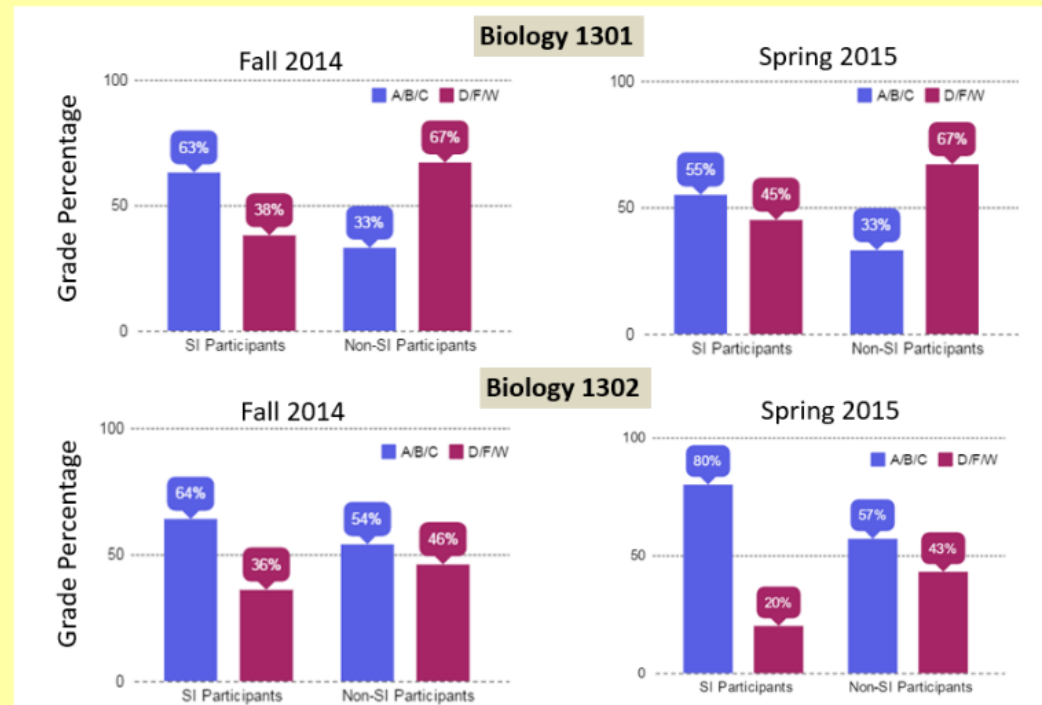

Figure 1. Biology 1301/1302 grade distribution for SI and non-SI participants.
BIOL 1301: Fall 2014 (n =233) Spring 2015 (n = 145)
BIOL 1302: Fall 2014 (n=125) Spring 2015 (n=119)

Impact on Students' Final Grades: SI vs Non-SI participants CHEM 1307/1308

Figure 2. Chemistry 1307/1308 grade distribution for SI and non-SI participants.
CHEM 1307: Fall 2014 (n =286) Spring 2015 (n = 228)
CHEM 1308: Fall 2014 (n=114) Spring 2015 (n=178)

Study Sessions
- Free
- Informal: no appointment necessary and not mandatory
- Sessions are planned based on majority of students' availability
- Sessions have been offered online, evenings and weekends in the past
- Open study hours on Fridays

Study Sessions

- Free
- Informal: no appointment necessary and not mandatory
- Sessions are planned based on majority of students' availability
- Sessions have been offered online, evenings and weekends in the past
- Open study hours on Fridays

Impact on Students' Final Grades: SI vs Non-SI participants BIOL 1301/1302

Figure 1. Biology 1301/1302 grade distribution for
SI and non-SI participants.
BIOL 1301: Fall 2014 (n =233) Spring 2015 (n = 145)
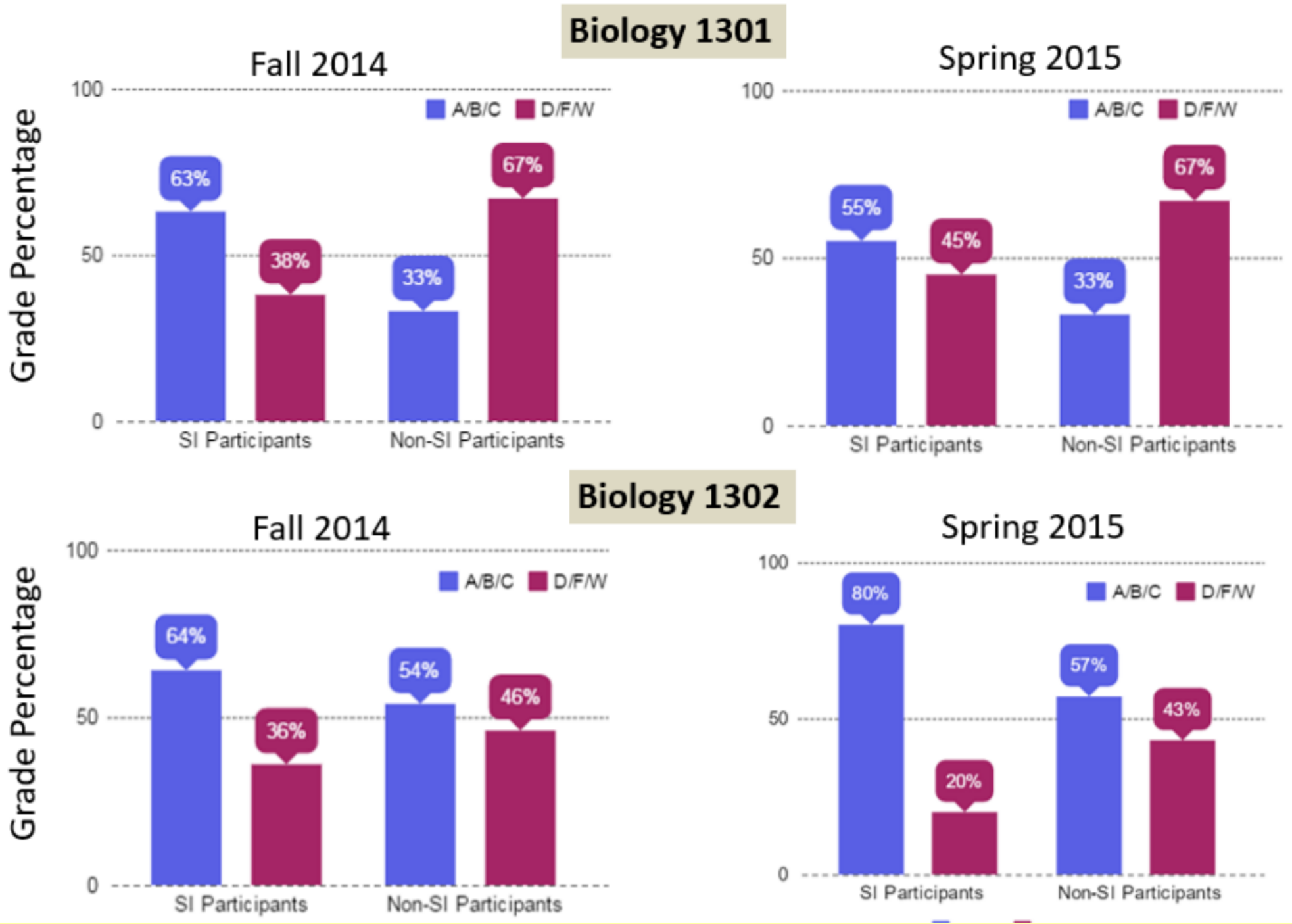BIOL 1302: Fall 2014 (n=125) Spring 2015 (n=119)

Biology 1301

Fall 2014

Grade Percentage

A/B/C   D/F/W

63%   38%
33%   67%

SI Participants   Non-SI Participants

Spring 2015

A/B/C   D/F/W

55%   45%
33%   67%

SI Participants   Non-SI Participants

Biology 1302

Fall 2014

Grade Percentage

A/B/C   D/F/W

64%   36%
54%   46%

SI Participants   Non-SI Participants

Spring 2015

A/B/C   D/F/W

80%   20%
57%   43%

SI Participants   Non-SI Participants

Figure 1. Biology 1301/1302 grade distribution for

ther
and

r courses
courses

Impact on Students' Final Grades:
SI vs Non-SI participants
CHEM 1307/1308

Figure 2. Chemistry 1307/1308 grade distribution for SI and non-SI participants.

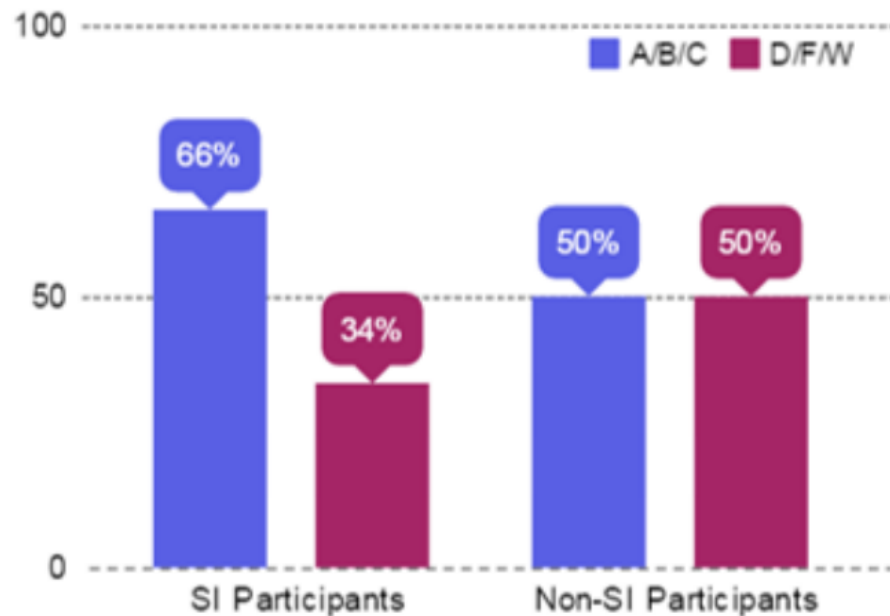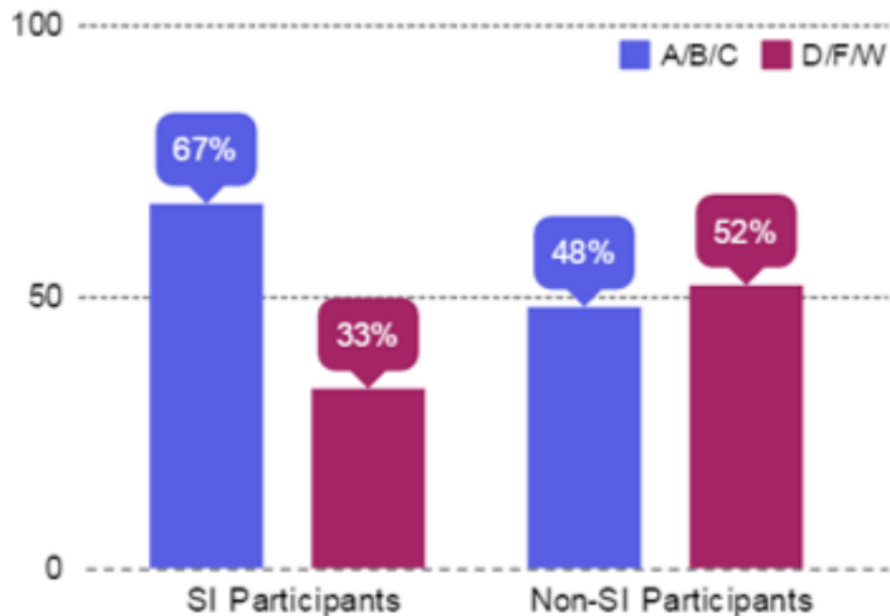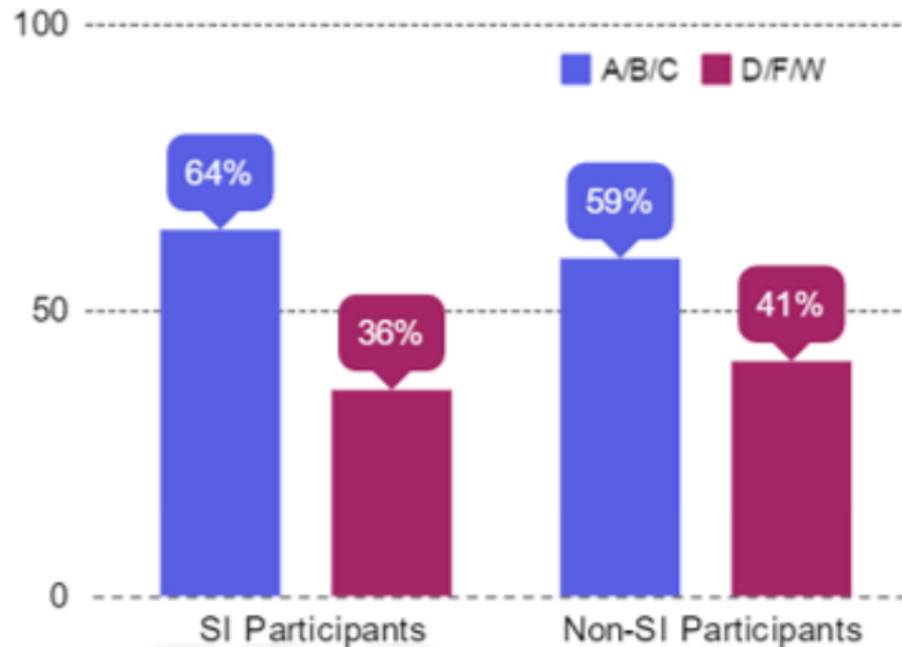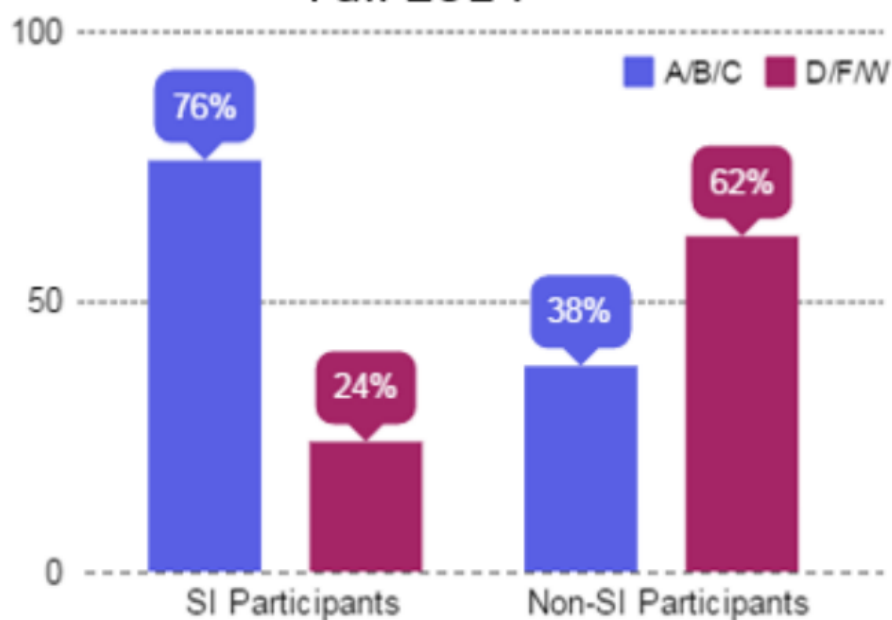*CHEM 1307: Fall 2014 (n =286) Spring 2015 (n = 228)*
CHEM 1308: Fall 2014 (n=114) Spring 2015 (n=178)

Future Directions

- Continue to increase grades and reduced withdrawal through collaborative learning
- Implement the TBL model in other courses such as Math, History, and Physics
- Expand the SI program to other courses
- Offer SI courses to upper level courses (Sophomore and Junior level)