

STaR Academy: Exploring the impacts of metacognitive interventions on faculty and students

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Scholarship of Teaching and Learning Grant Proposal
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ABSTRACT

Initiated in Summer 2021, the Top 40 STaR Academy is a faculty professional development workshop with a focus on exposing faculty to practices that will improve student's transition to and retention (STaR) at the university. Approximately 70 faculty have participated in the STaR Academy since its inception. Faculty participants are expected to revise their courses to instill a growth mindset, teach metacognitive learning strategies, and create motivating learning environments. To do so, the academy's central instrument is Dr. Sandra McGuire's *Teach Students How to Learn: Strategies You Can Incorporate into Any Course to Improve Student Metacognitions, Study Skills, and Motivation* (2015). Faculty implement the strategies outlined in the book with the goal of improving academic success and retention rates and decreasing equity gaps. In this project, our aim is to determine to what extent faculty implement STaR changes in their classrooms. More specifically, this project explores the short- and long-term effects of these strategies on STaR Academy faculty and students. We propose a mixed methods approach with online surveys and one on one interviews to learn how faculty implement the strategies in the McGuire text and how these changes support student's transition and retention in their first year. Our results will inform and refine future iterations of the STaR Academy. The ultimate goal is to transform the culture of teaching and learning at Charlotte as more faculty effectively implement these best practices.

BUDGET REQUEST PAGE

BUDGET: Request by budget category. Joint proposers must select one PI to be the lead and one department to receive this allocation.

Lead Principal Investigator: Jennifer Byrd

Principal Investigator 800#: 800091040

Title of Project: STaR Academy: Exploring the impacts of metacognitive interventions on faculty and students

Allocate operating budget to Department of: Interdisciplinary Studies

Fiscal Year One (January 15, 2023 to June 30, 2023)		
Faculty Stipend	Paid directly from Academic Affairs fund on May 15, 2023	3 faculty stipends: 2 at \$3850 1 at \$1000 Total = \$8700
911250	Graduate Student Salaries	
911300	Special Pay to Faculty other than Grantee	
915000	Student (Undergraduate or Graduate) Temporary Wages	
915900	Non-student Temporary Wages	
920000	Honorarium (Individual(s) not with UNCC)	
921160	Subject Incentive Fee	
925000	Domestic Travel	
926000	Foreign Travel	
928000	Communication and/or Printing	
930000	Supplies	
942000	Computing Equipment	
944000	Educational Equipment	

951000	Other Contracted Services	
Total Amount Requested		\$8,700

BUDGET NARRATIVE

A total of \$8,700 is requested to support this project. A stipend of \$3,850 will be paid to Principal Investigators (PIs) Jennifer Byrd and Ellen Wisner and \$1000 to Tonya Bates in the summer of 2023 to analyze data. After this analysis, these study results will likely be used to generate a journal article for publication. See Proposal Narrative and timeline of the study for details.

PI Bates is not teaching in Summer 2023. PI Byrd and PI Wisner will both be teaching in only one summer session, and PI Fuentes in both summer sessions.

UNIVERSITY OF NORTH CAROLINA
CHARLOTTE
COLLEGE OF LIBERAL ARTS & SCIENCES

Office of the Dean

December 1, 2022

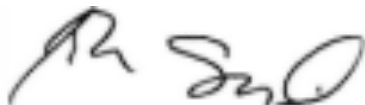
Dear Scholarship of Teaching and Learning Grant Selection Committee Members:

I am writing in full support of the Scholarship of Teaching and Learning grant proposal, “STaR Academy: Exploring the impacts of metacognitive interventions on faculty and students”, submitted by Ms. Tonya Bates, Ms. Jennifer Byrd, Dr. Catherine Fuentes, and Dr. Ellen Wisner. The College of Liberal Arts and Sciences value student success and one way we achieve this is through professional development opportunities for our faculty. In their proposal, this multi departmental group aims to look at these principles while exploring the degree of faculty implementation of STaR Academy principles as well as the short- and long-term effects those principles are having on faculty and students.

This project has the potential to reach all departments within the College of Liberal Arts & Sciences to focus on their goal of helping students develop metacognitive learning strategies, which support their understanding and learning. Their findings can help pave the way for more successful and wider spread implementation of the STaR Academy throughout the University.

We fully support the efforts of each of the departments represented in this endeavor in understanding what impact the STaR Academy interventions are having on faculty and students and what factors are prohibiting the implementation of these interventions by faculty.

Sincerely,



John Smail, Interim Dean
College of Liberal Arts & Sciences

PROJECT NARRATIVE

A. SPECIFIC AIMS

Purpose, Rationale and Impact

First time in college (FTIC) students have an incredibly short time to learn how to navigate the increased rigor demanded in college before their academic success is jeopardized. Many do not realize that previous strategies that served them well will no longer work until it is too late. The first sign of trouble happens weeks into the fall semester when students do not perform as well on an exam. If students cannot quickly identify where they went wrong and develop appropriate strategies, grades can suffer, leading some students to be placed on academic probation. The largest cohort placed on academic probation at UNC Charlotte are FTIC students after their first semester. If students continue to struggle academically, they may be suspended at the end of their first year. Others who are technically eligible to return, may opt not to, given their poor academic performance (Katreovich and Aruguete 2017, Martin 2017). Indeed, nationally up to $\frac{1}{3}$ of college students do not return for a second year (U.S. News & World Report 2014).

Given the prominent place that student success has in our university strategic plan, *Shaping What's Next*, it is imperative that Charlotte helps FTIC students successfully transition to the university. One of the strategies is a faculty development program called the Top 40 STaR Academy. This academy uses the text *Teach Students How to Learn* (McGuire, 2015) to equip faculty with interventions that will explicitly teach students the skills, strategies and resources that are correlated with college success and to instill students with a growth mindset and increase student motivation to learn. In essence, this academy seeks to take parts of the hidden curriculum and make sure they are visible to all students, not just the ones who “figure it out” (Conefrey 2021, Lynch 2006).

Faculty involved in this proposal found the STaR training impactful and have implemented interventions in their courses. Several have found that the training has led to changes in their overall teaching philosophy and teaching practices in all of their courses. However, we have anecdotal evidence that not all STaR participants have implemented interventions. Through this study, we seek to better understand how the STaR training impacted faculty participants, and to identify any obstacles preventing faculty from implementing their interventions.

Preliminary data collected and observations from our own courses indicate that students respond well to the interventions developed in the STaR Academy. Students appear excited and interested in learning about these metacognitive strategies. In addition, many have reported that they found success with the strategies. Based on this preliminary evidence, we believe we will find that these interventions had a positive impact on student behavior, motivation, and success.

Determining the impact and effectiveness of the STaR Academy, and the interventions designed as a part of this academy, will allow us to adapt both the training and interventions to be more successful in the future. More broadly, these findings will be useful to other educators at UNC Charlotte and more widely to inform similar professional development opportunities and student interventions.

Specific Objectives

The overarching goal of our research is to evaluate the impact of the STaR Academy. First, we seek to understand how/ participation in the STaR Academy has led to changes in participants' teaching practices. Are faculty utilizing the interventions they learned about? Which interventions are they using and why? Which ones are they not using? We also seek to understand how and to what extent students are utilizing these strategies and whether they are helping students succeed academically.

Our research will focus on the thirty-three strategies in Appendix C: Compilation of Strategies for Instructors of *Teach Students How to Learn* (McGuire, 2015). Faculty were tasked with implementing some of these strategies during the semester following their participation in the STaR Academy.

Research Questions

1. After participating in the STaR academy, which of the 33 strategies do faculty implement?
 - a. Why do faculty select these interventions and not others?
 - b. How do faculty implement these strategies?
2. What are faculty perceptions of the strategies?
 - a. Do faculty notice a difference in student performance and/or learning after they introduce these strategies?
 - b. What feedback do faculty receive from students about strategies?
3. How does teaching students these strategies shape student success?
 - a. Are students utilizing the strategies? If not, why?
 - b. What are the benefits students report from using these strategies?

B. LITERATURE REVIEW

Transition to college

Graduating high school and starting college is a major life transition. While some FTIC students easily make this adjustment, many struggle to navigate life as a college student. There are a number of reasons why students have difficulty adapting. One major adjustment students struggle with is meeting the academic rigor of college. Students find the strategies and skills that served them well in high school do not help them excel in college. Indeed, success in college often requires different study skills, learning strategies, organization/planning and academic support than students used in high school (Conefrey 2021; Eagan et al. 2013; Edwards 2018; McGuire, 2015; Turner and Thompson 2014).

What is metacognition?

In 2015 Saundra McGuire published her many years of experiences on teaching undergraduates chemistry in *Teach Students How to Learn: Strategies you can incorporate into any course to improve student metacognition, study skills, and motivation*. She based her findings on real student interactions and included practical strategies. Metacognition is described as an awareness of how one learns or thinking about how one learns and sounds complex to understand. McGuire states, “the information is not rocket science; anyone can teach students these techniques. This book will show you how.” (2015)

What about students and metacognition?

It has been established that students who employ metacognitive strategies in their courses are more successful than those who do not. One study examined first-year and transfer students in a general chemistry course where students were provided a 50-minute seminar on metacognition. Attendance at this one brief seminar resulted in students earning one letter grade higher on the final course grade as compared to students in the same course who did not attend (Cook, 2013). Further supporting this notion that students benefit from learning metacognitive strategies, Zhao (2014) noted, "All respondents agreed that the learning strategies introduced via the intervention had helped them become more effective learners."

What about faculty and metacognition?

After participating in professional development workshops, faculty often do not implement changes and best practices that they learned about. This may be because there is little time to reflect or often there is little time in the workshop event to actively work on developing products. We know typically that faculty who receive information about effective practices from trusted colleagues are more likely to adopt these practices (Daly, 2010). Many articles that mention faculty are quite simply a “how-to guide” to implementing these interventions (Stanton, 2021 and Voorhees, 2022, for example) rather than examining the impacts on faculty or barriers to implementation. There seems to be a gap in the literature with respect to how utilizing metacognition impacts faculty.

C. METHODS

Methodological approach

We have chosen a mixed methods approach to address our research questions. Qualtrics surveys will give us an abundance of general data. In-depth interviews will provide us the opportunity to disengage those complex factors (e.g., differential success based on different types of classes, etc.).

Faculty implementation

1. Recruit faculty via email to complete a Qualtrics survey regarding their experiences of implementing STAR interventions in their classes.

- Survey STaR faculty to determine to what extent they introduced metacognitive intervention to their students and any factors that prohibited their doing so.
- Survey STaR faculty to determine if the metacognitive intervention influenced faculty teaching in positive ways (introducing UCAE, guaranteeing students are able to improve test scores, implementing what they learned in other courses, etc.)
- This survey will also ask participants to follow up with in-depth one-on-one interviews.

2. Conduct in-depth, one-on-one follow-up interviews with faculty.

Student response

3. Recruit students from classes with faculty who implemented STAR interventions. Students will be recruited via email to complete a Qualtrics survey regarding their experiences with these interventions.

- Survey students' responses to determine academic successes (retention rates) and social successes (growth mindset, motivation).
- Survey students to determine the impact of intervention strategies on students of varying demographics/students who have been marginalized

4. Conduct in-depth, one-on-one interviews with students.

Data analysis and impact

5. Conduct mixed-method analysis to determine which interventions are effective, obstacles to faculty implementation of STAR interventions, and factors associated with student success in making positive academic changes.

6. Design a workshop for faculty to provide evidence-based strategies of improving student learning outcomes and success.

Possible limitations

One obstacle to interpreting our data is the ability to disentangle the complex and nuanced factors that shape a faculty member's success and a student's success based on these interventions. Qualtrics surveys will give us an abundance of general data. In-depth interviews will provide us the opportunity to disengage those complex factors (e.g., differential success based on different types of classes, etc.).

D. EVALUATION

Answering faculty implementation research questions 1&2 with Qualtrics survey

Researchers will obtain the name and emails of STaR Academy faculty participants (n=70). The researchers will send a request for participation via email with a Qualtrics survey.

- The survey will measure common sociodemographic information of the faculty participant (e.g., age; race/ethnicity; gender) and basic faculty information (how many STaR Academy trainings the participant has taken part in; how many other types of teaching trainings the participant has taken part in, and how many years the participant has been teaching).
- A 5-point Likert scale will measure the degree to which the faculty member feels that the intervention(s) have had an overall positive effect on students.
- Participants will then be asked a series of open-ended questions to assess what factors have affected their participation in STAR-based interventions. Sample questions include:
 - Did you signal or or teach a growth mindset? If so, how?
 - Did you teach students metacognitive learning strategies? If so, how?
 - Did you refer students to appropriate academic support? If so, how?
 - What is your perception of how the intervention went?
- We will also ask participants to volunteer for a follow-up, in-depth interview. We estimate that we will reach saturation after approximately 15 faculty interviews.

Answering faculty implementation research questions 1&2 with in-depth interviews

One-on-one interviews with faculty will allow the researchers to better understand and elaborate on data gathered through the surveys. Being able to discuss these topics one-on-one will generate a greater amount of detail while allowing the interviewer to ask for clarification and elaboration not easily obtained through the surveys (e.g., what obstacles faculty may face in implementing evidence-based interventions in different types of classes, how we might overcome those obstacles, how successful faculty found ways to use interventions in meaningful ways that others might borrow, etc.). Interviews will be audio-recorded with permission.

Answering student response research question 3 with Qualtrics survey

We will obtain the emails and names of students who have taken or are taking classes with those faculty members who have implemented STaR interventions. These students will be sent a recruitment email with a Qualtrics survey.

- This survey will contain questions to gather demographic data (e.g., race/ethnicity, gender, year/level; financially insecure or not)
- Students will then be asked open-ended questions about if they were exposed to interventions, what types of interventions, to what degree, ways in which they feel these interventions helped or did not help (in that particular class as well as in others). Sample questions include:
 - Are you utilizing metacognitive interventions? If not, why?
 - What are the benefits you gained by using these strategies?

- Questions from the “Effective Learning Strategies Survey” in Zhao et al. 2014 may be used to determine which learning strategies students utilized. Students will answer one scale regarding their behaviors prior to interventions and another on how/if their behaviors changed since the interventions.
- We will also ask participants to volunteer for a follow-up, in-depth interview. We estimate that we will reach saturation.

Answering student response research question 3 with in-depth interviews

We anticipate rich data from the student surveys, but recognize limitations to these surveys. Following up with students one-on-one will allow us to ascertain a depth of information that would be too complex to measure via Qualtrics. Here students will be asked the same questions as in the Qualtrics survey, but with much more depth and clarification. Examples are: Were there some classes where you learned interventions that you preferred or found more helpful than others? Did these help in all types of classes or just some? What was it about these strategies that you thought helped? Interviews will be audio-recorded with permission.

Data analysis and impact

Answers from demographic data from faculty and students will be analyzed using descriptive statistics to determine the percentages of faculty/students reporting particular data. These demographic factors will be correlated with the coded data from open-ended questions. Researchers will create two datasets (one for faculty and one for student) to report emerging themes drawn from open-ended questions.

Based on transcripts created from the audio recordings of faculty and student in-depth interviews, the researchers will use a combination of inductive/open and deductive/closed text analysis approaches (Bernard, 2011). Check-coding with two independent coders should result in statistically significant consistency (intercoder reliability equals the number of agreements divided by the number of agreements plus disagreements (Miles, Huberman, and Saldaña, 2014). Intracoder validity will be verified by the coder recording the same text with any discrepancies being resolved by a third party.

These methods will allow us to identify and parse what aspects of the interventions were most impactful for faculty and students. Subsequently, this evidence will be used to inform future professional development opportunities and student interventions.

E. KNOWLEDGE DISSEMINATION

This research will be disseminated on and off campus. The results of this research will be shared with campus stakeholders. First, the results will be shared with future iterations of the STaR Top 40 academy. We will also present the results at the Office of Assessment and Accreditation’s annual Faculty Showcase. We anticipate sharing these initiatives outside of UNC Charlotte by presenting at the following conferences: AAC&U

conferences on general education and /or transforming STEM, and at the annual meeting of the Undergraduate Education at Research Universities. Finally, we plan to draft a manuscript for the *Journal of Faculty Development*.

F. HUMAN SUBJECTS

If our proposal is funded, we will submit IRB approval. The principal investigators have current/in-process CITI certifications.

G. EXTRAMURAL FUNDING

While no extramural funding is being sought, the results from this study may be used as a pilot study for future funding.

The Office of Undergraduate Education is providing funds for a graduate student to support the project during the summer.

H. TIMELINE

Spring 2023	<ul style="list-style-type: none">• Survey participants• Conduct in-depth interviews with participants
Summer 2023	<ul style="list-style-type: none">• Process and analyze data• Share findings of research
Fall 2023	<ul style="list-style-type: none">• Disseminate findings

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