INNOVATION, DISCOVERY, EXPLORATION, AND ANALYSIS—IDEA

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Quality Enhancement Plan

Southern Association of Colleges and Schools Commission on Colleges

Texas State University

2021

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Quality Enhancement Plan

Innovation, Discovery, Exploration, and Analysis (IDEA)

Texas State University

Dates of the Virtual On-Site Review
March 30 –April 1, 2021

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I. EXECUTIVE SUMMARY

I. Executive Summary

Innovation, Discovery, Exploration, and Analysis (IDEA) is the theme of the Quality Enhancement Plan (QEP) at Texas State University. The plan includes three goals, each with two student learning outcomes. These outcomes are supported with discussion of actions and a corresponding description of the organizational structure and resources necessary to achieve the outcomes, as well as an assessment plan to determine the effectiveness of the QEP. In addition, the plan includes six main initiatives which are designed to organize and implement the actions denoted in the plan.

The three interrelated goals of the QEP are (I) to assist undergraduates in gaining awareness of research and ethical research practices, (II) to help students to synthesize research, and (III) to enable students to produce a research or creative project. The goals are accomplished through achieving the following six student learning outcomes in which students will (1) recognize the utility of research, inquiry, or creative expression; (2) identify and describe ethical aspects of research, inquiry, or creative expression; (3) analyze a body of research, inquiry, or creative expression that they have collected; (4) develop a research question or problem derived from the body of research, inquiry, or creative expression that they have analyzed; (5) implement a research/creative experience appropriate to their discipline either by contributing to a faculty member's research experience or engaging in an independent research experience with a faculty mentor outside of the classroom; and (6) communicate the results from their mentored research/creative experience.

Initiatives designed to achieve the goals include (1) an IDEA Center to coordinate, promote, and evaluate online tutorials and workshops on the ethics and utility of research, research classes, an informational event and showcase on undergraduate research as well as training, outreach, and collaborations; (2) two courses: RES 3399: Research and Creative Expression, an interdisciplinary overview of research, inquiry, and creative expression; and RES 4399: Mentored Research and Creative Expression, a directed research experience in which students either contribute to a faculty member's research experience or engage in an independent research experience with a faculty member; (3) an Undergraduate Research Forum that brings together students and faculty as well as potential donors and employers actively involved in research experiences across Texas State's two campuses; (4) a Research, Inquiry, and Creative Expression (RICE) Showcase that provides students enrolled in RES 4399 as well as others across both campuses the opportunity to present and receive awards for their faculty-mentored research/creative activity in performance, oral platform, or poster format; and both (5) Student Ambassadors and (6) Faculty Liaisons: respectively comprised of students with requisite research experience and faculty experienced in working with undergraduates on research projects. Both student ambassadors and faculty liaisons serve as Undergraduate Research Forum presenters, and as promoters of the IDEA Center's other initiatives and efforts.

The foundation of the plan is the result of a multi-staged topic selection process resulting in broad-based support from students, faculty, and staff across the university. Selection of the topic of undergraduate research is further supported by empirical evidence, research on best practices, and initiatives at peer institutions. Additionally, Texas State's leadership has allocated physical space and sufficient funding for the plan to succeed. The impact of the plan including student learning, will be assessed through quantitative and qualitative methods using mainly direct measures by the IDEA Assessment Team under the direction of the assessment coordinator.

II. FOCUS OF THE QEP

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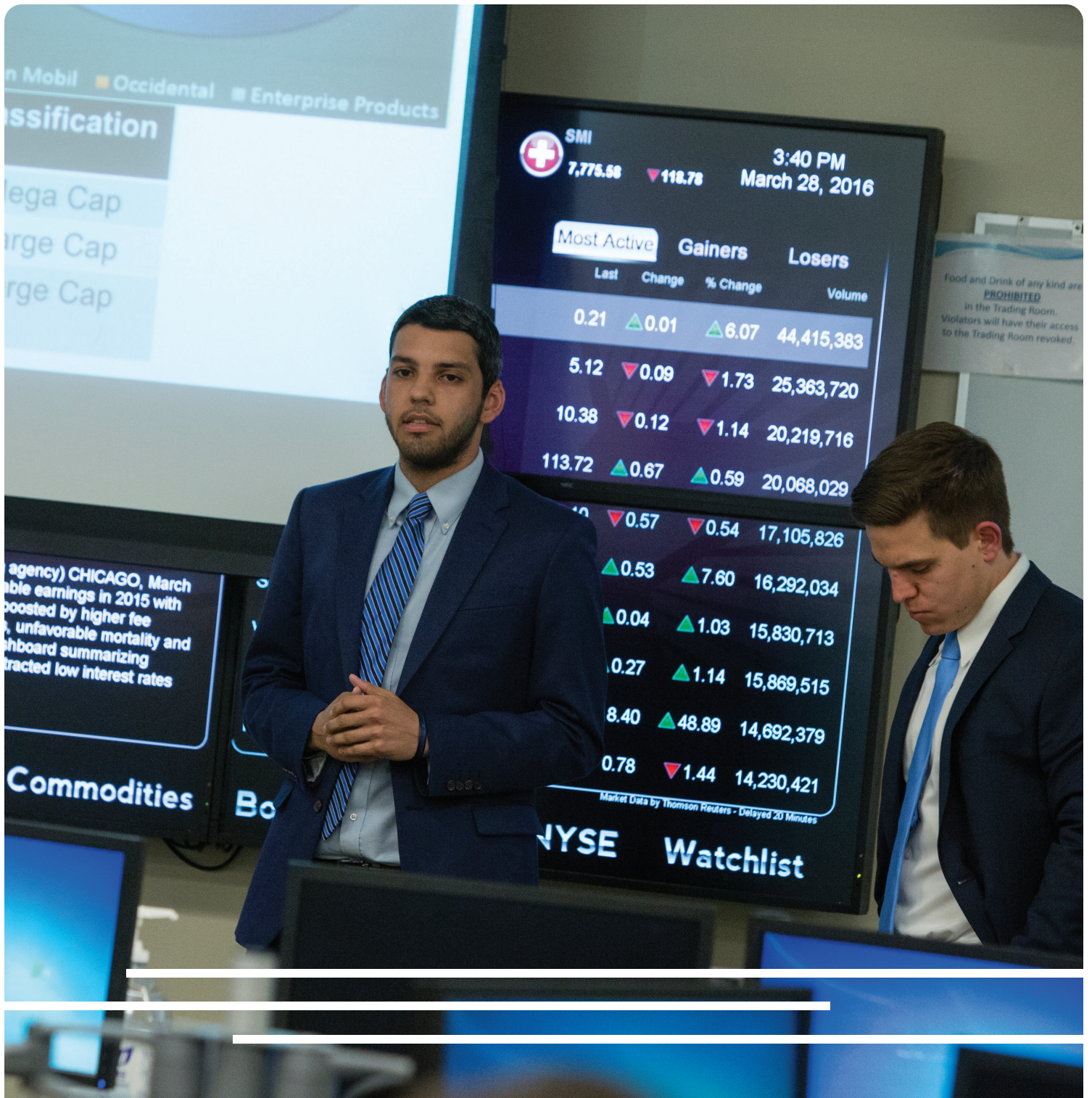
II. Focus of the QEP

Framework

The theme of Texas State University's Quality Enhancement Plan (QEP) is undergraduate research, more specifically the creation of opportunities for undergraduates from all academic disciplines to engage in research while also creating a uniform pathway with different possible starting points for the undergraduate research experience to unfold. Though numerous themes were nominated through a selection process, undergraduate research was chosen because of the clear need for enhanced undergraduate experiences in research. A variety of research studies which document the need for enhanced undergraduate research opportunities will be outlined below. In addition, surveys of Texas State undergraduate students measuring self-reported behaviors and "good practices" reveal that the percentage of students participating in research with faculty is significantly lower than other comparable institutions (CIRP, 2016; NSSE, 2019; Texas State University Alumni Survey, 2018). Furthermore, there is a wealth of empirical evidence suggesting that undergraduate research experience is a high-impact practice which supports a wide range of essential student learning outcomes as well as faculty development (Kuh, 2008; Lopatto, 2006; Wallin & Adawi, 2018). This QEP addresses student learning outcomes and aligns with the 2017-2023 Texas State University Plan; as such, it will contribute to the university's goal to achieve significant progress in research and creative activity as measured by national standards.

Definition of undergraduate research

While recognizing that there are many ways to define undergraduate research, the QEP's definition is adapted from the Council on Undergraduate Research (CUR), which currently has a membership of over 700 higher education institutions and over 13,000 individual members ranging from undergraduate students to institutional presidents. With a stated mission of supporting and promoting "high-quality mentored undergraduate research, scholarship, and creative inquiry" across academic disciplines ("Mission | Council on Undergraduate Research," n.d.), CUR defines undergraduate research as "an inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline" (Hensel, 2012, p. 51). The QEP adopts a process-oriented perspective on the inquiry or investigation, according to which undergraduate research is an activity which can be framed and informed by several distinct stages: (1) identification of a problem/need; (2) information gathering (e.g., data collection, systematic methods as appropriate to a given discipline); (3) analysis, creative engagement, or implementation; and (4) a proposed solution, conclusion, or creative product. In this vein, undergraduate research may occur in the context of (a) faculty-driven research projects and/or (b) student-driven research projects. A process-oriented, stage-demarcated perspective on mentored undergraduate research ultimately served as a guide to the students, faculty, and staff whose work led to creating the overarching structure for and the undergraduate research/creative expression experience specific to this QEP.

The QEP's perspective is also crafted with an inclusive spirit, to engage students with different types and stages of research knowledge, skills, and creative expression. The core value of undergraduate participation in research and creative expression is that through that participation, undergraduates develop research practices and an awareness of the value of research and ethical practices. The QEP thus includes three interrelated goals related to this definition. They include: (1) assisting undergraduates in gaining awareness of research and ethical research practices, (2) helping students to synthesize research, and (3) enabling students to produce a research or creative project.

Vision, mission, values, goals

Undergraduate research exists in many forms across Texas State, from the Honors College to the Science, Technology, and Advanced Research (STAR) Park and from the STEM Undergraduate Research Experience (SURE) program to the undergraduate research journal (TXSTUR). So that these diverse research experiences do not become siloed, the university would benefit from a centralized infrastructure to oversee, support, and assess these wide-ranging student learning experiences, and to facilitate opportunities and celebrate achievements in undergraduate research.

In recent years, Texas State has welcomed a record number of freshmen with declared majors and minors across all academic disciplines. Accordingly, this project unites students across all units in research activity that addresses many of the world's problems. Studies confirm that participation in undergraduate research helps students clarify a career path and develop interest in highly skilled professions that promote independence, collaboration, and innovation. Through their involvement with the QEP, undergraduate researchers will learn tolerance for obstacles faced in the research process and how new knowledge is constructed. They will also gain increased self-confidence and a readiness for more demanding research, scholarship, and creative expression activities. These skills in turn will produce undergraduates who have had direct experience in research and creative expression and who are ready to take on the economic and societal challenges our world faces today.

At the core of the 2017-2023 Texas State University Plan is a goal to achieve significant progress in research and creative activity as measured by national standards. Given that its theme is undergraduate research, the QEP is fully in alignment with the university's strategic plan in that it seeks to increase student research as well as creative and innovation opportunities. The research agendas of faculty who mentor these undergraduate students will also benefit from the QEP. Several national agencies have directly identified undergraduate research for external funding initiatives, and the university in turn will receive increased visibility and recognition from pursuing these grants. In addition, the pursuit of external funding for undergraduate research experiences to support the QEP's initiatives will also assist in supplementing donor funds to scale up the research experiences available to undergraduate students. The publications and presentations that result from these undergraduate mentoring activities will further enhance the research profile and prestige of Texas State, and ultimately contribute to its goal of becoming an R1: Doctoral University – very high research activity.

Learning outcomes

The goals of the QEP are accomplished through the following six student learning outcomes, in which students will (1) recognize the utility of research, inquiry, or creative expression; (2) identify and describe ethical aspects of research, inquiry, or creative expression; (3) analyze a body of research, inquiry, or creative expression that they have collected; (4) develop a research question or problem derived from the body of research, inquiry, or creative expression that they have analyzed; (5) implement a research/creative experience appropriate to their discipline either by contributing to a faculty member's research experience or engaging in an independent research experience with a faculty mentor outside of the classroom; and (6) communicate the results from their mentored research/creative experience.

Other intended outcomes

Although national enrollment of underrepresented and first-generation undergraduate students is at an all-time high, retaining these students through graduation continues to be a challenge. One acknowledged way of improving retention among underrepresented and first-generation students is through undergraduate research, which broadens their career opportunities and provides a crucial sense of community and belonging by developing a professional research network and community connections within their chosen fields (see e.g., Dahlberg, Barnes, Rorrer, Powell, & Cairco Dukes, 2008). In this way, the QEP should directly lead to improved retention and a greater sense of community for these student populations.

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III. IDENTIFICATION OF THE TOPIC

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III. Identification of the Topic

Through an extensive and inclusive multi-year process involving personnel from across the university, the topic of enhancing undergraduate research was selected for Texas State's QEP. In the selection of this topic and subsequent plan development, research findings on our university specifically and across higher education generally were considered. Ultimately, the scope of the plan was thoughtfully developed, with an emphasis on the implications for enhanced student learning.

Topic selection process

To generate widespread support and involvement during the planning process for the QEP, a series of introductory sessions were scheduled with various constituent groups. The Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) Liaison met in spring of 2017 with the following constituents to seek their input:

- President's Cabinet
- Council of Academic Deans
- Graduate Student Organizations

The QEP Theme Development Team was comprised of 28 members (see Appendix I) representing a variety of constituent groups for the purpose of gathering ideas. The Team had the following responsibilities:

- Introduce the QEP concept to constituents
- Identify criteria for the selection of the QEP theme
- Solicit ideas for the QEP theme from constituents
- Review and narrow the proposed ideas for the QEP theme
- Develop brief summaries for proposed topics in the narrowed list

Once the QEP was introduced, the university at large received an email message on March 6, 2017, soliciting possible topics and with a deadline of April 7, 2017. Faculty, staff, and students submitted ideas to the QEP email address. These ideas were in turn published on the QEP website. Thirty-nine distinct topic suggestions were received.

The QEP Theme Development Team met on Friday, April 7, 2017, and collectively identified the following criteria for the selection of the QEP topic:

- Is the topic in alignment with the university's mission and informed by a cross-section of its values, goals, and initiatives?

- Does the topic offer opportunity for growth which complements the strategic direction of the university?

- Does the topic reflect and embrace the broad and diverse interests, ideas, programs, and people that comprise Texas State University?

- Is the topic founded on documented need and research results which include empirical data analysis and best practices?

- Will the topic positively impact student learning – strengthening academic rigor, elevating student self-expectations, and improving attainment of learning outcomes?

- Will the topic yield quantifiable changes in student learning and success?

- Is the topic practicable and are its results achievable – building on existing infrastructure to implement and sustain a manageable and successful framework?

- Will the topic lead to benefits which balance its costs?

- Does the topic lead to a plan that offers sufficient flexibility for adjustment based on unforeseen internal and/or external factors?

- Does the topic innovatively anticipate current and future trends based on data and research?

- Will the topic enhance students' success as they progress through their Texas State experience and become citizens of Texas, the nation, and the world?

Using these selection criteria, the QEP Theme Development Team collectively reviewed the submitted topics. Through the course of extensive discussion during two half-day retreats, the Theme Development Team combined viable proposed topics into cohesive groups. Through the process, four candidates emerged: Star Quality Skills, Bobcats without Borders, Student Health and Wellness, and Students Building Skills through Research, Inquiry, and Creative Expression. Subgroups of the QEP Theme Development Team were formed to further investigate the potential of these four candidate themes and draft proposals for each. The team also ranked the topics in order of preference before sending them to the President's Cabinet for final approval. The topics which featured research and communication had been ranked highest by the team. After presenting the four candidate themes to university leadership, the final topic of undergraduate research was identified and adopted because it offered the university a chance to effectively address both research and communication within a single topic.

Sources of inspiration

The inspiration for this QEP final topic came from the following four sources: (1) feedback from students, faculty, and staff, (2) empirical evidence pointing to the value of undergraduate research, (3) research about best practices, and (4) initiatives at peer institutions.

It is important to note three overriding themes which also helped provide the foundation for the development and refinement of the topic:

1. Engagement in undergraduate research is beneficial to students. Specifically, empirical investigation of undergraduate research documents the numerous positive outcomes directly and indirectly related to student learning outcomes. The experiences in research, and skills obtained, also give students marketable workplace skills.

2. Both research and creative expression vary across disciplines; accordingly, so do the discipline-specific norms for what is appropriate. Consequently, the QEP is respectful of discipline-specific norms and is crafted in such a way as to accommodate the different types of creative expression and/or research in which Texas State faculty engage.

3. Building upon point 2 and the notion that research and creative expression occur differently within different fields, the theme of broad inclusivity is central to the QEP. Thus, the QEP is designed not only for students in disciplines in which there is already a tradition of involvement of undergraduates in research, but also for students in any academic discipline who might not otherwise think of pursuing an opportunity to create new knowledge or engage in new forms of creative expression.

Empirical justification

The need for enhanced student research opportunities across Texas State's two campuses is highlighted by a variety of global and local research studies. Both groups of studies are discussed below.

On the local level, several assessments of Texas State students highlight a need for engagement with undergraduate research. The collective pattern of findings suggests, generally, that students want more one-on-one work with faculty, that they expect to work on long-term projects, and that compared to the other seven universities in Texas classified as Emerging Research Universities (ERUs), students would benefit from enhanced research involvement.

   Alumni Survey. The Texas State Alumni Survey has been administered in its current format every semester since the summer of 2014 to collect information from recent bachelor's graduates about their college experiences and plans, with surveys sent to graduates six months after their graduation. Results of the fiscal year (FY) 2018 alumni survey indicate that 73% of alumni agreed they had worked on a project that took a semester or more to complete, down from 77% the previous year. While 92% of alumni in FY 2018 agreed that their professors cared for them as persons (up from 88% in FY 2017), only 68% agreed they had a mentor who encouraged them to pursue their goals and dreams (67% in FY 2017). These results suggest there is opportunity to involve more students in projects, such as research projects, that will allow students to work more closely with faculty and develop strong, supportive mentoring relationships.

Sixty-eight percent of FY 2018 graduates reported that their "Personal development in critical thinking" was affected "very much" by their Texas State education, down slightly from 71% reported by graduates in FY 2016 and FY 2017. These results suggest a need to offer additional opportunities for undergraduates to work on projects that allow them to systematically process information to improve understanding.

   Cooperative Institutional Research Program (CIRP) Freshman Survey. Texas State participated in the freshman survey in 2016 to better understand incoming students' backgrounds, high school experiences, attitudes, behaviors, and expectations for college. Survey results show that 70% of first-year students report there is a "very good or some" chance that they will work on a professor's research project. Most of Texas State's first-year students are entering college with an expectation that they will be engaged in research as undergraduates.

Also, 56% of first-year students report on the survey that they are "absolutely" or "very" confident in their ability to "explain the results of a study." Confidence levels vary by student major, ranging from a high of 66% for students in science and engineering majors to a low of 40% for general studies and undeclared majors. Variation by academic major in responses to this survey item as well as items designed to measure self-confidence in research skills point to the need to introduce all students to the benefits of and opportunities for involvement in undergraduate research.

National Survey of Student Engagement (NSSE). Since 2012, the NSSE has been annually administered to Texas State first-year students and seniors in the spring of each year. In 2019, Texas State first-year students reported a score which was significantly lower than other Emerging Research Universities (ERUs) in Texas on the NSSE engagement indicator of *Quantitative Reasoning,* which represents a combination of survey items relevant to undergraduate research. Texas State first-year students reported significantly lower scores on *Quantitative Reasoning* in 2017 and 2018 as well, and in 2017 also scored significantly lower on the engagement indicator, *Collaborative Learning.* Specifically, first-year students reported lower scores on "Reached conclusions based on your own analysis of information" *(Quantitative Reasoning*; 50% Texas State compared to 55% other Texas ERUs in 2019) and "Worked with other students on course projects or assignments" *(Collaborative Learning;* 53% Texas State compared to 55% other Texas ERUs in 2019).

According to 2019 NSSE results, one-third of first-year students have done or plan to work with a faculty member on a research project (34%); among seniors the percentage remains relatively stable at 32%, but the percentage of seniors who have done so is only 17%. Senior student participation in research with faculty varies by academic college, ranging from a high of 45% of university college seniors to a low of 20% for business administration seniors who have participated or plan to participate in research. These findings are particularly concerning given the fact that a majority of first-year students report on the CIRP Freshman Survey, discussed above, that they expect to work with faculty on a research project.

Among senior students in 2019, 65% report they "have or plan to complete a culminating senior experience," with results ranging from a high of 81% for Fine Arts majors to a low of 50% for Education majors. Research by the Gallup organization (Seymour & Lopez, 2015) has identified "working on a project that took a semester or more to complete" as a college experience which strongly relates to students' perceptions about being well prepared for life after graduation. Participation in research experiences as an undergraduate student may provide students with opportunities to establish relationships with faculty and to learn through experience on a research project.

Employer Evaluations of Student Career Fair Attendees. The Office of Career Services annually asks employers who attend Texas State career fairs to assess skills and presentation of students who attend. In fiscal year 2019, employers rated students' "evidence of critical thinking" as 6.84 on a scale where 1=low and 10=high. Critical thinking has been identified by employers as one of the top five most relevant hiring factors during the past three years (along with work ethic, communication/social skills, personality, and teamwork/leadership potential), and the development of critical thinking skills has been identified by the Council on Undergraduate Research (CUR) as a benefit of participation in undergraduate research.

Focus Groups. To gain more information regarding the state of undergraduate research at Texas State, focus groups were conducted with students who had engaged in a significant research project. To be considered "significant," the research had to include formulating a research question, designing empirical methods to test it, and analyzing and reporting the results. Twenty-four students volunteered and participated in the focus groups. While overall the state of undergraduate research at Texas State is excellent where it occurs, based on student feedback, it seems to be largely a matter of chance whether students are able to make a connection with a faculty member, which in turn leads to a positive research experience. The students interviewed in the focus groups were all exceptionally motivated and assertive; and in a majority of cases, they had personally initiated contact with the professor who mentored their research projects. It is questionable whether other interested, but less assertive, students would have made the connections necessary to

participate in an undergraduate research experience. Based on this feedback, some centralized way of matching undergraduates interested in research with faculty interested in mentoring undergraduate researchers would help draw students into undergraduate research who otherwise would not have the opportunity. Given that the results of the most recent CIRP freshman survey indicate that 70% of students come to Texas State believing that they will conduct an undergraduate research project and given that according to 2019 NSSE data only 17% of students who graduate end up conducting such a project, a significant percentage of the student population is missing out on a high impact practice proven to enhance student learning.

A common theme which repeatedly came up during the focus group discussion was whether the students felt adequately prepared to conduct undergraduate research. The vast majority of students responded that, although there was some value in being "thrown into the deep end," there were many skills that students either had to teach themselves or that their faculty mentors had to teach them first, before the research project could get off the ground. Given time constraints, this lack of preparation impacted what the students were able to accomplish during their capstone research projects. The majority of focus group participants stated that some structured course would have been helpful in preparing for their capstone research experience. Another common theme that was voiced was the wish that there was a more developed community of undergraduate researchers with whom to share experiences, as well as a system of undergraduate research mentors, composed of juniors and seniors, who could provide advice based on their own recent experiences. All participants said they would be eager to serve as mentors in such a program.

The majority of the student participants in the focus groups expressed that one of their main reasons for doing undergraduate research was that it would help them gain acceptance into a program of graduate study. That being the case, all participants could also readily appreciate the value of doing an undergraduate research project if one's primary goal was to enter directly into the workforce. This result should inform how the undergraduate research program is marketed, ensuring that the value employers place on research is underscored to those students who do not intend to go on to graduate school immediately after graduation.

Honors College. The Honors College tracks Undergraduate Research Fellowship awards and completion of Honors theses on an annual basis. The number of fellowships awarded to undergraduate students engaged in research has increased from 16 in fiscal year 2012 to 33 in fiscal year 2019 but remains very small relative to the size of the undergraduate student population at Texas State. Likewise, the number of students completing honors theses has increased from 45 in fiscal year 2015 to 83 in fiscal year 2019.

STEM Undergraduate Research Experience (SURE). The grant-funded SURE program was implemented in 2017 to offer first-generation and Federal Pell Grant-eligible students the opportunity to participate in a ten-week research experience, mentored by College of Science and Engineering faculty. While less than 30 students have participated in the program in each of the three years it has been offered, assessments have yielded positive results. Pre- and post-surveys conducted with 2018 program participants found statistically significant differences for most research skills among racial/ethnic groups, with Hispanic and Black students showing an increase in research skills compared to their baseline data. Statistically significant differences in the following skills were observed for Hispanic and Black students:

- Independence
- Writing ability
- Presentation skills

- Ability to achieve established goals
- Ability to troubleshoot technical problems
- Ability to work well with others
- Maturity
- Ability to multitask
- Technical ability
- Ability to follow directions
- Ability to make progress on a project

Undergraduate Research Survey. In the summer of 2019, Texas State implemented an Undergraduate Research Survey with enrolled students to better understand student experiences with and attitudes towards undergraduate research. The survey was repeated in the fall of 2019 with a more representative sample of students. Findings from the fall 2019 survey show that overall, 68% of the 710 student respondents found the idea of engaging in research activities exciting but only 42% of the students responding felt comfortable approaching faculty about working on a research project. More than one-third (36%) of the students who do not feel comfortable approaching faculty report that faculty are intimidating. Female students are much less likely to feel comfortable approaching faculty than are male students (37% of females compared to 52% of males). Eighty-five percent of female students report that faculty are intimidating, compared to 15% of male students. The vast majority of students (82%) report that they have not worked with a faculty member that they consider a mentor. This indicates that there is room for growth in building meaningful academic partnerships between students and faculty.

Apart from revealing areas for improvement, the survey revealed that students appreciate the practical value of research, based on their answers to the statement, "Engaging in research activities will develop skills that are attractive to future employers," a statement with which a vast majority of students (92%) agreed. Students also seem to grasp the value of research applied outside of academia based on their responses to the question, "Research in academia translates to real world application," with which a majority (83%) agreed. These are strong attitudinal predispositions towards research that can be built upon when crafting a robust culture of undergraduate research. However, 54% of undergraduates surveyed feel that information on undergraduate research opportunities at Texas State is not readily available. So, while there is an unmistakable enthusiasm for research among students at Texas State, these findings underscore the need to find ways to connect students with faculty who are available and willing to work with undergraduate students and support the decision to implement a centralized undergraduate research program as a means for providing outreach to students and helping them to overcome barriers to participation.

On the national level, an empirical justification for enhanced student research opportunities concerns the number of articles in higher education and/or undergraduate research outlets which emphasize the importance of undergraduate research. For instance, when discussing undergraduate research, Basken (2017) wrote that "employers have made clear the value they place in general on 'high impact' educational practices." Basken (2017) also summarized that data on undergraduate research are difficult to obtain and describe given the overall lack of data. Therefore, he reported that the current best alternatives were the different anecdotal successes reported in specific field situations. Malachowski (2017) further emphasized the importance of undergraduate research, noting that studies have shown how student learning depends strongly upon faculty involvement, and that when faculty members with a strong research focus fail to include students in that research, the result is a negative impact. Masterson (2017) provides additional explanation for the importance of undergraduate research programs. She notes that colleges nationwide are seeking to involve more undergraduates in mentored research since academics feel it teaches important skills,

e.g., problem solving, resilience, and working in a team. Involving undergraduates in mentored research is also viewed as having a positive effect on undergraduates' academic success and persistence. The Council for Undergraduate Research (CUR), often cited in the undergraduate research literature (and to be discussed in greater detail below), also lists the following benefits of undergraduate research:

- "Enhances student learning through mentoring relationships with faculty
- Increases retention
- Increases enrollment in graduate education and provides effective career preparation
- Develops critical thinking, creativity, problem solving and intellectual independence
- Develops an understanding of research methodology
- Promotes an innovation-oriented culture" ("Mission | Council on Undergraduate Research," n.d.)

Additional publications which draw similarly positive conclusions have come from the fields of Exercise Sports Science (Petrella & Jung, 2008), English (Lang, 2011), and Communication (Rodrick & Dickmeyer, 2002). Similarly, Schneider (2017) argued that all students should experience a capstone course that encompasses evidence-based investigation. Writing for the *Association of American Colleges and Universities*, Lopatto (2010) described undergraduate research experiences as "high impact" for the students involved. He summarizes his previous work (Lopatto, 2006), explaining that the types of student-reported benefits include gains on several disciplinary skills including research design, information/data collection and analysis, information literacy, and communication. Lopatto (2010) further noted that student respondents also evaluated their professional advancement from opportunities including scholarly publication, joining a learning community, and relationships with both mentors and peers. Professional development items included career path clarification and understanding a field's research process and how scientists think. He additionally noted that students also evaluated their personal development gains such as growth in their self-confidence, independence in their work and thought, and their sense of accomplishment. As an indicator of a federal agency's appreciation for undergraduate research, the National Science Foundation has a specific funding source for this type of work (Research Experiences for Undergraduates, or REU). Educational psychologists have long considered learning to occur across three domains: cognitive, affective, and psychomotor/experiential; engaging in undergraduate research facilitates learning across all three domains. Frymier and Houser (2018) argue that "student engagement would appear to be the gold standard by which most educators gauge learning" (p. 54). Drawing on the work of others, they reviewed three types of engagement. Of particular interest is behavioral engagement, i.e., a student's being observably "on task" during a given academic endeavor, which would be a key component of undergraduate research. Results from a cross-sectional survey administered to 13 research-intensive institutions, including six in Texas, likewise show that research productivity for biomedical faculty mentors with undergraduate students increases when they have the opportunity to work with them for more than a year on average, are committed and enjoy teaching about research, and have received more funding among other variables (Morales, Grineski, & Collins, 2017). This suggests that Texas State undergraduates' involvement with research may benefit faculty publication productivity and funding. Finally, from the 2017 report on Undergraduate Research Experiences for STEM Students (National Academies of Sciences, Engineering, and Medicine, 2017), two conclusions are stated: that (1) the published peer-reviewed literature suggests that students benefit from participation in a REU, and that (2) studies focusing on historically underrepresented students indicate that participating in REUs helps their persistence in STEM and helps them validate their disciplinary identity. Given that Texas State is a federally designated Hispanic Serving Institution with a majority minority enrollment, this is an especially salient reason for pursuing this initiative.

Scope of the plan

While students who enter the university as transfer students can benefit immediately from advanced research-focused coursework and while seniors will be able to engage with faculty either on existing faculty research or on projects that the students themselves design, Innovation, Discovery, Exploration, and Analysis (IDEA) is conceived foremost for beginning college students, as a way to increase their access to undergraduate research so that they can develop skills and competencies from the ground up. However, IDEA has the potential to impact a greater population as well through highlighting the significant role of research in shaping undergraduate educational experiences. From "research on research," to widely accepted standards developed by CUR, the benefits to students are clear and the methods we use to accomplish this expansion are informed by established successes at peer and aspirational institutions.

While prior efforts to expand research activity at Texas State have largely been led by individual colleges and departments, our survey of existing university research activities and study of the broader research landscape suggest instead that any student – in any major, from any academic background—can potentially benefit from the skills and competencies developed through the research process. Furthermore, familiarity with underlying motivations of research and research ethics can help students to develop an awareness of the important role that academic inquiry and creative activity play in our society, while providing them with the critical skills they need to make discerning judgements about research findings applicable to their own lives and work.

To that end, an important goal of IDEA is to develop broad, university-wide awareness of the QEP and its research pipelines and pathways that any interested, motivated, and curious student may access. Beyond university publicity and marketing campaigns, our efforts have focused on developing new research-focused course sequences which will be linked with new co-curricular programming, facilitated through a new center for undergraduate research, and supported by strong assessment practices. Our aim, then, is to expand research engagement by creating structures which promote equitable engagement with research, and by cultivating a healthy "user" base of student researchers.

Combined, we expect these efforts to initiate a cultural shift among our students while creating new opportunities for all of them. While students who enter the university as transfer students can benefit immediately from advanced research-focused coursework and while seniors will be able to engage with faculty either on existing faculty research or on projects that the students themselves design, IDEA is conceived foremost to increase access to research for all undergraduate students so that they can develop skills and competencies from the ground up.

IV. SUPPORT FOR THE TOPIC

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IV. Support for the Topic

Overview

IDEA developed from an open, comprehensive, methodical, and logical planning process. The QEP Theme Development Team started the process by soliciting ideas, proposing and vetting topics university-wide, and selecting a topic with broad-based support. The QEP Task Force then examined the current state of undergraduate research at Texas State, identified opportunities for enhancing student engagement in research, refined the topic, and developed the plan details.

Topic development process

In Spring 2017, the QEP Theme Development Team was constituted. The team was comprised of 28 faculty, staff, and students from across the university and included diversely represented faculty and students from many disciplines and across levels of rank including tenure-track, tenured and senior faculty, and both undergraduate and graduate students (see Appendix I, QEP participation). The primary goal of the team was to develop potential QEP themes to support the university's QEP decision-making process. The team also had the following responsibilities:

- Introduce the QEP concept to constituents
- Identify criteria for the selection of the QEP theme
- Solicit ideas for the QEP theme from constituents
- Review and narrow down the proposed ideas for the QEP theme
- Develop brief summaries for proposed topics in the narrowed-down list

The team reviewed the results of a university-wide email which had solicited suggestions for the university's next QEP. There were 39 ideas and rationales provided by respondents from a range of individuals, groups, and departments. The team then developed criteria by which the suggested QEP ideas would be evaluated. Those criteria are detailed in Section III, Identification of the Topic, and include alignment with the university's mission, opportunities for growth, diversity of interests, ideas, programs, and people, documented need at the university, potential for student impact and success, and achievability.

The team used the criteria to evaluate and reduce the list of QEP ideas and suggestions, and then organized the proposed themes into categories and ranked them according to the criteria. At the end of that process, four broad QEP themes were identified: communication, wellness, research, and globalization. The team then split into four groups, each of which developed one of the themes into a proposal. Each of those proposals was then delivered to the President's Cabinet, which reviewed the four proposed QEP Themes. Undergraduate Research was then chosen as the topic for the next QEP. Further details of the topic development process are found in Section III, Identification of the Topic.

Plan development process

After the decision was made to focus on undergraduate research for the next QEP, the QEP Theme Development Team was disbanded and the QEP Development Task Force was created. In addition to its co-chairs, the task force was originally comprised of 25 members from units across the

university and included faculty, staff, and students (see Appendix I). The QEP Development Task Force was charged with the following responsibilities:

- Define student learning outcomes related to the QEP
- Research the QEP topic
- Identify preliminary justifications for the theme, both quantitatively and qualitatively
- Identify actions needed to achieve the desired student learning outcomes
- Consider the infrastructure necessary to implement and maintain the QEP
- Research best practices related to the QEP
- Develop the assessment plan
- Budget necessary resources to successfully carry out the QEP
- Establish a timeline for accomplishing the plan
- Engage in outlining, drafting, and writing the QEP document
- Prepare submission documentation

The QEP Development Task Force met routinely in spring of 2018 to discuss the plan, identify and refine student learning outcomes for the QEP, and discuss the definition of undergraduate research. In Summer 2018 one of the co-chairs resigned from the university, and two additional co-chairs were added. Co-chairs attended the SACSCOC conferences and continued to meet with the task force members throughout Fall 2018 and both Spring and Summer 2019. Additionally, external consultant Dr. Suma Datta, assistant provost of Undergraduate Studies at Texas A&M University, was brought in to discuss her role as Executive Director of the Learning Communities, Academic Excellence, Undergraduate Research, National Fellowships, Capstones, and Honors (LAUNCH) Office, which promotes, coordinates, creates, and assesses undergraduate research at Texas A&M. The task force meetings ultimately resulted in the draft of a document in which the 11 bullet pointed responsibilities above were all fully addressed. Beginning in Fall 2020, a university marketing campaign was undertaken to make sure that all faculty, students, and staff fully understood the QEP. The marketing campaign's efforts included creating university marketing-approved logos and slogans for the QEP, digital and physical print media bearing the logos and slogans and distributed throughout the university and identifying and training two undergraduate students from each academic department who served as ambassadors of the QEP to the student population at large. At all stages of the process, QEP co-chairs worked to keep the larger university community both involved in and informed about QEP-related decision making. This was done through the regular meetings of the task force, periodic faculty development presentations to the university community, inclusion of students, and a regularly updated website. Ultimately, the QEP co-chairs were consistently focused upon maintaining transparency with the university community while designing a plan which focused on enhancing student learning outcomes.

In addition to regular, twice-monthly meetings of the entire group, in late spring 2019 the task force was also split into four groups that would work on specific areas of the QEP. Group 1 focused on literature reviews, the scope of the QEP plan, and best practices research. The work of Group 2 centered on actions and assessments related to Goal 1 (to assist students to value research and ethical research practices) and on administrative organization and professional development elements of the plan. Group 3 focused on the actions and assessments for QEP Goal 2 (to help students analyze research) as well as the organizational structure for the QEP. Finally, Group 4 took the lead on actions and assessments for QEP Goal 3 (to enable students to propose and produce a research experience) and resource elements, including budget and funding parameters of the QEP. Each group had regular meetings separate from the task force and brought back updates, questions, and concerns to the scheduled meetings of the task force through fall 2019 and into spring and fall 2020.

As a result of these efforts, Texas State experienced widespread participation in the development of the QEP. The process provided both extensive input to the development of the plan, broad-based support for the identified student learning outcomes, and buy-in for the plan's actions.

During the entire process of selecting the QEP topic and developing the plan, several common practices were implemented to maintain open communication with both the Office of Institutional Effectiveness and the university community. Because of the importance of the QEP, the co-chairs were added to the membership of the QEP Development Task Force in the summer of 2017. After this time, the QEP co-chairs met on at least a monthly basis with the associate vice president for Institutional Effectiveness, to report on task force progress and obtain feedback. Each semester, faculty, staff, and students were invited to open forums during which the co-chairs provided updates on the planning process and answered questions. Documentation of progress and updates were also conveyed to the university community via the QEP website. The QEP co-chairs regularly monitored the website's e-mail account for feedback and suggestions from the university community.

V. INSTITUTIONAL COMMITMENT TO THE TOPIC

BOBCAT IDEA
RESEARCH FOR EVERYONE

BOBCAT IDEA
RESEARCH FOR EVERYONE

V. Institutional Commitment to the Topic

Literature review

The year 1880 is sometimes regarded as significant for undergraduate research: it was around this date that Harvard students "began using the college library in significant numbers for research purposes" – and faculty were granted half-pay sabbaticals (Veysey, 1965). But beyond this obscure data point, it is difficult to identify precisely *when* and *why* research was first integrated into the undergraduate curriculum. Not only is the concept of research itself highly dependent on changing disciplinary norms and expectations, but the practice of training and developing researchers has been a goal of American universities for at least 200 years (Kinkead, 2012).

A more tractable formulation of this question might therefore concern moments of *institutionalization* – moments when the purpose, goals, and outcomes of research were clearly articulated and rationalized within an institutional framework. Viewed this way, undergraduate research as we know it was significantly shaped by at least three significant moments, all of which helped guide the development of the QEP at Texas State University.

First is the findings of the Boyer Commission in 1998, whose charge was to examine perceived shortcomings in undergraduate education, and which sought to develop an "academic bill of rights" that would situate research at the center of undergraduate learning (Boyer Commission, 1998). At the time of the report, the commission observed that "the experience of most undergraduates at most research universities is that of receiving what is served out to them" (p. 16).

The Boyer Commission (1998) argued instead that universities ought to create a "culture of inquirers, a culture in which faculty, graduate students, and undergraduates share an adventure of discovery" through the research process (p. 16). Many of the committee's recommendations – from integrating technology and championing interdisciplinary research – have since been widely integrated into university mission statements and curricular reform. The trend toward research-based teaching and learning is no exception.

A second key moment for undergraduate research occurred a decade later, when the Association of American Colleges & Universities published *High-Impact Educational Practices* by George Kuh. In this influential report, Kuh identifies ten areas where universities might bolster student engagement, and consequently improve retention and persistence – especially for at-risk students and other populations without historical access to higher education (Kuh, 2008).

Area seven on Kuh's list is undergraduate research. The broader goal of this area is to "involve students with actively contested questions, empirical observations, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions" (p. 10). By "practicing integrative and applied learning," undergraduate research fulfills at least one of Kuh's "essential learning outcomes;" but in a broader sense, essential components of undergraduate research are implied throughout all ten high-impact practices (p. 10). Although some recent research has questioned whether the promises of Kuh's high-impact practices have been realized (Johnson & Stage, 2018), their effectiveness almost certainly relies on the scale and institutional commitment toward implementation (Kuh & Kinzie, 2018).

A third key moment was the formation of the Council on Undergraduate Research (CUR), which has emerged as the preeminent national voice supporting undergraduate research. CUR was founded in the late 1970s by a small group of chemistry faculty at small liberal arts colleges and other teaching-focused institutions (Doyle, 1991). They were motivated by a sense that their efforts

to support research were less valued than those of their colleagues at universities with a larger research focus (and graduate student population). To bring greater visibility to their own work, and to support faculty working with undergraduate students, the CUR first appeared as a small newsletter that identified research funding opportunities and provided models for undergraduate research activity (p. 20).

As uncertainty about the future of undergraduate research spread during the 1980s (Doyle, 1991, pp. 19-20), the CUR responded by growing and evolving in both mission and scope. New science disciplines – including physics, astronomy, biology, and geology – were invited to join the council throughout the 1980s. Social sciences, led by psychology, joined the CUR in the late 1990s. Large public universities were also invited to join CUR. And while some humanities disciplines have been slow to engage and participate (Dotterer, 2002) – they were only invited to join CUR in the early 2000s – important discussions (Schantz, 2008) nonetheless emerged on how best to overcome the feeling of "culture shock" some humanities scholars may feel as they involve undergraduate students into their research (Rogers, 2003).

The impact of CUR cannot be underestimated in the development of this QEP. Especially helpful have been CUR assessment resources, designed to help universities develop an appropriate framework and expectations for undergraduate research programs. Among their most significant is "Characteristics of Excellence in Undergraduate Research (COEUR)" (Hensel, 2012). This compendium identifies twelve best-practice areas – from strategic planning to administrative support – that correspond broadly to common undergraduate research support structures (CUR, 2). Within the context of the Texas State QEP, several of these areas stand out: *research infrastructure* (area 3), including the need for research oversight (area 3.6) and administrative support (area 3.7); *dissemination* (area 7) including the need for enhanced student research publications (7.1), conferences (7.3) and symposia (7.4); and *curriculum structure* (area 9), including student course credits for research (9.3) and training in the responsible conduct of research (9.2.1).

CUR also provides member institutions with helpful self-assessment documents that can be used to help identify research characteristics, markers, and measures of excellence. These documents include "Using COEUR to Advance the Institutional Culture of Undergraduate Research," (Using COEUR, 2020) which refers heavily to the "Characteristics of Excellence" themselves. These documents were used by the QEP Development Task Force in developing a benchmarking framework to compare undergraduate research at Texas State with peer and near-peer institutions. An example of the results can be seen in Table 1.

Table 1: Texas State and Peer Analysis covering the Area 8, "Student Centered Issues," from the Characteristics of Excellence in Undergraduate Research (Hensel, 2012)

Characteristics of Excellence	Programmatic Example	Status at Peer and Near-Peer Institutions	Status at Texas State University (TXST)
8.1 Opportunities for early and sustained involvement	Research "on-ramps" / Research apprenticeship program / Summer research academy / Rising sophomore research programs	1. New Mexico State University - Undergraduate Research Apprenticeship Program 2. University of Central Florida - Summer Research Academy 3. University of Houston - Houston Early Research Experience (HERE) 4. University of Maryland - First-Year Innovation and Research Experience (FIRE) 5. Texas Tech University - Undergraduate Research Scholars in the Honors College 6. Drexel University - Students Tackling Advanced Research (STAR) 7. University of Houston Honors College - FrameWorks Program	TXST does not have a centralized program for "on-ramping" undergraduates into research.
8.2 Establishing and communicating expectations	Listing of active / ongoing faculty research projects pre-vetted by undergraduate research center and available for students to join	1. University of California Santa Barbara Faculty Research Assistance Program (FRAP) 2. University of Houston - "Research Positions at UH" website (subdomain of the Honors college) 3. Texas A&M - LAUNCH Research Opportunities Database 4. Louisiana State University - LSU Discover - Research Opportunity Database 5. University of Virginia - Undergraduate Novel Learning Experience and Scientific Hands-on (UNLEASH) - faculty/student matching program	TXST does not have a centralized list of active faculty research projects available for students to join.
8.4 Community of student scholars	Student research networking opportunities	1. Clemson University - Focus on Creative Inquiry Poster Forum 2. University of Maryland - Undergraduate Research Day 3. Louisiana State University - LSU Discover Day	TXST does have an annual, university-wide research poster session, but it is dwarfed by more structured programs, as at the University of Maryland.
8.5 Peer mentoring/ teamwork opportunities	Peer mentors in research	1. Texas A&M - Undergraduate Research Ambassadors (part of LAUNCH) 2. University of Central Florida - Research and Mentoring Program (RAMP)	TXST does not have a research peer mentoring or advising program.

		3. Louisiana State University - LSU Discover Research Ambassadors	
8.6 Expanding and integrating student research opportunities with other engaging experiences	Direct connection to student cohort and target population	1. University of Houston Office of Undergraduate Research (in the Honors College) 2. George Mason University Office of Student Scholarship, Creative Activities, and Research (OSCAR) 3. University of Oregon Associated Students for Undergraduate Research and Engagement (student organization)	TXST Honors College, as well as individual departments, have worked to develop undergraduate research independently, but efforts are not coordinated and there is no clear link to the co-curriculum.

Undergraduate research as a high-impact educational practice

As noted previously, one of the key moments for undergraduate research occurred with Kuh's (2008) inclusion of undergraduate research as a high impact educational practice. Two years later, Lopatto (2010) argued that "the positive effects of an undergraduate research experience on student learning, attitude, and career choice have passed from anecdote to systematic data" (p. 27). We find such evidence in several areas, including improved scholastic outcomes that can include grades and degree attainment, preparation for graduate school, and effects on students' attributes and skills. However, we are also mindful that the programs that are the subject of the empirical research and research reviews referenced in this document are highly context-dependent; Fechheimer, Webber, and Kleiber (2011) caution that "because the sample of students and courses included in this analysis come from one institution only, no attempts to generalize our findings beyond this single institution are attempted" (p. 162) serves as a reminder that programs included in the category of undergraduate research (UR) may in fact differ in critical ways.

First, participation in certain types of UR experiences is related to an increase in attainment of the bachelor's degree. In Astin's 1994 study that examined over 24,000 students from 300 campuses (reported in Prince, Felder, & Brent, 2007), positive correlations were found between students engaged in undergraduate research experiences and completing their bachelor's degree. Similarly, Rodenbusch, Hernandez, Simmons, and Dolan (2016) found an increase in the likelihood of completing a STEM degree within a certain time frame for students who participated in some UR programs. In addition to increased attainment of the degree, participation in some UR programs can have a positive effect on students' grades (e.g., Linn, Palmer, Baranger, Gerard, & Stone, 2015). For example, in a study that used GPA as an outcome measure, Fechheimer, Webber, and Kleiber (2011) found that participation in an undergraduate research program of longer than one semester was correlated with an increase in student's grades. That finding does not hold, however, for programs that include only a single UR course.

Second, there is heightened preparation for graduate or professional school for students who complete a UR program (Prince et al., 2007; Tan, 2007). For example, in a national survey with about 15,000 respondents, researchers found that a large percentage of students who participated in UR programs had an increase in awareness of graduate school; likewise, the experience increased the expectation that these students would eventually pursue a Ph.D. (Russell, Handcock, & McCullough, 2007). Once students enter a graduate program, their undergraduate research experience seems to affect the completion of that graduate degree as well. Bauer and Bennett (2003) found in their alumni survey study that respondents who had UR experiences were twice as likely

to complete their doctoral degree as were respondents who did not participate in an undergraduate research experience. Indeed, the expectation that students involved in UR programs are aimed toward graduate school is so pronounced that Tan (2007) lists preparing students for graduate programs as one of the reasons that UR programs are both important and popular.

Third, participation in UR programs can positively affect both student attributes and skills (Thiry, Weston, Laursen & Hunter, 2012; Willison, 2012; Sadler & McKinney, 2010). Dolan and Johnson (2009) note that participants in UR programs have reported increased confidence in their science skills, and survey results from Lopatto's (2010) study reveal that UR experiences can enhance both inquiry and communication skills. In Hunter, Laursen, and Seymour's (2006) ethnographic study of a summer UR experience, both faculty and students observed gains in communication and presentation skills in particular, as a result of participation in a UR program. Tan (2007) notes that students who completed a UR experience demonstrated "improved thinking, research, communication, writing, presentation, and relational skills while manifesting values such as self-confidence, goal-consciousness, determination, perseverance, resourcefulness, self-discipline, passion for reading and work, open-mindedness, creativity, courage, responsibility, and concern for others" (p. 212).

Benefit students across demographic groups and disciplines

Engaging in undergraduate research activities benefits all students, and these benefits can be even greater for women, first-generation, underrepresented, underserved students, and students who enter college with less academic preparation (Osborn - Karukstis, 2009). The benefits include: (1) advancing cognitive and intellectual growth, (2) gains in knowledge and skills, (3) academic achievement and educational attainment, (4) fostering professional growth and advancement, and (5) promoting personal growth. In a nationwide evaluation of undergraduate research opportunities for individuals who had received a bachelor's degree in science, technology, engineering, or mathematics (STEM) and in social, behavioral, or economic science, researchers found that the research opportunities increase understanding, confidence, and awareness of how to conduct a research project, help clarify interests in STEM careers, and increase the anticipation of a Ph.D. Moreover, this effect tended to be strongest among Latinx individuals (Russell et al., 2007). In a study of similar scale, with a longitudinal sample of 4,152 students from 219 four-year higher education institutions and with more rigorous controls, Eagan and colleagues (2013) found similar results and in addition they found that Latinx and African American students were significantly more likely than their White peers to report plans for STEM graduate and professional programs. There is also evidence, from smaller-scale studies, of these benefits in other academic fields such as family and consumer sciences (Collins, Hymon-Parker, Mitstifer, & Goff, 2010) and social science and humanities (including history and speech communication) (Ishiyama, 2002). Collins et al. (2010) report that undergraduate research projects "positively influences human sciences graduates in their pursuit of higher academic degrees and in their current positions." (p. 314). Further, Ishiyama (2002) found that participation in collaborative undergraduate research with faculty early on (first- and second-year students) was of particular benefit for first-generation college students. Even though there is a robust body of evidence regarding the benefits and effects at large-scale efforts to broadening participation, many of the undergraduate research programs and opportunities are optional and, in many cases, highly selective, providing inequitable access to students who could benefit the most.

Relationship between student needs and faculty interests

There is empirical evidence that suggests that by and large, faculty members who participate in undergraduate research activities believe that their students receive significant educational benefit from these opportunities and it benefits their research agenda (Karukstis, 2007; Prince et al., 2007). For example, results from a survey administered to 155 science and engineering faculty at an institution with an undergraduate research program established since 1980 found that faculty believed the research experience contributed substantially to cognitive and affective development of their students as well as contributions to their research program (Zydney, Bennett, Shahid, & Bauer, 2002). Similar results were found in a study that collected open-ended responses from 18 mentors that supervised undergraduate STEM researchers. Their analysis concludes that mentors reported gains in contribution to their research agenda (Adedokun et al., 2010). In addition to these studies, Webber, Laird, and BrckaLorenz (2013) analyzed approximately 110,000 student responses and 40,000 faculty responses to the *National Survey of Student Engagement* and the *Faculty Survey of Student Engagement* at over 450 four-year institutions and found that the majority of faculty members perceived undergraduate research to be of importance. In a more recent study with 536 biomedical faculty mentors from 13 institutions, Morales et al., (2017) found that faculty mentors were more productive in publishing collaboratively with undergraduate students when they worked with students a year on average and enjoyed teaching students about research. While these studies support the claim that there is a positive relationship between student participation and faculty beliefs, necessary conditions for faculty need to be created in order to expect fully implementation of these practices, in particular, if the access and inclusion of these opportunities are expected to increase at a given institution (Osborn & Karukstis, 2009; Wawrzynski & Baldwin, 2014).

Catalyst of inquiry-based and active learning curricula and instruction

Active engagement of students in the curricula has been established as a highly impactful practice for enhancing the undergraduate experience (Karukstis & Elgren, 2007; Karukstis, 2007; Lopatto, 2010; Prince et al., 2007; Zimbardi & Myatt, 2012). In a review of conceptual frameworks for actively engaging students in research through the curricula, Zimbardi and Myatt (2012) suggest that students are often engaged with research through the collection and analysis of primary or secondary evidence to determine the answer to a specific research question regardless of academic discipline. This interaction creates "hands-on" and "minds-on" opportunities for students to exert their own creativity and insight in the interpretation to ignite the passions and intellectual curiosity that fuel scientific discovery (Karukstis, 2007). Karukstis further asserts that by igniting this curiosity and passion, students are better able to generate "habits of the mind," which in turn lead to positive outcomes in job acquisition and field advancement. Further examples of the types of successful implementation of undergraduate research into the curricula are as follows: (1) Problem-based learning based in real-world situations that allows a group of students who are engaged in a student-centered, cooperative, and interactive exploration to design a suitable solution. (2) Project-based laboratories involving inquiry-driven scientific investigations that allow an individual to work independently or with a team of students to formulate the questions to be addressed and design experiments to answer the questions posed. (3) Collaboration among faculty in a variety of institutions to select, develop, and field test a collection of inquiry-based experiments involving particular organisms that lend themselves to research-based experimentation at all levels of the biology curriculum. (4) Year-long learning communities of students and faculty focused on large-scale team-based projects requiring a cross-disciplinary approach to address aspects of science, engineering, public policy, economics, politics, and social issues. (5) The use of geographic information system (GIS) technology as a teaching and learning tool to help students visualize complex spatial relationships in a variety of disciplines. (6) Online course design tutorials

that direct faculty to set skills goals for their students and then to choose specific content through which the overarching goals can be accomplished. (7) The use of scaffolding throughout the curriculum to integrate activities and exercises to develop information research skills through multiple, sequential assignments. (8) The use of institutional support services to facilitate the development of research-supportive curricula including the use of writing centers and undergraduate research offices. (9) The use of facility design strategies to optimally encourage research activity and collaboration and facilitate the presentation and celebration of research findings. (10) The use of teams to develop a collaborative research community, utilize the expertise and leadership skills of undergraduates, and lend a sense of continuity to projects over an extended period. (11) The design of an introductory interdisciplinary inquiry-driven laboratory designed to bridge laboratory experiences from biology, chemistry, and physics and to illustrate the commonality of investigative methods and laboratory techniques in these sciences (Karukstis, 2007; Karukstis & Elgren, 2007; Lopatto, 2010); Prince et al., 2007).

Actions

Current situation of undergraduate research at Texas State University

Texas State University operates in two locations. The campus located in San Marcos, Texas serves 95% of the enrolled students. The other approved off-site location in Round Rock, Texas serves less than 5% of Texas State's students. The Round Rock Campus predominately serves undergraduates enrolled in the following three programs in the College of Health Professions (CHP): communication disorders, nursing, and respiratory care. It is anticipated that the remaining CHP departments of health administration, health information management, and radiation therapy will move to the Round Rock Campus. The Round Rock Campus also offers junior- and senior-level courses, primarily in the evenings, for a limited selection of majors. Texas State also offers several courses via distance education; however, few programs are offered fully online. A little more than 10% of student credit hours are generated via distance education.

Texas State is organized into ten academic colleges: College of Applied Arts, McCoy College of Business Administration, College of Education, College of Fine Arts and Communication, College of Health Professions, College of Liberal Arts, College of Science and Engineering, University College, Honors College, and The Graduate College.

Texas State is home to a robust culture of undergraduate research in select colleges. This culture of undergraduate research is currently centered within only five of the university's colleges: honors, business administration, education, health professions, and science and engineering (see Appendix II). In its remaining colleges, however, including the College of Liberal Arts which at this time is the university's largest college in terms of undergraduate enrollment, Texas State currently does not have a consistently robust culture of undergraduate research. Importantly, the university also does not currently have an undergraduate research program which is broad-based, equitable, university-wide, and independent of any specific academic discipline, and which might make the full cycle of a research experience (i.e., from the conducting of research or creative expression to the dissemination of its results or product) possible for undergraduates within potentially any academic field. These facts played a significant role both in the selection of undergraduate research and creative expression as the theme of the QEP, and in the creation of the various initiatives which together constitute Innovation, Discovery, Exploration, and Analysis (IDEA). Brief descriptions of undergraduate research in the colleges at Texas State will follow.

   Honors College. In the Honors College, all undergraduate students are required to complete and present an honors thesis, "an original, independent research project undertaken your

senior year with the guidance of a faculty mentor." ("Thesis : Honors College : Texas State University," 2019). Honors also offers financial support for its undergraduate students, a searchable database of available mentors in disciplines throughout the university, and a curriculum of unique honors courses from across disciplines.

Each of these units also offer opportunities for students to showcase their research. Health professions hosts a competitive Dean's Research Forum showcasing winning posters, and a Spring Research Forum (since 2002) showcasing the research of undergraduate and graduate students as well as faculty. Science and engineering hosts the yearly Women in Science and Engineering (WISE) conference, which began in 2010. WISE, which is dedicated to increasing the participation of women in STEM fields, includes scholarships and other support to encourage participation. Education undergraduates often present posters of their research within units (health and human performance, curriculum and instruction), while some exceptional students present their work at conferences. Honors students end their tenure with a presentation of their honors thesis at the Undergraduate Research and Honors Thesis Forum, which has been held each spring since 2007.

Business administration. The McCoy College of Business has worked closely with the Honors College to increase participation from undergraduates in business. Mentors are available to help with honors theses, and there has been an active push to increase the number of business courses offered in the Honors College. McCoy is also home to several competitions involving student organizations oriented around entrepreneurship and marketing which involve extensive undergraduate research.

In McCoy and other units across the university, students are given the opportunity to enroll in an independent study to work closely with a faculty member on a research project. Also, many units across both campuses offer courses which involve undergraduate research, but which are not titled as such (e.g., in the College of Fine Arts and Communication: "advertising and public relations campaigns" in the School of Journalism and Mass Communication; "argumentation and debate" in communication studies; and "brand experience" in communication design all involve undergraduate research).

Education. Within the College of Education, health and human performance undergraduates are involved in research as part of their coursework. More specifically, they are exposed to research through their second and third years as students, then are expected to conduct pedagogical research during senior internships. Health and human performance also runs a research laboratory, Community Engaged Scholar, which is dedicated to fostering research – including among undergraduate students. The College of Education features nine faculty mentors in health and human performance, six in curriculum and instruction, and one in STEM Education on a website dedicated to undergraduate research in the College of Education.

Health professions. In the College of Health Professions, seven units actively engage students in undergraduate research: (a) clinical laboratory sciences, (b) communication disorders, (c) health administration, (d) health information management, (e) St. David's School of Nursing, (f) radiation therapy, and (g) respiratory care. Across those units in health professions, students may enroll in 11 different undergraduate courses which are research intensive, and research is otherwise considered central to the curriculum in health professions.

Science and engineering. The College of Science and Engineering reports a high incidence of undergraduate research with faculty, especially in the physical sciences (chemistry and biology), mathematics and computer science and special opportunities for science and

engineering students to participate in undergraduate research, including a biology colloquium and an annual summer STEM undergraduate research in engineering program which immerses Pell Grant-eligible and first-generation college students in a 10-week research intensive experience. The College of Science and Engineering offers 14 courses which include UR, including senior-level courses titled undergraduate research across the curriculum (biology, chemistry, computer science, industrial engineering, and physics).

To recap, while there are robust and ongoing cultures of undergraduate research within four of Texas State's colleges, the remaining six colleges do not offer similar possibilities of a research or creative expression experience to their undergraduates. This is not to say that there is no undergraduate research culture in these latter colleges, but rather that the units in them do not consistently have the same range of structures and resources to create research and creative expression opportunities for their undergraduate students. As is evident from the preceding review, research and creative expression can take different forms as a function of the academic discipline. This is also true of the different departments which comprise the College of Liberal Arts, and of the university's remaining colleges as well. Given the university's current state-of-affairs in undergraduate research, it appears that the university community would benefit from a more broad-based, cohesive, and organized system of support and mentoring for undergraduate research.

Actions to achieve goals and outcomes

To achieve the desired goals, two student learning outcomes were identified for each goal and two student-centered actions were identified for each student learning outcome. The student outcomes follow a sequence which begins with awareness, followed by synthesis, and culminates with production. This framework, which is described below, allows student learning to progress from more simplistic to higher-level research skills. The assessments, also noted below and detailed in Section VI, Assessment, will provide baseline data on student learning as the QEP is rolled out during year one and as its assessments become available for analysis. Assessment data for years two through five will also be collected and analyzed. By the end of year five of the QEP, the expectation is to have achieved a 2-3% increase in each assessment of student learning relative to the year one baseline. Environmental variables, for example, the number and type of students participating in undergraduate research, undergraduate student graduation rates, overall GPAs, and other similar measures of student success, will also be collected and analyzed using appropriate statistical procedures over the same five-year period to provide measures of success for students in the QEP relative to other Texas State students.

Several strategies were used to include undergraduate students on the Round Rock Campus and enrolled in distance education in Innovation, Discovery, Exploration, and Analysis (IDEA). First, content will be delivered online or via Zoom to ensure that all undergraduates are given the opportunity to participate. Second, representatives of the IDEA Center, housed on the main campus, will provide in-person training to faculty teaching face-to-face or hybrid courses on the San Marcos and Round Rock campuses or distance education courses and will help pair faculty with undergraduates regardless of location or mode of delivery.

Goal I: To assist undergraduates in gaining awareness of research and ethical research practices.

Outcome 1: Students will recognize the utility of research, inquiry, or creative expression.

Goal I: To assist undergraduates in gaining awareness of research and ethical research practices			
Outcome 1: Students will recognize the utility of research, inquiry, or creative expression.			
Action	**Organization/ Structure**	**Resources**	**Assessments**
Action I.1.A: Students will attend an informational event and panel discussion on research	Undergraduate Research Forum which includes informational booths and panel discussions	The IDEA Center will sponsor the event with participation from each college	Electronic survey distributed to registered attendees
Action I.1.B: Students will take an online tutorial on the utility of research	Online module available via *Canvas* course-management system	Content contributed by research faculty from each college, research librarians at the University Libraries, and instructional design specialists	Online assessment consisting of five scenario-based multiple-choice on the utility of research and five questions on research tools

Action I.1.A: Students will attend an informational event and panel discussion on research.

  Institutional need supporting the action. As indicated in the 2016 CIRP Freshman Survey, 70% of Texas State's first-year students are entering college with the expectation that they will be engaged in research as undergraduates (see Section II. Identification of the Topic, Empirical Justification). However, only 17% of students who graduate have in fact participated in a research project. Focus groups conducted with 24 undergraduate students who were engaged in research activities indicated that the access to research opportunities was due mainly to having personal contact with the professor and taking personal initiative. Although these practices providing access to research may be successful for some students, they do not follow a systematic and equitable process which guarantees broader participation. From a more recent survey administered in summer 2019, about half of the students surveyed expressed that they did not feel comfortable approaching faculty, while the vast majority reported that they have not worked with a research mentor. Currently, Texas State has no university sponsored activity which introduces freshmen and sophomores to research. While some units sponsor undergraduate research presentations, including College of Health Profession's Dean's Research Forum, Engineering Senior Project, and Honors College events, these are intended to promote completed research projects and do not address the need for student awareness of research or why and how to participate in it.

Literature supporting the action. Gaining an understanding of how professionals work on real problems, and appreciating the roles of academics in community research, were cited by students as important benefits of the undergraduate research experience (Lopatto, 2003; Trott, Sample McMeeking, & Weinberg, 2019; Weinberg, Trott, & Sample McMeeking, 2018). Exposing students to computer-based training and research yielded higher student perceived achievement and satisfaction with the training, supporting this model of online training and assessment (Kirkpatrick et al., 2019). Also, encouraging students to network with other researchers was one of several suggested guidance tips for helping to motivate students starting out in research (Mabvuure, 2012).

Action. Once a semester, the IDEA Center will sponsor a two-hour Undergraduate Research Forum, open to all Texas State students. Department liaisons and student ambassadors will help to encourage attendance and will present (not all at once but cycling through different departments each semester) at the forum. A primary 40 to 60 minute main program, consisting of an undergraduate researcher and faculty mentor-led panel discussion and Q&A session emphasizing the value of research and creative expression, will be followed by an opportunity for students to visit informational booths from different disciplines set up throughout the forum showcasing these areas: basic and applied sciences; social sciences; humanities; and creative activities. Faculty research liaisons and mentors and their students will provide literature and feedback on opportunities for students to participate in research experiences across the university. Presentations will focus on how students benefit from participation in undergraduate research and how they got involved with these experiences. Faculty will discuss how they support students in the research process. Cross-disciplinary members will discuss how they met and how they began their research agendas; and research practitioners will address forms of research being done at Texas State. Though open to all undergraduate students, the forum will be a prerequisite for students to enroll in the online modules on the utility of research and the ethics of research. Following the first year of the QEP, the forum may be offered in conjunction with the Research Symposium at the end of the school year, to help prepare students who have enrolled in the research-intensive courses Research (RES) 3399: Research and Creative Expression or 4399: Mentored Research and Creative Expression.

Assessment. Assessment of student awareness will consist of an electronic survey distributed to registered attendees of the Undergraduate Research Forum, designed both to confirm student participation to satisfy a prerequisite for enrolling in RES 3399 and 4399 or otherwise participate in undergraduate research, and to collect data for purposes of annual assessment. Before they leave the venue, attendees will be asked to complete the following survey items: (1) to list three benefits of participating in undergraduate research, including any personal benefits; (2) to explain how research that they learned about at the forum made a difference in society; (3) to explain how they would become involved in undergraduate research, e.g., what their next step would be, who might they contact; and (4) to say whether hearing from student researchers at the event was valuable, with an opportunity to suggest ways to improve these events. Completion of this survey will be required to provide evidence of attendance, which is a prerequisite for RES course enrollment. Each forum will include signage explaining the survey completion requirement, and instructions for how to complete the survey prior to exiting the forum, including note cards and signs with a QR code link to the survey. Attendees will be asked to complete it on the spot. Tablets may also be provided at the forum to facilitate participation in the survey. The forum will be video-recorded to be made available to students who are unable to attend but who must complete attendance to participate in RES-designated courses.

Action I.1.B: Students will take an online tutorial on the utility of research.

Institutional need supporting the action. Although the University Research Survey provides evidence that current undergraduates at Texas State appreciate the practical value of research, the vast majority of students who participated in the focus groups, who themselves were students actively engaged in undergraduate activities, felt that much of their knowledge about the utility of research had to be self-taught or that their mentor had to first teach them before starting the research project (see Section III, Identification of the Topic, Empirical justification). While data from NSSE on perceived gains made in ten areas between 2015-2019 show that on average, approximately 64% of senior Texas State students reported that the university had contributed to their ability to solve complex, real-world problems, this is below the reported averages for virtually all other perceived gains made by seniors for the years surveyed. In addition, results suggested that a more structured course or learning module would be helpful as a prerequisite to fully engage in research activities. Currently, Texas State has no university sponsored activity which provides information about the general utility and benefits of research. As noted above, some units sponsor undergraduate research presentations, including the Dean's Research Forum of the College of Health Profession, Engineering Senior Project, and Honors events. However, these events are intended to promote completed research projects in specific areas and do not explicitly address the utility of research. Examples of the utility of research might include that acquiring the research-related skills needed to solve complex, authentic/real-world problems in undergraduate biology and physics may lead to the development of better general problem-solving skills (Hoskinson, Caballero, & Knight, 2013), or that in the field of nursing, important links have been proposed between knowledge of research as it informs evidence-based practice, and quality and cost-effective care (Christie, Hamill, & Power, 2012). Real-world examples such as these and others would help Texas State students better understand the utility of research.

Literature supporting the action. In addition to the recent biology-, physics-, and nursing-related examples mentioned above, earlier work has similarly pointed to the utility and benefits of research in agriculture (Evenson, Waggoner, & Ruttan, 1979) and to how business and science can mutually benefit from each other (Howgrave-Graham., Kirstine, & Larkins, 2009).

Action. Students will take an online learning module in the university's course-management system (*Canvas*). The modules offered through the University Libraries will broadly expose students to the role of research in the acquisition and sharing of knowledge. The 20-minutes module will begin with information about the general utility of research, including interdisciplinary examples about the benefits of research, both to the student's own interests (increased GPA, retention, graduation rates and graduate school admission) and to society. Though open to all undergraduate students, the module will provide a foundation while also serving as a prerequisite for students to enroll in the workshop on ethical research practices and research-intensive courses. Students seeking to enroll in research-intensive courses and who attend the Undergraduate Research Forum will be directed to the online modules.

Assessment. Assessment will be administered online in the format of five scenario-based multiple-choice items at the end of the training modules on the general utility of research, and five questions on research tools, in a manner similar to online Collaborative Institutional Training Initiative (CITI) training for research ethics.

Students will be allowed multiple attempts to pass the assessment but will be required to pass it as a prerequisite to enrolling in RES 3399 or RES 4399.

Outcome 2: Students will recognize the utility of research, inquiry, or creative expression.

Goal I: To assist undergraduates in gaining awareness of research and ethical research practices			
Outcome 2: Students will identify and describe ethical aspects of research, inquiry, or creative expression.			
Action	**Organization/ Structure**	**Resources**	**Assessments**
Action I.2.A: Students will take an online tutorial on research's ethical aspects	Online module available via *Canvas* learning management system	Content contributed by research faculty from each college, research librarians at the University Libraries, and instructional design specialists	Online quiz consisting of five scenario-based multiple-choice questions on research ethics
Action I.2.B: Students will attend a workshop on ethical research practices	Workshop held each semester on San Marcos campus; workshops will be available live via *Zoom* in Round Rock and for distance learning	The IDEA Center will sponsor the event with participation from each college	Paper or online, five questions quiz on ethical practices in research

Action I.2.A: Students will take an online tutorial on research's ethical aspects.

Institutional need supporting the action. While Texas State offers undergraduate courses in philosophy with content pertaining to medical ethics and bioethics, only two types of research-focused ethics training are currently offered, and only for students engaging in specific kinds of research. One is the Institutional Review Board (IRB)-mandated training for students engaged in human-subjects research. The other is the Institutional Animal Care and Use Committee (IACUC)-mandated training for students engaged in animal-subjects research. Both trainings are delivered though CITI. Undergraduate students interested in pursuing research activities are otherwise not required to receive training in research ethics.

Literature supporting the action. Ethical training is essential for scholars and is, in fact, required at many research-oriented universities, including Texas State and other Emerging Research University peers in Texas. In addition to the obvious necessity for ethical practices in research involving human and animal subjects, correctly citing the work of others and otherwise avoiding plagiarism, and adhering to industry ethical standards, training undergraduate researchers in ethics has been shown to increase appreciation for research, literacy, and ethical behavior (Lopatto, 2010). Requiring course-based training in research ethics, such as the proposed modules, has been shown to increase understanding and retention of ethical standards and appreciation for ethical behavior in research (Lopatto, 2010).

Action. An online module, created in the *Canvas* course-management system and available to all students, will introduce students to the fundamentals of research ethics. The online module will consider a broad spectrum of disciplines, from the sciences to the performing arts, with topics including avoiding plagiarism, proper source citation, ethical handling of data, and human- and animal-subjects research. The module will be designed to take about 20 minutes and will conclude with a brief online quiz of students' ethical knowledge. Students enrolled in research-intensive courses and who attend the Undergraduate Research Forum will be directed to the online modules.

Assessment. As with the assessment on the utility of research, students will be required to pass a five-question, post-lesson online quiz on the ethics module. This assessment will be included at the end of the *Canvas* training session and will allow for multiple attempts to pass it. A successful completion with a passing score will be required to allow undergraduate students to enroll in the RES courses. Students will complete five scenario-based multiple-choice responses to examples from the online training module about ethical best practices on human subjects, avoiding plagiarism, safeguarding data, vulnerable populations and animal handling.

Action I.2.B: Students will attend a workshop on ethical research practices.

Institutional need supporting the action. Currently, Texas State has no university-required activity which introduces freshmen and sophomores to ethical research responsibilities. For any student to participate in research activities, such knowledge is a requirement. University Research Integrity and Compliance (RIC), under the Office of Research and Sponsored Programs, is responsible for supporting these efforts. RIC offers the necessary training as required by the IRB and the IACUC on an as-needed basis and sponsors the nationally recognized human subject protection training program offered by CITI. However, neither of these efforts provide the type of information or the format that is relevant to freshman and sophomore potential researchers.

Literature supporting the action. Ajuwon and Kass (2008) found that trainees' knowledge of the operations of an IRB increased from 6.05 at pretest to 6.29 at posttest out of 7 points. Delaney and Sockell (1992) analyzed the results of a survey of members of the Columbia University Graduate School of Business classes of 1953-1987 in order to assess the potential effectiveness of ethics training programs. Results provided systematic evidence that individuals in firms which have ethics training programs are less likely to perceive that they have "to do things that are not right" to get ahead than are employees in firms without such programs. The data also revealed that individuals exposed to ethics programs were more likely to have refused to take an unethical action when confronted with their most serious ethical dilemma than were other respondents.

Action. Each semester, the IDEA Center will sponsor a two-hour, face-to-face, experiential workshop on the ethics of research at the San Marcos campus (offered to Round Rock and distance education students via *Zoom* link live and recorded for those who cannot attend at that time). The workshop will feature group activities and hands-on examples and will build on the training provided in the online module. Workshops will cover two subjects: (1) general information which applies to all disciplines and (2) discipline-specific information related to ethics. Sample topics include examples of applied ethics within various disciplines; conflict of interest (personal, professional, and financial); avoiding plagiarism; policies regarding human subjects; live vertebrate animal subjects in research; safe laboratory practices; mentor/mentee responsibilities and relationships;

collaborative research including industry partnerships; peer review; data acquisition and laboratory tools management, sharing and ownership; research misconduct and policies for handling transgressions; and responsible authorship and publication.

Assessment. Upon completion of the instructional portion of the workshop, an assessment will be administered to measure the success of student understanding of the ethical requirements of research. Assessment of student awareness will consist of a five question, electronic quiz distributed to attendees at the workshop, or a paper quiz completed before departure from the workshop, designed to both confirm student participation and satisfy the prerequisite for enrolling in the RES courses or otherwise participate in undergraduate research, and to collect data for purposes of annual assessment. The questions will ask students scenario-based questions related to ethical practices in research. Additionally, several random drawing prizes may be awarded from among the completed surveys.

Goal II: To help students to synthesize research

Outcome 3: Students will analyze a body of research, inquiry, or creative expression that they have collected.

Goal II: To help students to synthesize research			
Outcome 3: Students will analyze a body of research, inquiry, or creative expression that they have collected.			
Action	**Organization/ Structure**	**Resources**	**Assessments**
II.3.A: Students will assemble an annotated bibliography	RES 3399 offered for students Qualified faculty will teach course content	The IDEA Center will coordinate the course including approval, delivery, and qualifying faculty	Annotated bibliographies will be assessed by the IDEA Assessment Team using a rubric developed by the IDEA Center
Action II.3.B: Students will maintain a research journal/log in which they record and reflect upon their process of collecting a body of research, inquiry, or creative expression	RES 3399 offered for students Qualified faculty will teach course content	The IDEA Center will coordinate the course including approval, delivery, and qualifying faculty	Journals/logs and reflections will be assessed by the IDEA Assessment Team using a rubric developed by the IDEA Center

Action II.3.A: Students will assemble an annotated bibliography.

      Institutional need supporting the action. Although many students at Texas State gain basic research skills, including the assembly of an annotated bibliography, as part of their disciplinary coursework, there is currently no common set of guidelines or methods of assessment with respect to the teaching of these skills. During the focus groups conducted during fall 2019, research-active undergraduates expressed that much of their basic prerequisite knowledge had been self-taught with guidance from a research mentor, and that a structured course would have helped. They also mentioned that the lack of such a course may be a barrier preventing many of them from engaging in university-affiliated research opportunities. Teaching these skills at the sophomore level will better prepare students to produce a mentored research or creative project at the junior and senior level.

      Literature supporting the action. Research-supportive curricula, and in particular research-intensive courses, have the potential to provide a more equitable access to the benefits of undergraduate research opportunities (Nadelson, Walters, & Waterman, 2010; Trosset, Lopatto, & Elgin, 2008). According to the Council on Undergraduate Research (CUR), one of these benefits is the development of critical thinking skills and an understanding of the process (steps) of research. By participating in the development of an annotated bibliography, students will be encouraged to think critically about their proposed topic and to relate fact-based evidence to their own research (The Annotated Bibliography – Doctor of Social Work (DSW) Research Guide, 2019). Schneider (2017) found that effective undergraduate research includes all undergraduate students being immersed into assignments (such as creating an annotated bibliography) which encompass evidence-based investigation.

      Action. Students who want to acquire an interdisciplinary overview of research, inquiry, and creative expression will enroll in the research-intensive designated course RES 3399: Research and Creative Expression. Faculty qualified and selected to teach this course will supervise students as they produce an annotated bibliography related to the students' body of research, inquiry, or creative expression. The bibliography will be informative/summative in nature including a working hypothesis, methodology, and anticipated findings/conclusions. The guidelines for this annotated bibliography will be determined and coordinated by the IDEA Center.

      Assessment. Annotated bibliographies completed as part of RES 3399 will be collected by the IDEA Center and assessed by a trained team of graduate students making up the IDEA Assessment Team using a common rubric to measure key performance indicators central to this learning outcome (e.g., the degree to which students have demonstrated understanding of the different purposes of an annotated bibliography, have identified and analyzed or otherwise critically engaged with sources related to their research question(s), etc.).

Action II.3.B: Students will maintain a research journal/log in which they record and reflect upon their process of collecting a body of research, inquiry, or creative expression.

      Institutional need supporting the action. This action is complementary to the previous action related to assembling a bibliography. Since Texas State does not have a common set of guidelines or methods of assessment with respect to the teaching of this skill, there is a need to create a mechanism through which undergraduates in any academic

discipline will learn the practice of reporting and reflecting upon their ongoing research experience. Keeping a research journal/log will provide evidence of their learning experience and will benefit them greatly as they develop as researchers/creators.

Literature supporting the action. The review of the literature indicates that a clear understanding of the research process is a very important component in undergraduate research. Research conducted by Lopatto (2010) indicates that professional development items such as activities for discovering the research process and understanding how scientists think are very important components in an undergraduate program. Lopatto (2006) points out that this focus leads to a student's personal development and independence in work, and that a more developed thought process about research begins to form early about a potential research topic (Lopatto, 2006).

Action. Students enrolled in the research-intensive course, RES 3399, will maintain a research journal/log in which they analyze the process used to collect a body of research, inquiry, or creative expression. Keeping a research journal/log will encourage students to reflect on what they have learned, to recognize their achievements, and to discuss challenges that they faced regarding the research process. The guidelines and assessment methods pertaining to this action will be centrally coordinated by the IDEA Center.

Assessment. Research journals/logs completed as part RES 3399 will be collected by the IDEA Center and assessed at the end by the IDEA Assessment Team using a rubric designed to assess key performance factors (e.g., incorporation of faculty feedback into the project, motivation for the selection of included sources, whether and how findings from previous studies have impacted the student's ongoing formulation of their research question or creative project, possible additional related research questions, etc.) which support the learning outcome.

Outcome 4: Students will develop a research question or problem derived from the body of research, inquiry, or creative expression that they have analyzed.

Goal II: To help students to synthesize research			
Outcome 4: Students will develop a research question or problem derived from the body of research, inquiry, or creative expression that they have analyzed.			
Action	**Organization/ Structure**	**Resources**	**Assessments**
Action II.4.A: Students will assemble a proposal on their synthesized research	Students will enroll in the course RES 3399 Faculty teaching the course will supervise students in developing a research proposal to address their research question or problem The research proposal will include research objectives/hypotheses, methodology and research/creative activity implications	The IDEA Center will coordinate the course including approval, delivery, and qualifying faculty Library resources to aid in literature search Collection of RES 3399 instructor-supplied resources detailing the development of research proposals On-line resources on responsible conduct of research	Research proposals will be assessed by the IDEA Assessment Team using a rubric developed by the IDEA Center
Action II.4.B: Students will develop and deliver a class presentation on their synthesized research	Students will enroll in the course RES 3399 Faculty teaching the course will instruct students in best practices for producing and delivering a quality research presentation, performance, or poster Faculty instructor and students enrolled in the course will critique oral presentations and posters and provide feedback designed to improve communication skills Electronic copies of the presentation, performance, or poster will be submitted to the IDEA Center	The IDEA Center will coordinate the course including approval, delivery, and qualifying faculty Collection of RES 3399 instructor-supplied resources that cover creating a research presentation / performance / poster Collection of RES 3399 instructor-supplied resources on communication and delivery of research presentation / performance / poster	Evidence of research delivery through a presentation / performance / poster (poster, Power Points, videos) will be assessed by the IDEA Assessment Team using a rubric developed by the IDEA Center

Action II.4.A: Students will assemble a proposal on their synthesized research

 Institutional need supporting the action. University NSSE results in 2017 and 2018 found that Texas State first year and senior-level students reported significantly lower scores on "Reached conclusions based on your own analysis of information" (*Quantitative Reasoning*) as compared to students from other Texas Emerging Research Universities. These results point to a need to expose our undergraduate students to curricular activities which develop this skill.

 Literature supporting the action. Participation in undergraduate research teaches important critical thinking and problem-solving skills (Masterson, 2017). Involvement in undergraduate research can be of benefit in gaining employment or admission to graduate school in part because it leads to higher order thinking skills (Schmitz & Havholm, 2015). Beckman and Hensel (2009) include the student's increased confidence in their intellectual ability as a benefit obtained through involvement in undergraduate research.

 Action. Guided by instruction in research synthesis, students enrolled in RES 3399 will analyze a body of existing research, inquiry, or creative expression they have gathered to formulate their own discipline-specific research or creative activity question or problem. Students will develop a research proposal addressing the question or problem which fleshes out research objectives/hypotheses, methodology and research/creative activity implications. As applicable in detailing methodology, students will demonstrate an understanding of responsible conduct concerning research topics such as human and animal subjects research and data management practices. Participation in this activity will contribute to the students' ability to analyze information and draw conclusions.

 Assessment. Proposals completed as part of RES 3399 will be assessed by the IDEA Assessment Team using a common rubric developed by the IDEA Center. The rubric will be used to assess the research proposal through relevant key performance indicators (e.g., relevance of the topic, completeness of the literature review, and project-related factors including its design and its likelihood of yielding data which will allow for addressing the research question). Proposals and completed rubrics will be maintained by the IDEA Center.

Action II.4.B: Students will develop and deliver a class presentation on their synthesized research.

 Institutional need supporting the action. NSSE data on 10 perceived gains among seniors between 2015-2019 indicate that on average, approximately 71% of seniors reported that their experience at Texas State had helped develop their ability to speak (clearly and) effectively. While this percentage was consistent (it varied by no more than one or two percentage points for all years surveyed), it never ranked among the top five abilities in which there was perceived gain. These findings point to a need to provide additional opportunities for our undergraduate students to develop the ability to speak effectively. Providing such opportunities in the context of a high-impact practice which was meaningful to students would align with acknowledged best practices.

 Literature supporting the action. Opportunities for written and oral communication are considered essential features of a successful undergraduate research experience (Lopatto, 2003) and can lead to improvement in students' oral and written communication skills (Beckman & Hensel, 2009). This is a soft skill set considered a

valuable commodity by employers (Schmitz & Havholm, 2015). Stuart (2013) points out that oral communication skills are improved both through the practice of making a research presentation, and through observation of peer presentations.

Action. Students enrolled in RES 3399 will present their synthesized research/creative activity to the class in the form of an oral presentation. Presentations will be critiqued by the faculty member teaching the course, as well as by other students in the course. Participation in this activity will contribute to enhancing the students' communication skills. Exposure to research practices and synthesis in the course will position students to progress to more advanced engagement in faculty-mentored research.

Assessment. Presentations completed as part of RES 3399 will be assessed by the IDEA Assessment Team, using a common rubric developed by the staff of the IDEA Center and with input from the faculty member.

Goal III: To enable students to produce a research or creative project

Outcome 5: Students will implement a research/creative experience appropriate to their discipline by either contributing to a faculty member's research or engaging in an independent research experience with a faculty mentor.

Goal III: To enable students to produce a research or creative project			
Outcome 5: Students will implement a research/creative experience appropriate to their discipline by either contributing to a faculty member's research or engaging in an independent research experience with a faculty mentor.			
Action	**Organization/ Structure**	**Resources**	**Assessments**
Action III.5.A: Students will produce a paper/creative expression based on their mentored research/ creative experience	Students will enroll in the course RES 4399 Faculty member mentor will supervise students as they produce a paper that responds to their mentored research/ creative experience	The IDEA Center will coordinate the course and faculty Library resources to aid in literature search Literature discussing reflection essays	The research project will be assessed by the IDEA Assessment Team using a rubric developed by the IDEA Center
Action III.5.B: Students will maintain a research journal/log in which they record and reflect upon the research/ creative process	Students will enroll in the course RES 4399 Faculty member/mentor will supervise student's research/creative expression experience	The IDEA Center will coordinate the course and faculty Guidelines for research journal/log	Student research journals / logs will be collected and assessed by the IDEA Assessment Team using a rubric developed by the IDEA Center

Action III.5.A: Students will produce a paper/creative expression based on their mentored research/creative experience

Institutional need supporting the action. Several assessments of Texas State undergraduate students highlight a need for more one-on-one work with faculty. For instance, in a 2019 NSSE survey, 3% of first-year students reported that they either had worked with, or were currently working with, a faculty member on a research project. For seniors, that number rose to only 17%.

Literature supporting the action. There are many benefits for students who engage in faculty-mentored research, including more effective speaking and greater abilities in gathering and analyzing data (Bauer & Bennett, 2003) and gains in both personal and professional development (Seymour, Hunter, Laursen, & Deantoni, 2004). Student engagement in research is also effective in both retaining and helping to create career opportunities for minority and underrepresented students (Nagda, Gregerman, Jonides, von Hipple, & Lerner, 1998).

Action. Students who want to conduct mentored research under the direct supervision of a faculty member will enroll in RES 4399, the research-intensive designated independent study course. As part of the class, faculty approved to teach the course will closely supervise students as they produce a paper/creative expression which responds to their original research experience. The guidelines and assessment methods for this paper/creative expression will be determined and coordinated by the IDEA Center.

Assessment. Papers and creative expressions completed as part of RES 4399 will be assessed by the IDEA Assessment Team using a common rubric designed by the IDEA Center staff to assess key performance indicators including the development of an abstract describing the project and any findings, clarity of the research question and of any procedures or methodology used, quality of any data obtained, and appropriateness of any conclusions reached.

Action III.5.B: Students will maintain a research journal/log in which they record and reflect upon the research/creative expression process.

Institutional need supporting the action. While similar to action II.3.B in which a research journal/log was completed in the course of collecting a body of research for a literature review, the current action of completing a research journal/log is situated in a context where the research journal/log documents a student's actual research/creative expression process. In addition to the justification and support of the earlier action, the fall 2019 Focus Group findings included that students felt there was an absence of a course teaching basic research skills such as keeping a research journal/log. There is thus a perceived need on the part of undergraduates for this action in a context where the undergraduates are engaged in actual research.

Literature supporting the action. In addition to the previously cited work by Lopatto (2006, 2010) with respect to Action II.3.B above, Wisker (2019) further notes that reflective writing such as keeping a research log can help students make progress with their developing research.

Action. To ensure that students who enroll in a research-intensive designated independent study course receive constructive and sustained feedback from their faculty

mentors, as part of RES 4399, the research-intensive designated independent study course (RES 4399), students will maintain a research journal/log in which they reflect upon to the guidance they have received concerning their original research experience. The guidelines and assessment methods for this research log will be centrally coordinated by the IDEA Center.

     Assessment. Research journals/logs completed as part of RES 4399 will be collected by the IDEA Center and assessed at the end of the course by the IDEA Assessment Team using a common rubric developed by the IDEA Center. The rubric itself will assess key performance indicators (e.g., incorporation of faculty feedback into the project, clarity in the description of steps taken to complete the project, impact of previous studies on the research or creative process, etc.).

Outcome 6: Students will communicate the results from their mentored research/creative experience.

Goal III: To enable students to produce a research or creative project			
Outcome 6: Students will communicate the results from their mentored research/creative experience.			
Action	**Organization/ Structure**	**Resources**	**Assessments**
Action III.6.A: Students will create a presentation about the mentored research experience and present it at an undergraduate research showcase event	Research, Inquiry, and Creative Expression (RICE), the undergraduate research showcase, will include poster displays, presentations, awards, and recognition	The IDEA Center will sponsor the event with participation from each college	Papers/ creative expression and presentations assessed by a faculty panel using a rubric developed by the IDEA Center
Action III.6.B: Students will prepare their research experience or creative expression for submission to an external field-appropriate research conference or exhibition	Students will enroll in the course RES 4399 Faculty member/mentor will supervise student's preparation of a research/creative expression experience submission	Content for dissemination will be contributed by research faculty from each college University Librarians IDEA Center staff	Prepared submissions of mentored research/creative experiences will be assessed by the IDEA Assessment Team using a rubric developed by the IDEA Center

Action III.6.A: Students will create a presentation about the mentored research experience and present it at an undergraduate research showcase event.

   Institutional need supporting the action. Although Texas State colleges including health professions, science and engineering, and honors currently sponsor research events, events vary widely in scope and there is sparse coordination among constituent groups. Overall student engagement rates are difficult to measure due to a lack of university-level coordination, but best estimates suggest relative underperformance. For example, the Spring 2019 Undergraduate Research Conference, a university-wide event sponsored by the Honors College and open to all students, featured just over 100 posters representing all colleges and schools. By comparison, the University of Maryland, which has a smaller undergraduate population, reports hosting an annual research day featuring 600 posters. Maryland also provides numerous undergraduate student symposia, conferences, and student journals, and offers awards and prizes to recognize outstanding student work.

   Literature supporting the action. "Every university graduate should understand that no idea is fully formed until it can be communicated" (Boyer Commission 1998, p. 24). Following the Boyer Commission report in 1998, U.S. universities at all levels of Carnegie classification began to reimagine ways in which research might become a central, rather than peripheral, feature of undergraduate education. The Council for Undergraduate Research (CUR) is widely credited with establishing key "best practice" areas for research's communication. In their "Characteristics of Excellence," CUR details the importance of on-campus research showcases. These events, as CUR writes, "bring together the community of undergraduate scholars" and "provide opportunities for peer networking and cross-disciplinary conversation." (Hensel, 2012, p. 12).

   Action. To disseminate their original research experience, students who enroll in RES 4399, the research-intensive designated independent study course will produce a presentation. To ensure the quality of this presentation, its production will be closely supervised by a faculty mentor. The presentation will take place at Research, Inquiry, and Creative Expression (RICE) showcase sponsored by the IDEA Center, who will give out awards and recognitions for the top presenters and their faculty mentors. The guidelines and assessment methods for this presentation (including all logistics for San Marcos and Round Rock student and faculty participants and distance education students) will also be determined by the IDEA Center.

   Assessment. Presentations completed as part of RES 4399 will be recorded and collected by the IDEA Center and assessed by a faculty review panel for the showcase event using a common rubric developed by the IDEA Center staff to measure key performance indicators related to the student's presentation (e.g., clarity of exposition, use of supporting material, etc.).

Action III.6.B: Students will prepare their research experience or creative expression for submission to an external field-appropriate research conference or exhibition.

   Institutional need supporting the action. Texas State has relatively few opportunities for undergraduate students to disseminate their research in peer-reviewed publications and venues. For instance, there is only one undergraduate research journal, which is published by the Honors College and is currently being run by volunteers. Because Texas State aims to expand its research profile as part of its 2017-2023 strategic plan,

having a centrally coordinated and assessed process through which students can prepare their mentored research for conference submissions is essential.

Literature supporting the action. Jungck, Harris, Mercuri, and Tusin explain that "[t]oo often [students] fail to appreciate that research is not complete until it is published" (2004, p. 24). Publication, exhibition, or performance – irrespective of whether it is an original contribution to the field – is therefore a core feature of the research experience. Some scholars nonetheless express concern that research dissemination increases stress on students and faculty unnecessarily (Gilbert, 2004). Indeed, there is good reason to hold student research deliverables to a high standard; but the larger pedagogical impact and skills development potential of research is clear: dissemination promotes "real world" communication skills, enhances self-confidence, and increases employability (Spronken-Smith, 2013).

Action. Successful preparation of a conference submission (e.g., an abstract) based on the mentored research experience will round out the student's undergraduate research experience. Thus, students enrolled in RES 4399, the research-intensive designated independent study course will identify a research conference or exhibition appropriate for their research or creative expression and prepare a submission for it. This proposed action focuses on (1) a student's identification of an appropriate target audience for the student's body of work, and (2) a student's understanding of the submission and review process. For this reason, successful preparation of a conference submission is sufficient; actual submission to a conference is not required. Faculty mentors will assist students in identifying conference or exhibition venues which are appropriate for a student's discipline. Most importantly, faculty mentors will guide students through every step of the submission preparation process by providing ongoing feedback and evaluation. The submission preparations will be gathered by academic departments at the end of the semester and reported to the IDEA Center. The guidelines and assessment methods for this submission will also be determined by the IDEA Center.

Assessment. Research/creative expression conference submission preparations completed as part of RES 4399 will be collected by the IDEA Center and assessed by the IDEA Assessment Team using a common rubric to assessing key performance indicators pertaining to the prepared submissions (e.g., conformity of the abstract and of the overall submission to the conference's stated submission guidelines, etc.).

The implementation of all actions will be mindful of the potential short- and long-term effects of the COVID-19 pandemic and will otherwise follow the Texas State University Roadmap. Some of the instructional activities such as the online modules are intended for a virtual environment by design. The two research-intensive courses will be delivered using Texas State Teaching and Research Roadmap guidelines until it is safe to deliver courses face-to-face. The Division of Information Technology (DOIT) at Texas State has equipped classrooms with technological tools to support synchronous and/or asynchronous content delivery, and dedicated resources for faculty to deliver high-quality, effective "flexible" face-to-face, hybrid and online instruction. With respect to conducting research, the Office of Research and Sponsored Programs has provided comprehensive guidance for research during the pandemic which includes supporting laboratory-based and field research and abiding by health and safety measures including that per university policy, on-site research work of undergraduate students must be entirely voluntary and authorized by the student's mentor.

To receive credit for the online modules as a prerequisite for enrolling in the research courses, students need to score 100% on the multiple-choice items and will have multiple attempts to score 100%. To receive credit for the workshop, students need to score 70% on an electronic/paper quiz. To receive credit for the research courses RES 3399 and 4399, students need to earn a "C" or better in each class. However, to enroll in RES 4399, students will need faculty approval in addition to a grade of "C" or better in RES 3399.

Finally, the experiential events will be delivered following the models of the New Student Orientation (NSO) program from the Undergraduate Admissions office, and the Virtual Honors Research Forum showcases for undergraduate research from the Honors College. These online and virtual experiential models have been already implemented with acceptable degree of success.

Other QEP Initiatives

The Innovation, Discovery, Exploration, and Analysis (IDEA) Center. Despite our robust research culture, there is no centralized infrastructure to oversee, support, and assess this broad range of student learning experiences. To facilitate and recognize these activities, we propose an undergraduate research center. The IDEA Center will transform the educational experience of undergraduates at Texas State. More specifically, the IDEA Center will coordinate, promote, and assess research-supportive curriculum, workshops and online tutorials, training, collaborations, and programs so that undergraduates can graduate with a research-intensive designation on their transcripts.

Texas State will expand and enhance undergraduate research dissemination by centralizing resources and increasing diverse opportunities for how, when, and why students share their work with the community. The newly formed IDEA Center will play a crucial role, providing staffing and organizational support for student research publications, symposia, and conferences including the newly formed Research, Inquiry, and Creative Expression (RICE) showcase. Faculty and students will participate in the assessment of research (for example, as faculty reviewers of student posters), but the IDEA Center will collect, analyze, and circulate research outcomes within the university.

Faculty Liaisons. Beginning with members of the QEP committee for undergraduate research, research-productive faculty members will be identified in units across the university's two campuses. Special attention will be given to faculty members already meeting four conditions: (1) they teach undergraduate research-intensive courses; (2) they conduct research with undergraduate students outside of class; (3) they conduct research with master's- and/or doctoral-level students; and (4) they have published or performed, or had scholarly or creative work presented at a research conference or performance venue, co-authored or co-created with undergraduate, M.S. or M.A., or doctoral students. These faculty help make students in their units aware of the online utility and ethics modules and the day-long Undergraduate Research Forum (see below). To solicit faculty to become liaisons, university communications will be sent via email and university social media three times early in each semester (fall, spring, summer) inviting recipients to participate as faculty advisors for undergraduate research and to volunteer to help promote the IDEA Center and QEP initiative. Productive research or creative faculty in each unit will be identified and approached for their willingness to participate as liaisons and advocates for the QEP initiative. Finally, knowledge of the IDEA Center and QEP undergraduate research initiative will be introduced to all new research- or creative-oriented faculty new hires during new faculty orientation, led by a faculty member who already participates in undergraduate research.

Student Ambassadors. Initially, student ambassadors will be recruited from the following potential pools: (1) upper-level undergraduate students who already partner with a faculty member conducting research; and (2) upper-level undergraduates who have completed a research-intensive undergraduate course. After the initial semester following the launch of the QEP and IDEA Center, student ambassadors will come from the pool of students who are currently enrolled in one of the RES courses, have completed the utility and ethics online modules, and intend to continue in the QEP initiative. These experienced ambassadors will play an active role in the IDEA Center workshops, which will serve as in-person opportunities for ambassadors to recruit and guide undergraduates interested in research. Finally, student ambassadors will visit areas of potential recruitment throughout the university once per semester and briefly describe the IDEA Center, the QEP and how students can participate, including large-enrollment courses, introductory courses in disciplines which traditionally emphasize research or creative expression as well as those which do not, and "tabling" early in the semester in the university's central quadrangle with other student organizations, or in an open house in the IDEA Center.

Courses. The Council on Undergraduate Research (CUR) has included research-supportive curricula (9.1) and student course credit for research (9.3) as two best practices that facilitate student and faculty involvement in undergraduate research. They also state that "Institutions that highly value undergraduate research have departments and programs that are careful to design curricula to be supportive of research" (Hensel, 2012, p. 14) and that "[i]nstitutions should have a mechanism to award course credit to students for participating in undergraduate research." (Hensel, 2012, p. 15).

To facilitate this research experience, two research intensive (RES) designated classes have been created:
- RES 3399: Research and Creative Expression provides an interdisciplinary overview of research, inquiry, and creative expression. In this class, students will analyze a body of research, inquiry, or creative expression they have collected and develop a research question or problem which responds to it,
- RES 4399: Mentored Research and Creative Expression provides students with a mentored research/creative experience. In this class, students will either contribute to a faculty member's research/creative experience or engage in an independent research/creative experience under the supervision of a faculty member. Students will disseminate the results of this research/creative experience outside of the classroom.

These research-intensive classes, which are housed in University College, provide a mechanism through which students can have the opportunity to engage in mentored research in a format which is standardized and delivered across the university relying on a common set of guidelines regarding student learning outcomes, course activities, and methods of assessment. As described above, selection of faculty to teach these courses will be determined by a faculty member's demonstrated commitment to undergraduate research.

Undergraduate Research Forum. Once a semester, the IDEA Center will sponsor a day-long Undergraduate Research Forum which will serve as the required point of entry for students intending to enroll in the RES courses. The forum will feature a main presentation of between 40 and 60 minutes, followed by smaller panels capturing the various discipline categories (physical sciences; social sciences; and creativity activities). The forum will bring together students and faculty actively involved in research experiences across Texas State's two campuses. The location of the forum will rotate each semester between colleges that are able to accommodate it. The forum will be open to all students across the university. Advisors and student ambassadors will help to encourage attendance at the forum. The target audience will be: (1) undergraduates

who are curious about different kinds of research being conducted at Texas State; (2) undergraduates who are looking for opportunities to get involved in research; (3) donors and employers interested in supporting undergraduate research; and (4) faculty who engage undergraduates in research or who are interested in future collaboration with undergraduates. After the main program, activities will include informational booths set up at the forum so that faculty research mentors and their students can provide literature and feedback on opportunities for students to participate in research experiences across the university; and panel discussions which will provide more in-depth exploration of undergraduate student research experiences. Panels will consist of students sharing the benefits of participating research and how they got involved with these experiences; faculty discussing how they support students in the research process; cross disciplinary members discussing how they met and how they got their research going; and research practitioners addressing forms of research being done at Texas State.

Research, Inquiry, and Creative Expression (RICE) **showcase.** Each semester, the IDEA Center will sponsor this showcase, which will provide students enrolled in the mentored undergraduate research course (RES 4399) the opportunity to present their faculty-mentored research/creative activity in performance, oral platform, or poster format. The showcase will also work with each college, including honors, to highlight the depth and breadth of undergraduate research at Texas State across all disciplines. The goal of the event is to increase visibility of undergraduate research conducted at Texas State and increase participation by undergraduates in faculty mentored research. The event will take place on the San Marcos campus and will be free to attend. Virtual components will be incorporated for broader accessibility. The event will be free to attend. Organization of the showcase will mirror professional academic conferences. The event will be designed to be inclusive and will be promoted in a variety of ways (e-mail, social media, flyers, posters, university newspaper, message boards, etc.) to draw a diverse audience of students, faculty, staff and administrators and from the general public. A trained team assembled by the IDEA Center will use a rubric to measure a student's analytic skills related to research and student's ability to communicate their research. Awards will be given to students for high achievement in oral presentations, creative performances, and posters. Faculty dedicated to excellence in undergraduate research and serving as research mentors will be recognized. Student presenters will be afforded the opportunity to nominate their faculty mentor to receive an outstanding research mentor award. Measurable key performance indicators such as participation rates and post-event survey results will be used to evaluate event success, with adjustments being made as necessary to improve future showcases.

Timing of student actions

Students will gain awareness about the utility and ethics of research as freshmen. Academic advisors and sponsors of Bobcat Day, a university-wide recruiting event, will encourage freshmen to participate in the day-long Undergraduate Research Forum, online tutorials, and in-person workshops. Faculty and marketing campaigns will also encourage these and other students to participate in these entry-point activities. During these events, information about the RES courses will also be distributed. For instance, there will be an informational booth set up at the forum with take-aways about the courses. In addition, faculty liaisons and student ambassadors will help to build interest in these courses. Ideally, a student would take the first course, RES 3399, as early as reasonably possible in their academic career. Acquiring these skills earlier will better prepare them for the production of a mentored research experience with a faculty member, which they will complete ideally as juniors or seniors. By completing these courses of action, students will receive a research-intensive designation on their transcript, which will help them as they apply for jobs and/or to graduate school. They will also receive certificates for completion of the online modules and workshops.

Timing of Student Actions		
Sophomores	**Juniors**	**Seniors**
Action I.1.A: - Students will attend an informational event and panel discussion on research. Action I.1.B: - Students will take an online tutorial on the utility of research. Action I.2.A: - Students will take an online tutorial on research's ethical aspects. Action I.2.B: - Students will attend a workshop on ethical research practices.	Action II.3.A: - Students will assemble an annotated bibliography. Action II.3.B: - Students will maintain a research journal/log in which they reflect upon and record the process used to collect a body of research, inquiry, or creative expression. Action II.4.A: - Students will assemble a proposal on their synthesized research. Action II.4.B: - Students will develop and deliver a class presentation on their synthesized research.	Action III.5.A: - Students will produce a paper/creative expression based on their research/creative experience. Action III.5.B: - Students will maintain a research journal/log in which they reflect upon and record the research/creative expression process. Action III.6.A: - Students will create a presentation about the mentored research experience and present it at an undergraduate research showcase event. Action III.6.B: - Students will prepare their mentored research experience for submission to a field-appropriate research conference or exhibition. Actual submission to the conference or exhibition is not required.

Administrative organization

The mission of the IDEA Center will be to increase and improve undergraduate participation in research at Texas State. It will be administered centrally through two staff members of the IDEA Center, housed administratively in University College, and physically located in Alkek Library. The IDEA staff members, a director and an assistant director, will collaborate with members of an advisory committee, consisting of a faculty liaison and student ambassador from each of the undergraduate colleges across the university, and representatives from university assessment and the QEP co-chairs, to improve mentoring connections for undergraduate students interested in participating in research. The IDEA Center will oversee efforts to standardize learning outcomes embedded in research-intensive courses across the various units for purposes of assessment.

Faculty liaisons from participating units will serve as points of contact for interested students in their respective units; will connect interested students to resources at the IDEA Center; will receive IDEA Center-referred students into their units; and will be repositories of information for interested students and faculty in their areas. These liaisons will be the point of entry for students into the QEP, connecting them with faculty who either teach an undergraduate research-designated course in their area or with faculty willing to work with students on undergraduate research in an extracurricular fashion. Liaisons will also instruct interested students in the initial steps required to

participate, including informing them of the required online modules and workshops on the utility and ethical conduct of research.

Increasing and improving undergraduate research will involve willing faculty members, student workers and, over time, undergraduate students who have participated in undergraduate research. The IDEA Center will also employ an administrative assistant and student workers. The goal is to promote undergraduate research across diverse units, faculty, and students, improve the success and management of students enrolled in research-intensive courses across various units, and increase opportunities for students not enrolled in research-intensive courses to find mentors and participate as desired.

Professional development

To successfully increase faculty participation, it will be essential to consider how undergraduate research mentoring factors into professional development – especially toward promotion and tenure for tenure-track assistant professors. Participation by such junior faculty must be considered as more than typical service. While teaching and supervising the research of graduate students can already be time-consuming, responsibly carrying out these activities with undergraduate students (who are generally not as knowledgeable about their fields as graduate students) can represent a unique challenge indeed.

Research shows that faculty supervising undergraduate researchers appraised student applicants, taught essential skills, oriented students to the projects at hand, lectured and demonstrated research concepts, and often supervised or assisted undergraduates one-on-one (Hunter et al., 2006). All faculty surveyed in Hunter et al. (2006) described the task as rewarding but time intensive. Literature shows that there are substantial, manifest benefits to undergraduate students participating in research, including improvements in self-perceptions as scientists and professionals, clarifications of career intentions, and improvement in skills including communication, laboratory skills and techniques, instrumentation, and confidence (Hunter et al., 2006). For these reasons, it is important that the manifest benefits to students and the university's mission be recognized and rewarded among participating faculty. At Texas State, mentoring undergraduate students in substantial research projects outside of the realm of teaching an UR-designated course has been recognized as demanding more time and attention than many other service assignments: the university has recently updated its faculty workload credit assignment guidelines, which now allow for the granting of workload credit to faculty who participate in undergraduate research mentoring. The results of this update should represent a welcome additional incentive for faculty to mentor undergraduates who are conducting research and/or creative activities.

On the other hand, such mentoring promises a number of substantial benefits for participating faculty and students: it can help raise the profile of participating faculty at research conferences; help recruit undergraduate and graduate students; increase faculty research productivity; help push undergraduate research participants toward more fulfilling, successful bachelor's degrees and more graduate school applications; and can be an important recruitment incentive for our Texas State population, which has substantial first-generation and underrepresented and underserved student enrollment. In the literature, documented student success (i.e., number of students participating, conference papers or journal articles submitted) is obviously of benefit to the students but is also inherently beneficial to participating faculty: of the participants in the study by Hunter et al. (2006), 90% of faculty reported benefits from UR, as did 91% of students. For these reasons, faculty supervision of undergraduate research is worthy of inclusion in faculty merit decisions among departmental and college promotion and tenure committees.

In pursuit of this goal, introductory information about training for faculty interested in or selected to participate in UR should be included at new faculty orientation (university, college and school/departmental levels). Through the IDEA Center, faculty will be offered training by instructional designers on how best to:

- engage students in research
- mentor undergraduate students
- train undergraduates in research
- understand the importance of UR in the tenure process
- implement undergraduate research projects in class; and
- find and pursue funding resources which can support undergraduate research

Texas State's professional development series will include:

- a faculty-oriented introduction to the QEP
- ideas for incorporating undergraduate research into existing professional development presentations on successful grant writing.

The envisioned impact of the fully implemented QEP

As explained earlier, to enroll in research intensive courses, students must first complete two online training modules and an in-person workshop, ideally in their freshman or sophomore years. The modules and workshop are an important gateway in that they provide the students with valuable information about research utility and ethics. This hybrid learning model provides equal opportunities to students in the San Marcos and Round Rock campuses.

Two specific research-intensive courses, RES 3399 and RES 4399, have been developed. These two courses provide students with a systematic overview of research, inquiry, and creative expression. The courses are designed in an interdisciplinary way so that a student from any academic background can potentially benefit from the course materials. Students emerge from these classes equipped with the skill sets to not only synergize existing research from literature, but also to develop and implement a research question independently. These courses are particularly important because some departments may not have systematic courses on research methods which adequately prepare undergraduate students to conduct their own research.

One of the ways the IDEA Center promotes research is through the RICE student poster showcase, which is a required component of RES 4399. The RICE showcase serves as a university-wide platform for students to share their research activities. Because students must explain their research results to attendees during the showcase, they gain valuable experience in public speaking and communication, which are critical skills for presenting research. Furthermore, the RICE showcase helps foster a community of student scholars, where students can take pride in their contributions and be motivated by each other.

In addition to helping undergraduates conduct their own research, a fully implemented IDEA Center can also pair interested students with faculty members who have research opportunities. Faculty members who are willing to have undergraduates contribute to their research can coordinate those research projects with the IDEA Center. This has the dual benefit of not only helping our faculty with their research, but also of potentially increasing the number of our undergraduates who pursue graduate studies because it will give them experience helping faculty with their research. As previously mentioned, the percentage of undergraduates who self-identify as having participated in research at Texas State is 17%. After implementation, the IDEA Center

should succeed in increasing that percentage by exposing students to more research opportunities and giving them the tools and confidence necessary to conduct their own research.

The IDEA Center can also help raise the profile of the university. Exceptional undergraduate research can potentially be published, and some of their research could be mentioned in local or national media. Either of those outcomes could provide the university with positive press coverage.

Timeline for implementation

Timeline for QEP Implementation	
Date	**Action**
Spring 2021	On-site review of Quality Enhancement Plan (QEP)
Summer 2021	Draft and follow-up report of QEP, if necessary
Fall 2021	Submit follow-up report, if necessary Approval of QEP and SACSCOC Reaffirmation Hire staff for the IDEA Center Design professional development for faculty liaisons, training for student ambassadors Develop online modules Develop workshop curriculum Develop assessment instruments (rubrics, surveys, quizzes for online modules), train graduate students in applying rubrics Develop RES 3399 curriculum
Spring 2022	Implementation of QEP Test assessment instruments Hold first Undergraduate Research Forum Facilitate online modules and workshop Initial collection of baseline data on Research Forum, modules, and workshop Submit RES 3399 curriculum for approval Develop RES 4399 curriculum
Fall 2022	Offer RES 3399 for the first time Continuing collection of baseline data on RES 3399 Submit RES 4399 curriculum for approval Plan the showcase
Spring 2023	Fully implement QEP actions: Forum, online modules, workshop, RES 3399 RES 4399 and showcase Completion of first year baseline data collection
Summer 2023	Analyses of first-year data
Academic Year 2023-2024	Expand faculty involvement and ambassador involvement Re-evaluate and revise plan as necessary based on assessment results Train personnel on updated plans Implement modified plan Gather second year assessment data Analysis of student learning and outcomes against baseline data

Academic Year 2024-2025	Re-evaluate and revise plan as necessary based on assessment results Train personnel on updated plans Implement modified plan Gather third year assessment data Analysis of student learning and outcomes against baseline data and second year of implementation
Academic Year 2025-2026	Revise plan as necessary based on assessment results Train personnel on updated plans Implement modified plan Gather fourth year summative assessment data
Fall 2026	Prepare QEP Impact Report
Spring 2027	Submit QEP Impact Report

QEP organizational structure

The proposed QEP will require the sustained, coordinated efforts of faculty, staff, administration, and students throughout the university. To accomplish the goals of the QEP, a structure providing the leadership and personnel, along with reporting lines and activities, has been established. The organizational structure is shown in Figure 1.
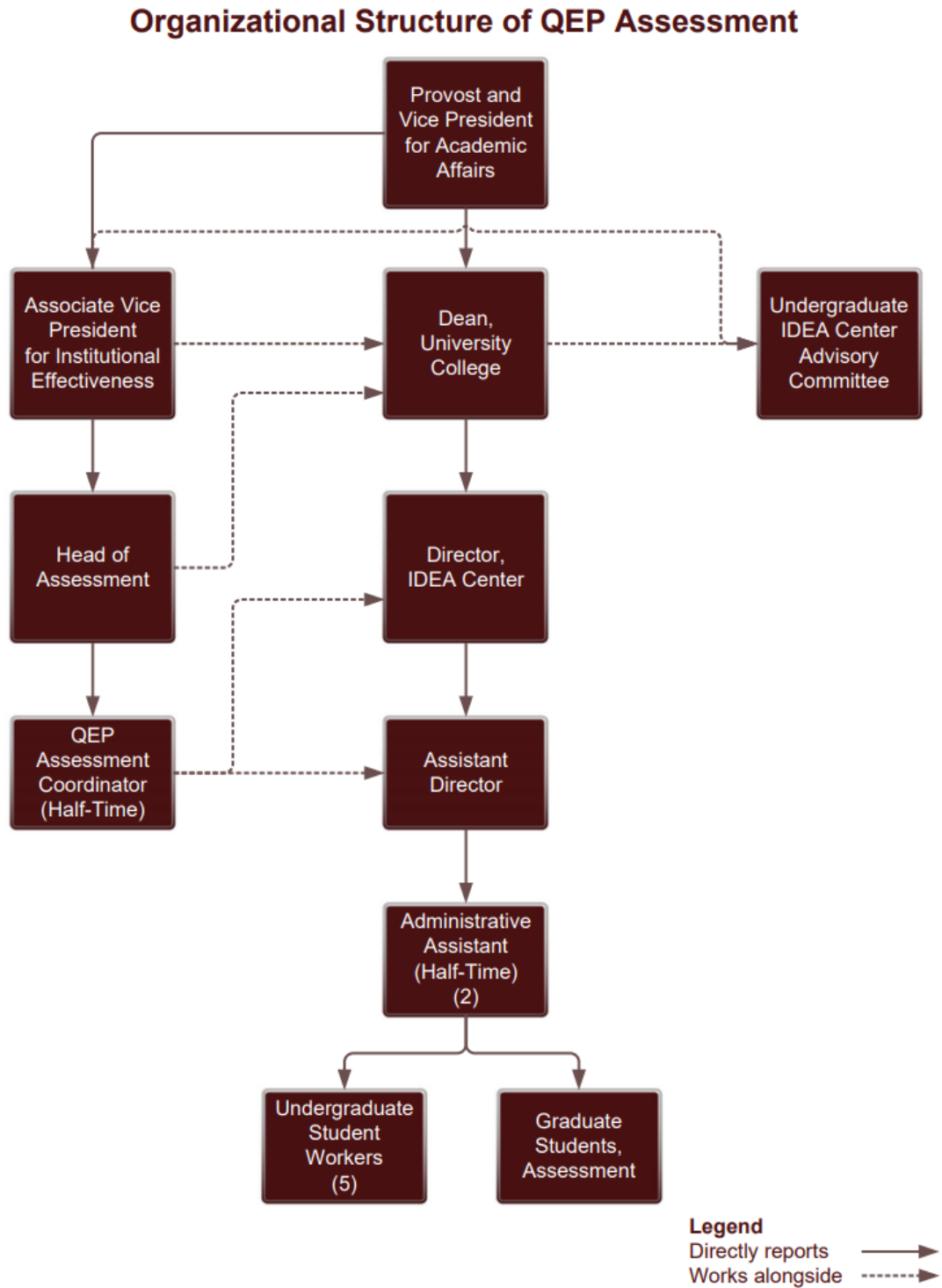
IDEA Center leadership

To provide ongoing leadership for the implementation and sustainability of the QEP, an organizational structure will be institutionalized. The IDEA administration will bring key players together, discuss issues relevant to the success of the QEP, establish goals, and develop strategies for achieving them.

IDEA Administration. A 50% program staff director who is also a 50% tenured faculty member will be hired who will report to the dean of University College. The person hired will serve as the leader of the QEP and the IDEA Center. The director along with a 100% program staff assistant director will oversee all activities outlined in the QEP including the implementation of actions, organization, and development of staffing, use of resources, coordination of regular meetings with center liaisons, and assessment of the QEP. Personnel from the IDEA Center also directly report to the director on activities pertaining to the QEP. Personnel from other divisions supporting the QEP will indirectly report to the director. The director and assistant director will receive suggestions and support from an IDEA Advisory Committee.

IDEA Advisory Committee. The IDEA Advisory Committee will be created to provide guidance and support in achieving the IDEA goals. Members of the committee will include faculty, staff, and students. The IDEA administration will provide leadership and convene meetings of the IDEA Advisory Committee. By reviewing assessment data and offering suggestions and advice, the IDEA Advisory Committee will provide an effective feedback loop for continuous improvement. The IDEA Advisory Committee will be made up of representatives as follows:

- One faculty representative/liaison from each college
- One student representative/ambassador from each college
- The head of assessment from Institutional Effectiveness

Figure 1: Organizational structure of QEP assessment

Organizational Structure of QEP Assessment

The IDEA Center

The Division of Academic Affairs provides leadership for the IDEA initiative. The newly created IDEA Center staffing will serve as the core.

IDEA Center Staff. To support the IDEA Center's efforts, a half-time *director*, a full-time *assistant*/*associate director*, an *administrative assistant*, and *student workers* will be hired. The director should be a faculty member tenured at the rank of associate or full professor, be active in research, and be experienced in directing or otherwise working productively with undergraduates on research and creative projects.

Support from outside the IDEA Center. Support for the center will be provided from a cross section of the university, including:

- College representatives/faculty liaisons on the IDEA Advisory Committee
- Hosting of center initiatives and activities (e.g., the Undergraduate Research Forum and the RICE Showcase) by each participating college and the LBJ Student Center
- Promotion of center activities through University Marketing and colleges
- Faculty liaisons between the center and the academic units, including:
  o College-level representatives for membership on the IDEA Advisory Committee
  o School/Department representatives for coordination of class-level interaction with center activities
  o Instructors, mentors, and/or research advisors of students in the QEP
- Student ambassadors, including:
  o Ambassadors who serve on the IDEA Advisory Committee
  o Ambassadors who participate in the Undergraduate Research Forum

Resources

The resources necessary to undertake the actions and initiatives of the Quality Enhancement Plan (QEP) consist of personnel, monetary, equipment, and both virtual and physical space. Because the Undergraduate Research initiative involves a new, fully staffed Undergraduate IDEA Center, resources will consist of new allocations as well as reallocations or in-kind use of existing university resources. At Texas State, most of the expenditures for the QEP will be paid from appropriations and tuition.

Budget and funding

A realistic budget for the newly allocated QEP funds has been estimated. The IDEA Center expenditures will come from appropriations and tuition. The proposed budget and funding sources appear in the table below, with discussion following. University administration is committed to full funding of the QEP regardless of fluctuations in appropriations and tuition.

New funding projection for fiscal years 2022 – 2026*					
	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
IDEA CENTER OPERATIONS					
Director (50%)	$55,000	$56,700	$58,400	$60,100	$62,000
Buyout (full professor)	52,922	52,922	52,922	54,510	56,145
Assistant Director (100%)	0	61,800	63,700	65,600	67,500
Assessment Coordinator (50%)	30,000	30,900	31,900	32,800	33,800
Student Development Specialist (100%)	42,000	43,300	44,600	45,900	47,300
Research Grants Coordinator (50%)	28,000	28,900	29,700	30,600	31,500
Administrative Support (100%)	44,000	45,300	46,700	48,100	49,600
Graduate Students (2 X 20 hrs. X 49 wks.)	29,400	30,300	31,200	32,200	33,100
Student Wages (2X20 hrs. X 49 wks.)	19,600	20,200	20,800	21,400	22,100
Undergraduate Student Ambassadors	5,000	6,000	7,000	8,000	9,000
Benefits	72,600	74,800	77,000	79,300	81,000
Research Expenses, Incentives & Awards	0	15,000	17,500	20,000	22,500
Student Travel	0	30,000	30,000	35,000	35,000
Equipment & Technology	35,000	0	0	10,000	7,500
Development & Assessment	5,000	10,000	12,500	15,000	17,500
Director/Staff Travel	2,500	2,750	3,000	3,250	3,500
Maintenance and Operations	30,000	35,000	40,000	45,000	50,000
TOTAL COST OF QEP	**$451,022**	**$543,872**	**$566,922**	**$606,760**	**$629,045**

Incremental Funding Needed	$2,797,621
Number of Years	5
Average Incremental Funding Needed	$559,524

* Funding from appropriations and tuition

Human resources

Costs associated in the category of human resources include salary and benefits for the director of the IDEA Center (50%), an assistant director (100%), a research grants coordinator (50%), an assessment coordinator (50%), a student development specialist (100%), an administrative assistant (100%), and student assistants. The administrative assistant, student assistants, student development specialist, and research grants coordinator will be new positions. The director will have a 50% appointment in the IDEA Center and 50% appointment in their department. The center director buyout salaries for the years listed are equivalent to 50% of average CUPA salaries for a full professor. The assistant director will be program faculty with a 100% appointment in the IDEA Center. Descriptions of these positions follow below. See also Appendix III for sample job announcements and job duties for IDEA Center leadership.

__Director, IDEA Center.__ The director will have experience working with students from diverse backgrounds and a demonstrated commitment to improving access to higher education for under-represented groups and will hold an earned terminal degree in a research-based program from an accredited institution. The director will oversee the center's operations to coordinate, promote, and evaluate the undergraduate research and creative endeavors curriculum and associated programs. In their administrative role, the director reports to the dean of University College.

Assistant director, IDEA Center. The assistant director will assist the director in all aspects of the IDEA Center's operations. The assistant director will maintain the center's website, prepare informational and promotional materials for all aspects of the center's programming, work with university offices in the disbursement of funds to support undergraduate student research and creative endeavors, process necessary paperwork and maintain fiscal records to support the program, develop and present workshops for students and faculty, and provide on-site supervision of IDEA Center events. The assistant director will hold an earned master's degree or higher in a research-based program from an accredited institution. The assistant director's position reports to the director of the IDEA Center.

Assessment coordinator. A half-time assessment coordinator position is proposed to coordinate and conduct assessment of the undergraduate research program. Job duties will include acting as a liaison with faculty who are assessing undergraduate students engaged in research, assisting with rubric and survey development, training and supervision of graduate students tasked with assessment activities, survey administration, data collection, and report preparation. This position will not be assigned to the IDEA Center. Instead, they will report to the university's head of assessment, who is under the associate vice president for Institutional Effectiveness, to facilitate integration of QEP assessment into the institutional assessment program.

Student development specialist. The student development specialist is responsible for implementing activity-specific goals, programs, and services, including planning workshops and training to increase participation in undergraduate research activities. The position will develop strategies to institutionalize the IDEA Center activities over time, advocate for goals, and implement project management and evaluation processes. The student development specialist reports to the director of the IDEA Center.

Research grants coordinator. The research grants coordinator will contribute significantly to establishing a culture of scholarship for undergraduate research throughout the university. Specifically, the individual will act as an advisor, helping Texas State undergraduate students identify and apply for extramural competitive fellowships, scholarships, and grants to support their research projects. The research grants coordinator reports to the director of the IDEA Center.

Administrative support. The administrative assistant's primary role will be to provide administrative support to the IDEA Center director and to faculty/student participation in undergraduate research. The administrative assistant will perform duties such as maintaining calendars for staff and scheduling appointments, answering phones, greeting visitors, filing, ordering supplies, and assisting with various administrative duties. They will assist the director with budget transactions and monitor due dates for projects/assignments, assist the program with a wide variety of documentation including assist with QEP reports for SACSCOC accreditation, serve as travel officer for faculty and students, prepare travel applications and reimbursement, assist with preparations for programs, activities, and events, and supervise student workers.

Graduate students. The primary role of the graduate student assistants will be to assist with the assessment of the undergraduate research program, as well as serve as mentors to the undergraduate students in the program. Other responsibilities of graduate student assistants will include assisting staff with research center programming and events, helping edit and maintain the undergraduate research journal, and providing support through various administrative tasks. The QEP assessment coordinator will train graduate students to apply all rubrics reliably. At least two independent graduate student coders will apply the rubric to student work after a process of calibration. Inter-rater agreement of at least 80% will be sought.

Undergraduate student ambassadors. The undergraduate student ambassadors' primary roles will be to assist with necessary assessment activities and workshops/programs, and to serve as ambassadors to recruit students to undergraduate research activities.

Research expenses, incentives, and awards

While faculty and graduate students involved in mentoring undergraduates may have some existing funds to support an undergraduate research project, additional funds for such projects have been allocated. These funds will cover:

- Field work, including but not limited to funds for travel to field sites, permits required for doing the field work, any necessary equipment required to conduct the work
- Transcription and editing services
- External analysis
- Conference/Professional meeting travel to disseminate research findings.

Students' ability to promote and present their research or creative work as part of a community of practice is an integral part of the undergraduate research experience. Providing advanced financial support (i.e., travel stipends, scholarships, and presentation awards) will allow students to disseminate their findings at local, state, and national conferences without causing students an additional economic burden. The benefits of presenting undergraduate research findings allow the student to develop marketable skills (i.e., presentation skills, critical thinking skills, effective communication), increase networking opportunities, and contribute to graduate school preparation.

Student travel

Eligible travel funds include conference or qualifying event registration fees, transportation (including airfare), lodging, meals, and materials. The maximum individual travel fund amount will be $500 (in-state) and $750 (out-of-state) per academic year. The IDEA Center will receive applications after a student has received acceptance to a conference or qualifying event. Applications are accepted on a rolling basis with funds distributed quarterly on a first-come, first-served basis. Students are encouraged to seek additional funding through departments, faculty, and other programs. Matching funds will receive additional consideration. Students who have already been awarded travel funds during the same academic year may reapply and be awarded if remaining funds are available. Application criteria for travel funds would consist of an application including title, letter of recommendation from faculty member, and acceptance information to the conference or other qualifying event. Upon return from the conference or qualifying event, the student will be required to submit a two-page report on the experience and detailing resulting growth areas. Students who are awarded must also present their findings at the RICE showcase.

Equipment and technology

Equipment needed to implement the QEP consists of desktop computers and printers. Desktop computers will be provided in the IDEA Center facility for the director, assistant director, research grants coordinator, student development specialist, assessment coordinator, and administrative assistant and a few workstations for undergraduate and graduate student workers. At least one office printer will also be purchased for IDEA Center staff administrative use. One or more printers capable of printing large-format posters may also be purchased as poster-printing demand grows; it is expected that existing printers on the campuses and at nearby commercial establishments will suffice to meet initial needs of program participants. The IDEA Center will

purchase eco-friendly conference poster tubes to be checked out by students with poster presentations at conferences.

Other technology needs are minimal and should be met using existing university resources. Online tutorials and quizzes will be delivered using *Canvas*, the university's online learning management system. Online surveys will be delivered using either *Canvas* or *Qualtrics*, for which the university owns an enterprise license. *Zoom*, the university's web-conferencing tool, will be used to connect faculty and students located at the Round Rock campus with workshops and programs offered on the San Marcos campus. The university provides a wide range of software for use by students and faculty engaged in research; examples include *ArcGIS, MATLAB*, *Qualtrics, JMP Pro,* and *SPSS Statistics*. The Alkek Library permits students to check out equipment such as digital cameras, video recorders, sound recorders, headsets, and drawing tablets.

Development and assessment

Funding for personnel and program development and assessment activities is included in the proposed budget. Funding is proposed to support the development of three new online tutorials to be created in the university's learning management system, as well as for costs associated with planning and implementing the undergraduate research forum and showcase, the workshop on ethical research practices, and the new RES 3399 and RES 4399 undergraduate research courses.

Staff development funding is proposed to provide training to faculty members who will serve as liaisons to recruit and supervise students and participate in assessment activities. Training will also be necessary for the undergraduate students who serve as ambassadors to recruit students to undergraduate research activities or who assist with the workshops and programs. Graduate students will receive training in assisting the undergraduate research program by applying rubrics to student work and serving as mentors to undergraduates in the program.

Expected funding needs for assessment activities include the development of online quizzes to assess learning in online tutorials, development of rubrics and training personnel to apply them to undergraduate student work, development, and deployment of electronic and paper surveys to assess programs and activities, and funding for incentives used to encourage response to online and in-person assessments.

Physical facilities

The IDEA Center will serve as a centralized, one-stop center for undergraduate students to search for available research projects and funding. This center will also hold workshops, training, collaborations, and programs. It will also be responsible for coordinating the guidelines and assessment methods of various courses, in addition to collecting, analyzing, and circulating research outcomes within the university.

In order to be centrally situated on the San Marcos campus, accessible to undergraduate students, and contain the needed research materials, data, and staff familiar with research, the IDEA Center will be located on the first floor of the Alkek Library, which is the main library on the San Marcos campus and which has recently undergone extensive renovations. Figure 2 depicts a schematic of the first floor of Alkek. Having collaboration space as well as large meeting spaces nearby will help facilitate the activities of the IDEA Center while keeping their actual physical footprint small. Approximately 1200 square feet of space will be used to house the staff for the IDEA Center.

Figure 2: Schematic of the first floor of Alkek Library with IDEA Center highlighted

IDEA Center
Shared Meeting Space

Grand Staircase to Main Floor
Elevators

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VI. ASSESSMENT

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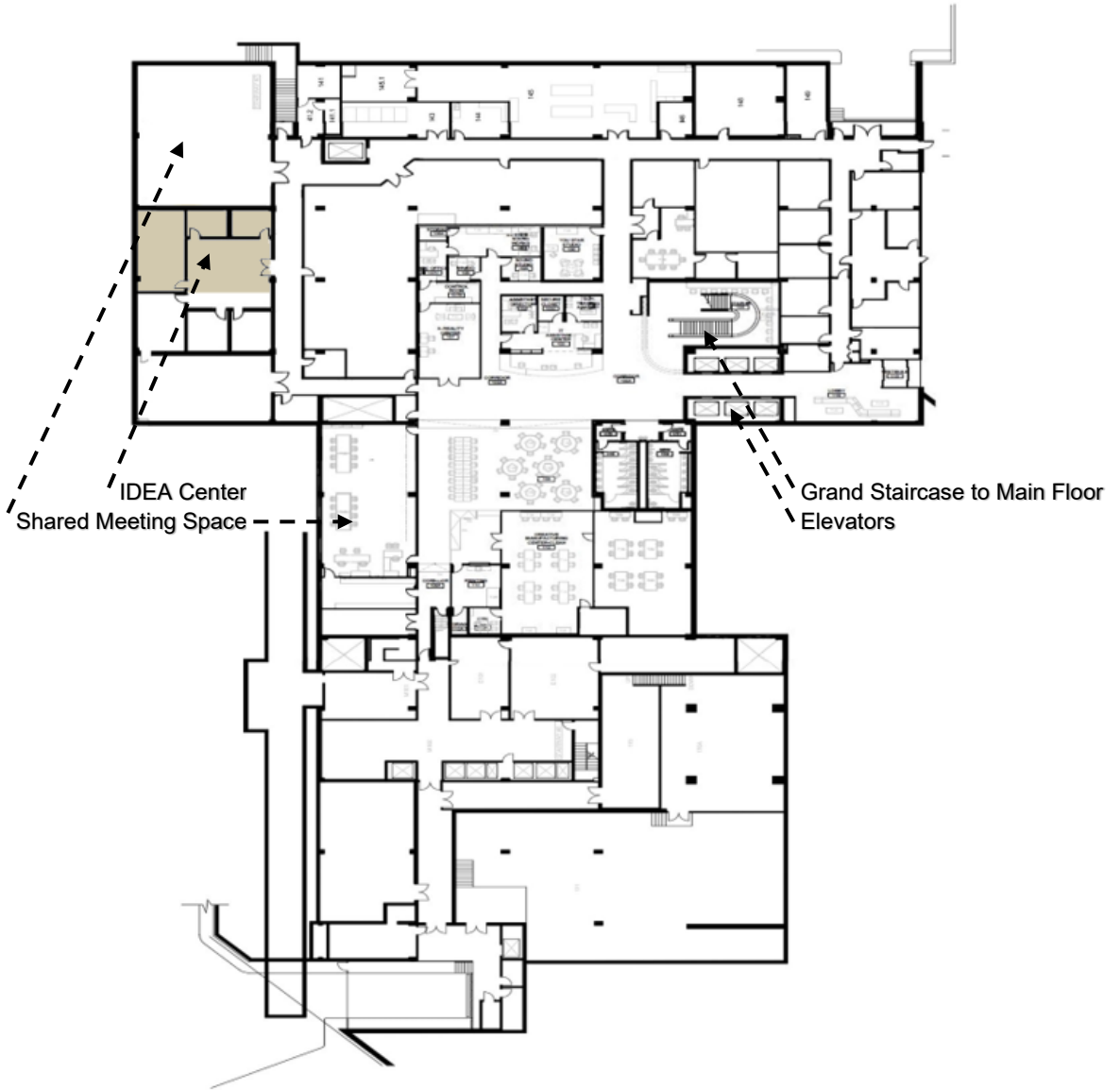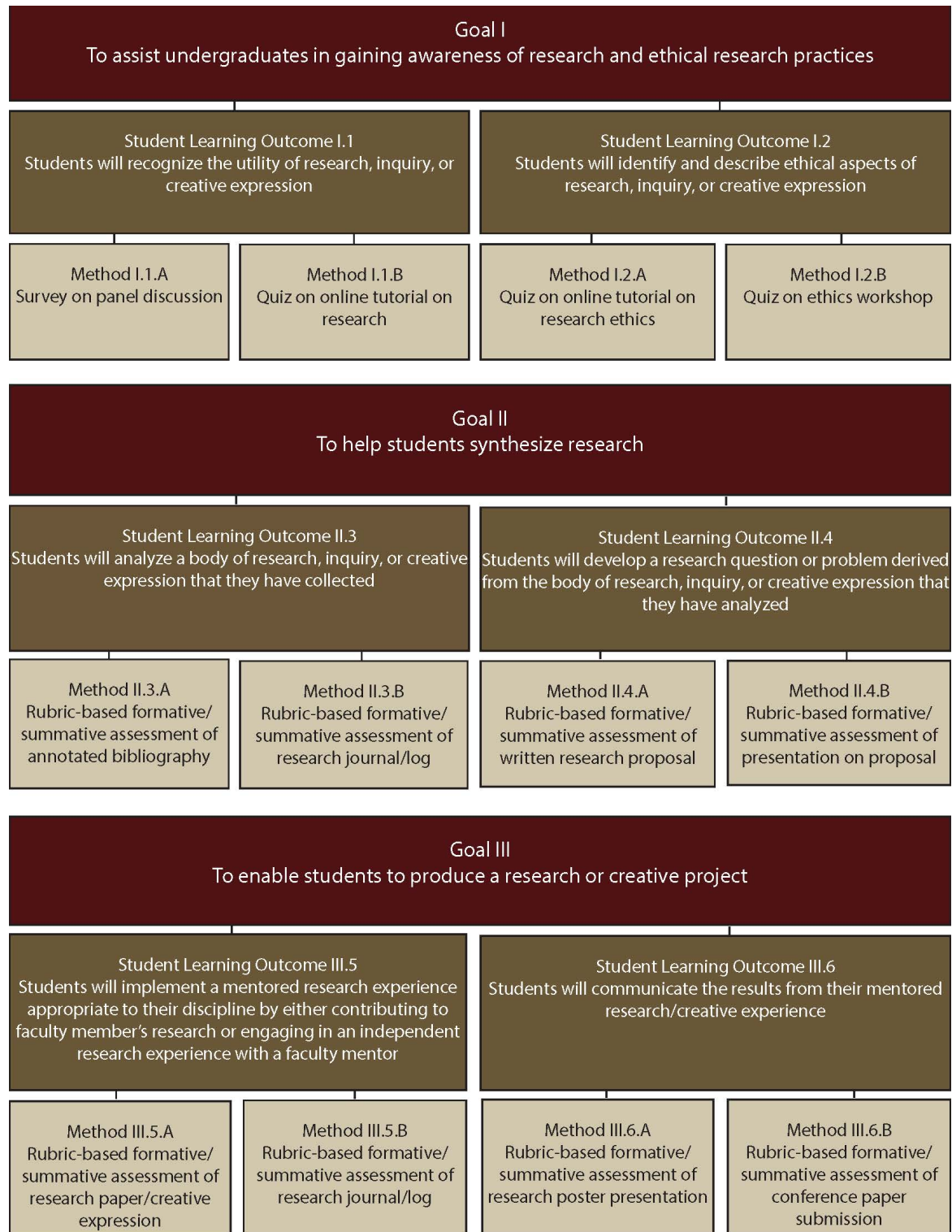
VI. Assessment

Conceptual framework for assessment

Texas State University exhibits a robust commitment to undergraduate research; however, coordination of undergraduate research traditionally has been localized in individual colleges, departments, and programs. This localization has resulted in a few unintended consequences. The first is that the quality of the undergraduate research experience at Texas State is variable, as revealed through interviews with members of student focus groups, many of whom express a desire for a more structured program of undergraduate research. Another consequence of this localization is that it is difficult to assess the impact of undergraduate research across the student experience at Texas State. As a result, it is challenging to devise improvements to undergraduate research, as there is a lack of hard data upon which to base decisions. This Quality Enhancement Plan (QEP) aims to address these issues by building a framework for undergraduate research which will provide a consistent, high-quality research experience across all of the colleges which comprise Texas State. Providing centralized coordination and oversight of undergraduate research will also enable Texas State to coordinate efforts and leverage untapped resources as well as develop a more targeted marketing campaign, allowing the institution to recruit underserved students to undergraduate research that might otherwise remain unengaged.

The first step in improving the overall undergraduate research experience was the development of six student learning outcomes, specifically keyed to undergraduate research and shared across the colleges of Texas State. Students will attain these learning outcomes through a structured series of online modules, in-person workshops, and research-intensive courses, culminating with a capstone research project under the supervision of a faculty mentor. The assessment of this research experience will employ a multi-faceted approach, with two direct methods of assessment designed to assess each of the six student learning outcomes. The various elements of the assessment plan include an online or paper survey and electronic quizzes, with projects and presentations evaluated using locally designed rubrics. The framework of goals, learning outcomes and assessment methods which form the foundation of Texas State's QEP on undergraduate research is outlined in Figure 3. The assessments will provide baseline data on student learning during year one, thereby allowing for observing changes in student learning during years two through five. The goal is to have achieved a 2-3% increase by year five in each assessment of student learning relative to the year one baseline.

Undergraduate student graduation rates, overall GPAs, and other similar environmental indicators of student success will also be collected and analyzed over the same five-year period to gauge the relative success of students in the QEP compared to other Texas State students. In addition, indirect measures such as the Cooperative Institutional Research Program (CIRP) Survey for Freshmen, the National Survey of Student Engagement (NSSE), and locally developed student and faculty surveys will be used to evaluate the overall level of satisfaction with the undergraduate research program. The assessment of these various modalities will be spearheaded by the director and staff of the IDEA Center in consultation with the assessment coordinator working under the supervision of the head of assessment. The assessment of the various student artifacts will be accomplished by a mixed team of faculty and graduate students working under the guidance of the assessment coordinator and the director of the IDEA Center.

Figure 3: Outline of Goals, Learning Outcomes, and Assessment Methods

Goal I
To assist undergraduates in gaining awareness of research and ethical research practices

Student Learning Outcome I.1	Student Learning Outcome I.2
Students will recognize the utility of research, inquiry, or creative expression	Students will identify and describe ethical aspects of research, inquiry, or creative expression

Method I.1.A	Method I.1.B	Method I.2.A	Method I.2.B
Survey on panel discussion	Quiz on online tutorial on research	Quiz on online tutorial on research ethics	Quiz on ethics workshop

Goal II
To help students synthesize research

Student Learning Outcome II.3	Student Learning Outcome II.4
Students will analyze a body of research, inquiry, or creative expression that they have collected	Students will develop a research question or problem derived from the body of research, inquiry, or creative expression that they have analyzed

Method II.3.A	Method II.3.B	Method II.4.A	Method II.4.B
Rubric-based formative/ summative assessment of annotated bibliography	Rubric-based formative/ summative assessment of research journal/log	Rubric-based formative/ summative assessment of written research proposal	Rubric-based formative/ summative assessment of presentation on proposal

Goal III
To enable students to produce a research or creative project

Student Learning Outcome III.5	Student Learning Outcome III.6
Students will implement a mentored research experience appropriate to their discipline by either contributing to faculty member's research or engaging in an independent research experience with a faculty mentor	Students will communicate the results from their mentored research/creative experience

Method III.5.A	Method III.5.B	Method III.6.A	Method III.6.B
Rubric-based formative/ summative assessment of research paper/creative expression	Rubric-based formative/ summative assessment of research journal/log	Rubric-based formative/ summative assessment of research poster presentation	Rubric-based formative/ summative assessment of conference paper submission

The QEP for undergraduate research will be phased in over two years, starting with the hiring of the IDEA Center director and staff beginning in the fall of 2021. The first stage of the program, the online modules and workshops, will be offered to students in the spring of 2022. This will be followed by the first research course, RES 3399, in the fall of 2022, with the full program of undergraduate research coming in the fall of 2023. Figure 4 outlines the timeline for implementing the various components of the QEP undergraduate research program, together with the size of the student cohorts anticipated to participate in the program during the initial five years that the program is in place.

Figure 4: Implementation Timeline and Projection of Student Participation

	Informational Event Panel	Online Utility	Online Ethics	Ethics Workshop	RES 3399	RES 4399	Showcase	
Fall 2021	Hiring Staff	Hiring Staff	Hiring Staff	Hiring Staff	Hiring Staff	Hiring Staff	Hiring Staff	
Spring 2022	50 - 75	20 - 30	20 - 30	20 - 30	x	x	x	
Fall 2022	100 - 135	35 - 55	35 - 55	30 - 40	20 - 25	x	x	
Spring 2023	150 - 200	50 - 75	50 - 75	40 - 50	30 - 35	15 - 20	15 - 20	Cohort 1
Fall 2023	200 - 265	65 - 100	65 - 100	50 - 60	40 - 45	25 - 30	25 - 30	Cohort 2
Spring 2024	250 - 325	80 - 120	80 - 120	60 - 70	50 - 55	35 - 40	35 - 40	Cohort 3
Fall 2024	300 - 390	95 - 145	95 - 145	70 - 80	60 - 65	45 - 50	45 - 50	Cohort 4
Spring 2025	350 - 450	110 - 165	110 - 165	80 - 90	70 - 75	55 - 60	55 - 60	Cohort 5
Fall 2025	400 - 515	125 - 190	125 - 190	90 - 100	80 - 85	65 - 70	65 - 70	Cohort 6
Spring 2026	450 - 575	140 - 210	140 - 210	100 - 110	90 - 95	75 - 80	75 - 80	Cohort 7
Fall 2026	500 - 640	155 - 235	155 - 235	110 - 120	100 - 105	85 - 90	85 - 90	Cohort 8

Legend	
Hiring Staff	All positions will be filled by end of fall 2021
x	Course or event not yet offered due to timing of the QEP rollout
Grayscale shading	Horizontal shading bands denote student cohorts 1-8 progressing through the QEP between spring 2022 and fall 2026

NB: initial projections of student participation represent estimates based on number and size of initial sections of the RES courses; growth in participation over time is meant to reflect the university's growing awareness of the QEP while also depicting estimated by-cohort attrition over time.

Assessment of student learning outcomes

The QEP focuses on the achievement of the three primary goals described below. Each goal is comprised of two student learning outcomes. Assignments contributing to the student attainment of the learning outcomes will be assessed to provide formative data for the ongoing improvement of the undergraduate research program. Furthermore, all methods outlined below are designed to provide summative data by the end of the five-year timeline. Subsequent to the end of the five-year window, methods may be revised based on assessment results to provide more effective content delivery as students progress through the QEP curriculum. The curriculum is designed for students to progress through the program sequentially, with each module, workshop, and course building upon previous instruction and with students acquiring deeper research skills as they advance through the program, culminating with a capstone research project. Under normal circumstances, a student will be able to complete the research curriculum, starting with attending the informational event and culminating with the completion of the capstone research project, in as few as three consecutive semesters.

Primary responsibility for the assessment of these student learning outcomes will reside with the director of the IDEA Center. The half-time assessment coordinator, working for the

head of assessment, will assist the director of the IDEA Center in developing and administering the various assessments and analyzing data and integrating findings into practices.

The assessment instruments employed to assess the QEP learning outcomes will be developed through the combined efforts of the director and staff of the IDEA Center, the assessment coordinator working with the head of assessment, and the faculty who will be teaching the various courses and workshops associated with the QEP. For the more objective assessments, including the surveys and quizzes, a common set of questions will be developed and used as a test bank for electronic administration. Instructional design experts from the Office of Distance Education and Learning (ODEL) will also be consulted in the development of these assessment instruments. Resulting assessment data will be gathered, stored, and analyzed by the assessment coordinator.

For the subjective assessments, including projects and presentations, a common set of rubrics will be used to assess the learning outcomes associated with the undergraduate research program. The rubrics will focus on process and be general in nature, such that they can be used to assess assignments across diverse colleges and programs, irrespective of academic discipline. The rubrics employed in assessing the relevant outcomes of the QEP are derived from VALUE rubrics promulgated by the Association of American Colleges and Universities (AAC&U) and which have been vetted for validity and reliability. Two sample assessment assignments and corresponding rubrics are included in Appendix IV.

Most subjective student learning will be assessed by the IDEA Assessment Team, a group comprised of research-experienced graduate students recruited by faculty liaisons from the representative colleges, schools, and departments at Texas State. Under the guidance of the assessment coordinator, the IDEA Assessment Team will assess assignments using the developed rubrics. To improve interrater reliability, the IDEA Assessment Team will meet collectively to receive training on using the rubrics. Upon receiving the training, each member will assess three to four assignments as a group and compare results to "normalize" the rubrics before going on to assess the remaining student artifacts.

To the extent possible, student artifacts will be assessed by the IDEA Assessment Team members drawn from the college from which the student artifact was submitted. For example, ideally a biology student's project would be assessed by a graduate student from the College of Science and Engineering.

As a condition of their involvement, faculty participating in the QEP will submit electronic copies of all QEP student assignments to the IDEA Center and, when practicable, all assignments will be assessed by the IDEA Assessment Team. If student participation in the QEP grows to the extent that assessing all assignments is impractical, the staff of the IDEA Center will randomly select a portion of the submitted work to assess.

The IDEA Center will maintain all student artifacts and assessment records documenting the assessment process. The director of the IDEA Center and the assessment coordinator will regularly analyze the assessment results and provide a yearly report to the IDEA Center Advisory Committee and the provost and vice president for Academic Affairs. The QEP outcomes assessment plan and results will be placed in the university's outcomes assessment monitoring database in a manner similar to other educational outcomes assessments. Results and evidence of improvement will likewise be reported and audited in a manner similar to other educational outcomes assessments. Observations from annual assessment reports will serve as the basis for improving processes, content, and delivery. This strategy will be employed throughout the implementation of the QEP to ensure continuous improvement.

Specifically, the accomplishment of the student learning outcomes of the QEP will be assessed as follows:

Goal I. To assist undergraduates in gaining awareness of research and ethical research practices.

Outcome 1: Students will recognize the utility of research, inquiry, or creative expression.

> **Method of assessment I.1.A:** Students will attend an informational event and panel discussion which together emphasize the value of research and creative expression. The informational event will highlight Texas State undergraduates presenting their research/creative projects, while the panel discussion will feature conversations between students and their faculty mentors on the benefits of their research collaboration. The panel discussion will include a question-and-answer session with attendees. To assess the effectiveness of this event, attendees will be asked to respond to four survey items: (1) to list three benefits of participating in undergraduate research, including any personal benefits; (2) to explain how research made a real difference in society; (3) to explain how they would become involved in undergraduate research – what would be their next step; who might they contact; and (4) to say whether hearing from student researchers at the event was valuable, with an opportunity to suggest ways to improve these events. Completing this survey will be required to provide evidence of attendance, which is a prerequisite for RES course enrollment. The assessment instrument will be administered immediately after the panel discussion is finished and completed before attendees depart the venue and later reviewed by IDEA Center personnel. The assessment results will inform the planning and content of future panel discussions and presentation format to better recruit students to the undergraduate research program.

> **Method of assessment I.1.B:** After attending the informational event and panel discussion, students electing to pursue undergraduate research will have the opportunity to enroll in an online learning module designed to provide a deeper introduction to the utility and benefits of undergraduate research. Upon completion of the online module, students will be assessed by means of a short quiz jointly developed by the staff of the IDEA Center in cooperation with the assessment coordinator and the instructional design team from the Office of Distance Education and Learning. The quiz will be administered through *Canvas*, the university's learning management system, and will be automatically graded. Students will be expected to answer five multiple choice items on the general utility of research and five questions on research tools. The information included in the module will provide context and background for students who enroll in the undergraduate research methods course, RES 3399. Assessment results will be reviewed by the staff of the IDEA Center and used to adjust the content of the module and the associated assessment instrument.

Outcome 2: Students will identify and describe ethical aspects of research, inquiry, or creative expression.

> **Method of assessment I.2.A:** Students interested in pursuing undergraduate research through this QEP will be required to enroll in an online tutorial designed to introduce students to the fundamentals of research ethics across a broad spectrum of disciplines, from the sciences to the performance arts. Topics addressed will include plagiarism, proper source citation, ethical handling of personal data, and human and animal test-subjects research. The attainment of the learning outcome will be assessed through five

scenario-based multiple-choice questions administered through *Canvas*, immediately upon completion of the module. The questions will focus on identifying basic concepts pertaining to plagiarism, animal test subjects and human subjects research and the purpose of an institutional research review board (IRB). While students will have multiple opportunities to pass the quiz, the assessment will focus on the number of students who meet the expectation on their first attempt. The results of the assessment will be reviewed by the staff of the IDEA Center, and the review will inform modifications to the online tutorial.

Method of assessment I.2.B: Students interested in pursuing undergraduate research through this QEP will be required to enroll in a workshop designed to provide a deeper examination of ethical research practices that were introduced in the online module. The workshop participants will analyze case studies related to ethical practices in research, focusing on examples of applied ethics within various disciplines. Upon conclusion of the workshop, students will be assessed via a five-question quiz administered through *Canvas*. The quiz will ask students to identify fundamental ethical issues identified in the case studies and how they could have been avoided, describe the institutional rules in place at Texas State to prevent such violations, and identify the appropriate points of contact if a student has a question pertaining to the proper ethical conduct of a research task or the development of a creative project. Results of the quiz will be reviewed by the staff of the IDEA Center and used to improve the quality of the ethics workshop.

Goal II. To help students synthesize research.

Outcome 3: Students will analyze a body of research, inquiry, or creative expression that they have collected.

Method of assessment II.3.A: As part of the introductory research course, RES 3399, students will demonstrate the skills needed to assemble and critique a body of literature pertaining to their area of study or creative expression by producing an annotated bibliography. The attainment of the needed skills demonstrated through the annotated bibliography will be assessed by the IDEA Assessment Team trained on the use a common rubric which measures key performance indicators integral to the learning outcome being assessed. The key performance indicators include the degree to which students can describe how a source can be employed to answer a research question, identify, and employ the various annotation styles, and demonstrate analysis of the various uses of an annotated bibliography. An example of the annotated bibliography assignment and rubric for assessing the annotated bibliography is included in Appendix IV.

Method of assessment II.3.B: As a requirement of the introductory research course, RES 3399**,** students will maintain a research journal throughout the semester which describes the process used to assemble a body of research and creative expression pertaining to the research question or creative project the student seeks to undertake. At the end of the course, the journal entries will be assessed through a common rubric by the IDEA Assessment Team. The rubric will be designed to assess key performance indicators which support the learning outcome, such as how the students incorporate feedback from faculty into their research analysis, the various sources they employed to collect the body of research, the methodology used to conduct that search, and how they have both analyzed findings from previous research which contribute to an understanding of the research question or creative project, as well as identified possible questions for further investigation.

Outcome 4: Students will develop a research question or problem derived from the body of research, inquiry, or creative expression that they have analyzed.

Method of assessment II.4.A: As part of the introductory research course, RES 3399, students will develop a research or creative expression proposal based on the synthesized research they have conducted throughout the semester. Along with an overall description of the project, the research proposal will include a field- or discipline-specific statement of the research question, a review of the pertinent literature, and a proposed methodology of research. The research or creative expression proposal will be assessed by the IDEA Assessment Team recruited specifically for their experience in research, using an IDEA Center developed common rubric which assesses the proposal across the following key performance indicators: relevance of the topic, thoroughness of the literature review, and the description of the project including adequacy of the design, the feasibility, and likelihood of success, and the potential for learning. The IDEA Center will maintain electronic copies of the proposals and completed rubrics. An example of the research assignment and rubric for assessment is included in Appendix IV.

Method of assessment II.4.B: As a requirement of the introductory research course, RES 3399, students will develop and deliver an oral presentation on their research proposal. The assignment is designed to assess students' ability to organize and articulate their research such that it is clear and understandable to a diverse audience. The assessment will also assess students' confidence in delivering research results using appropriate visual aids. Finally, this method will assess students' grasp of the material by evaluating their capacity to field questions about the research they have analyzed. The assessment of this assignment will be accomplished by the IDEA Assessment Team, utilizing a common rubric developed by the staff of the IDEA Center in collaboration with the assessment coordinator and with input from the faculty teaching the course.

Goal III. To enable students to produce a research/creative project

Outcome 5: Students will implement a research/creative experience appropriate to their discipline by either contributing to faculty member's research or engaging in an independent research experience with a faculty mentor.

Method of assessment III.5.A: As part of the independent research study, RES 4399, and under the supervision of a faculty research mentor, students will produce a paper or creative expression based on their research/creative experience. This independent study will typically be undertaken during a student's junior or senior year. Projects will be assessed by the IDEA Assessment Team using a common rubric designed by the IDEA Center and the assessment coordinator. Using the rubric, assessors will determine how well students accomplish the following key performance indicators: development of an abstract; clarity in stating the research question; the procedure/methodology used to investigate the question, the quality of the data/results, and the appropriateness of the conclusions drawn from those results. The rubric will be designed to also encompass the elements of artistic exhibitions and creative performances in the fine arts. Faculty mentors for RES 4399 may be directly identified by the student or selected from a list of potential mentors compiled by the IDEA Center. All faculty mentors must be approved by the IDEA Center.

Method of assessment III.5.B: Students will maintain a research journal which documents their research activities during the independent study, RES 4399, and describing how they

have incorporated feedback from their faculty mentor into their research process. Key performance indicators which will be examined are the students' perception of their time management skills, their capacity to describe the planning components necessary to conducting effective research based on faculty feedback, and insights into their research experience such as what they would change if they could do things over again. Faculty mentors will also provide written feedback on the journal itself. Research journals will be assessed by the IDEA Assessment Team using a common rubric and working under the supervision of the IDEA Center. The common rubric will assess the degree to which students have incorporated faculty feedback into the project, described steps taken to complete the project, and used previous studies to guide their research or creative process.

Outcome 6: Students will communicate the results from their mentored research/creative experience.

Method of assessment III.6.A: Students in RES 4399 will create a presentation describing their research/creative experience, with particular focus on the results and the conclusions that they have drawn from it. The presentation, which will be given at an undergraduate research showcase event and recorded, will be assessed by a faculty review panel drawn from a pre-compiled list of faculty who expressed interest in participating in the showcase event as part of the service component of their job. The review panel will use a common rubric that the director and assessment coordinator of the IDEA Center will have trained them to use. As part of the presentation, students will be assessed on their organization, use of language, delivery techniques, use of supporting material, and their overall clarity in describing the research purpose, findings, and conclusions to an audience unfamiliar with the topic.

Method of assessment III.6.B: Students in RES 4399 will prepare their research experience or creative expression for submission to an appropriate research conference or exhibition in the research discipline. Actual submission will not be required. Instead, the prepared submissions will be assessed by the IDEA Assessment Team working with the IDEA Center who will use a common rubric to assess the potential for the submissions to be accepted at a conference. More specifically, the common rubric will assess students on their ability to compose a concise abstract, develop a descriptive title, and adapt their paper to the appropriate length mandated by the conference, as well as provide sufficient background and scope for their research so as to draw connections to the broader themes of the conference to which they are submitting.

Summative assessment of environmental change

The implementation of the QEP is expected to expand the number of Texas State students participating in undergraduate research. This QEP aims to develop undergraduate research skills in as little as a three-semester, or 18-month, period. Since the QEP Impact Report is due in five years and because one year has been established for program development, the timeline of the plan allows for four full years of implementation and assessment.

Within the five years of the QEP implementation: Environmental changes, such as the number and type of students participating in undergraduate research, will be assessed to yield data on the early success of the QEP. Early milestones which can be addressed within the first five years of implementation and prior to graduation will also be evaluated. These short-term and intermediate measures of effectiveness will serve as indicators of institutional change resulting from the implementation of the QEP. The short-term and intermediate measures are described as follows.

Academic achievement. Using student academic records, grades of students participating in undergraduate research will be collected and analyzed. Since undergraduate research has been shown to be a high-impact practice, both academic progress towards graduation and overall academic performance are expected to be higher among students who participate in undergraduate research than among those who do not.

Tracking underrepresented and underserved participation in undergraduate research. As noted above, undergraduate research has consistently been found to be a high-impact educational practice. However, participation rates of underrepresented and underserved students in undergraduate research are chronically low. Given that one of the purposes of this QEP is to spur an increase in participation of all students, including underrepresented and underserved students, in undergraduate research, the participation rates these students in this QEP will be closely monitored.

Graduation Rates. Both graduation rates and years to graduation will be tallied. Given the evidence that undergraduate research is a high-impact practice, students who participated in undergraduate research are expected to have higher graduation rates compared with students who did not participate in undergraduate research.

Acceptance rates to graduate school. Numerous focus groups conducted with Texas State undergraduates have indicated that acceptance to graduate school was one of the primary reasons that students undertook undergraduate research projects. In light of this, the numbers of QEP students who are later admitted to graduate programs will be tallied and reported.

Alumni survey. The Office of Institutional Research annually surveys alumni who received their bachelor's degree in the previous calendar year about their experiences at Texas State. Questions on the survey instrument address whether alumni participated in undergraduate research and, if so, the impact that research had on their current employment or graduate studies. Results from alumni who entered the university during the time of QEP implementation will be reviewed to measure long-term impact.

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VII. APPENDICES

BOBCAT IDEA
RESEARCH FOR EVERYONE

VII. Appendices

Appendix I: QEP participation

QEP Theme Development Team

Division of Academic Affairs
- College of Applied Arts:
  Donna Vandiver, Assistant Dean

- McCoy College of Business Administration:
  Bill Chittenden, Associate Dean

- College of Education:
  Patrice Werner, Associate Dean

- College of Fine Arts and Communication:
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- The Graduate College:
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- College of Health Professions:
  Barb Sanders, Associate Dean

- Honors College:
  Heather Galloway, Dean

- College of Liberal Arts:
  Susan Day, Associate Dean

- College of Science and Engineering:
  Greg Passty, Associate Dean

- University College:
  Michael Nava, Associate Dean

- Academic Affairs:
  Dana Willett, Assistant Vice President, Office of Distance & Extended Learning

- Enrollment Management and Marketing:
  DeDe Gonzales, Associate Director, Financial Aid and Scholarships

- Institutional Effectiveness:
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  Lisa Garza, Director, Office of University Planning and Assessment

- Research and Federal Relations:
  Mike Blanda, Assistant Vice President

Division of Finance and Support Services
>Darryl Borganah, Associate Vice President, Financial Services
>Nancy Nusbaum, Associate Vice President, Finance and Support Services Planning

Division of Information Technology
>Joan Heath, Associate Vice President and University Librarian
>Milton Nielsen, Special Assistant to the President for Information Technology

Division of Student Affairs
>Jennifer Beck, Director, Retention Management and Planning
>Norma Gaier, Director, Career Services

Division of University Advancement
>Daniel Perry, Assistant Vice President

Department of Athletics
>Tracy Shoemake, Associate Athletic Director

Faculty Senate
>Alexander White, Vice Chair

Student Foundation
>Mariela Martinez, Student Foundation Representative

Graduate House
>Kelly Gourluck, Graduate House Representative

Staff Council
>Adam Clark, Chair

Student Government (SG)
>Connor Clegg, Student Government Representative

QEP Development Task Force

Co-chairs:
>M. Alejandra Sorto, Professor, Department of Mathematics (summer 2017 – present)
>Erina Duganne, Associate Professor, School of Art and Design (fall 2018 – spring 2019)
>Peter Golato, Professor, Department of World Languages and Literatures (fall 2019 – present)
>Wesley Jennings, Professor, School of Criminal Justice (fall 2018 – summer 2019)
>Sean Horan, Associate Professor, Department of Communication Studies (summer 2017 – summer 2018)

Division of Academic Affairs
- College of Applied Arts:
  Doug Morrish, Professor and Assistant Dean

- McCoy College of Business Administration:
  David Wierschem, Associate Professor and Associate Dean for Undergraduate Programs

- College of Education:
  Kent Griffin, Associate Professor

- College of Fine Arts and Communication:
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- The Graduate College:
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- College of Health Professions:
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- Honors College:
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>Jaxon Castillo, Electrical Engineering major, Ingram School of Engineering
>Nik Farrell, Recreation Administration major, Department of Health and Human Performance
>Isabel Valdez, Graduate Assistant, Exercise Science major, Department of Health and Human Performance
>Amy Baker, Biochemistry major, Department of Chemistry and Biochemistry
>Jennifer Idema, Campus Life Committee Chairperson, Graduate House
>David Mills, doctoral student, Department of Geography (summer 2019)
>Shane Rich-New, Biochemistry major, Department of Chemistry and Biochemistry
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>Mason Glasscock, Agricultural Sciences major, Department of Agriculture
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>Bryson Wright, Radiation Therapy major, College of Health Professions
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>Jacob Salinas, Student Foundation (fall 2018)
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>Monnette Villarreal, Student Government (fall 2018)

Appendix II: State of undergraduate research at Texas State University

Honors College
- Undergraduate Research Fellowship (URF) program, a competitive annual initiative to fund undergraduate research with awards up to $1,000 for winning students
- STEM Undergraduate Research Internship Stipend (10 awards of $1,000) for undergraduate students in STEM fields conducting faculty-led research
- The Honors College website hosts a section dedicated exclusively to undergraduate research, including a repository of faculty mentors across all colleges
- Annual undergraduate research poster presentations featuring honors theses, completed research, work-on-progress, proposed research, creative projects and course-based research
- Honors publishes the Undergraduate Research Journal (TXSTUR)
- Honors provides additional guidance and resources for undergraduate scholars on their website.

McCoy College of Business
- McCoy College doesn't have any events to specifically showcase undergrad research, but a few faculty have spent time in the last three years working directly with honors students to make sure they have all the support they need to write their honors thesis. These faculty see their honors students as the "low hanging fruit" in expanding undergrad research, and encourage their students to be involved in Honors College programs to showcase research.
- Further regarding honors students, McCoy College of Business' approach has been two-fold: (1) expand the number of business-specific honors courses, so that our local honors students can fulfill most of their honors requirements in the college; (2) make personal contact with each student to make sure they feel part of the college and are aware of the support available. Faculty would very much like to get to the point where there were too many honors students to provide this personal touch; for now, however, faculty are still able to do this.
- "Undergraduate research" in a business college sometimes looks different than it does in other parts of the university. The college has historically put a lot of resources and energy into undergrad student organization competitions. In these competitions, students will address a specific problem or problems, create solutions to these problems, write up a report, and (often) make an oral presentation of their findings. The college has had some very successful competition teams.
- While no departments in McCoy College of Business seem to require a senior thesis, all business students must take the capstone course (MGMT4335: Strategic Management and Business Policy), in which they are asked to address a business problem, write a report, and make an oral presentation. As above, faculty in the college consider this undergraduate research in the context of a business college.
- Other than the capstone course, undergrads have the opportunity to work directly with faculty on a research project by taking an independent study. Over the past four academic years, the college has run 43 independent study sections, many of which have multiple students working on a project.
- The college also offers several courses (often "writing-intensive classes") that offer students the chance to work on research projects. One such course, QMST 4373C: Data Analytics, requires students to gather and analyze data, and create a poster for submission to the Texas State Undergraduate Research Symposium. Students from this class have won awards at the symposium competition the last two years.

College of Education (CoE)
Department of Health and Human Performance (HHP)

- In HHP, undergraduates are involved in research in course work as well as in internship/practical field experiences. For example, students in Public Health learn about the research process and then as seniors they conduct a program analysis as part of their internships with community partners.
- Many HHP undergraduates also do poster presentations within the department as well as at the university poster symposium. Some exceptional undergraduates attend state and national organization conferences to present their work.
- Several HHP faculty are registered on the research advisory directory which gives undergrads a way to link to a mentor. The directory is created through the honors college.
- HHP runs a Community Engaged Scholar laboratory, partly to engage undergraduate scholars.

College of Health Professions (CHP)
Research-based decision-making is a critical aspect of all undergraduate degrees offered in the College of Health Professions (CHP). The seven departments offering undergraduate degree programs are: (a) Clinical Laboratory Sciences, (b) Communication Disorders, (c) Health Administration, (d) Health Information Management, (e) St. David's School of Nursing, (f) Radiation Therapy, and (g) Respiratory Care. Across departments, the CHP degree programs offer 11 research-intensive undergraduate courses. Annually, CHP showcases all levels of research produced by undergraduates, graduates, and faculty at the Dean's Research Forum. Students and faculty submit research proposals to a committee for review. The committee allows submissions in the following categories: (a) faculty research, (b) student research, (c) faculty/student collaboration research, and (d) student educational posters. This last category of posters draws on student projects created in the 11 research-intensive undergraduate courses. Students and faculty with accepted proposals are invited to present their research and educational posters at the Dean's Research Forum, where participants compete for awards within each submission category.

- The College of Health Professions has a dedicated spring "Research Forum" that allows undergraduates (and graduate students and faculty) the opportunity to share any research that they may be involved with in the form of digital poster. CHP has been doing this since approximately 2002.
- Nearly all of CHP undergraduate programs have a dedicated course for research. For example, CLS 4361 – Clinical Research – is required for 2nd year (seniors) CLS students. The students must work on a capstone project with a clinical affiliate (hospital) or a CHP faculty on a project; conduct an IRB (if necessary), literature review, data acquisition and analysis; and draft a paper. Students also present a *Powerpoint* to the entire CHP faculty and clinical staff.
- CHP's undergraduate programs also have "Directed Study" courses in which CHP faculty often work with undergrads on faculty research project. Many have published and presented projects over the years.

College of Science and Engineering (CoSE)

- High incidence of undergraduate student research with faculty
- Hosts Women in Science and Engineering (WISE) annual conference
- Students participate in Summer Undergraduate Research in Engineering (SURE)
- Senior Design Days
- Biology Colloquium

- Research Experiences for Undergraduates (REU) in:
  - Chemistry and Biology
  - Mathematics (Algebra, Combinatorics and Statistics)
  - Computer Science (Smart and Connected Communities)
- Some CoSE departments provide travel funds for undergraduates to attend and present their work at academic meetings

College of Science and Engineering courses which include undergraduate research with faculty.

BIO 4299. Undergraduate Research.
Supervised individual research projects in a mentor-student relationship with a biology professor. Available only to biology majors with junior standing and at least a "B" average. May be repeated once for credit. Prerequisites: BIO 2450 with a grade of "C" or better and consent of the supervising professor.
2 Credit Hours. 0 Lecture Contact Hours. 4 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Standard Letter
Course Fee: $20; Fee - Lab BIO

CHEM 4299. Undergraduate Research.
This course is available to undergraduate chemistry or biochemistry majors only. It may be repeated for credit but a maximum of four semester hours from this course are applicable toward advanced chemistry electives. Prerequisite: Permission of department.
2 Credit Hours. 0 Lecture Contact Hours. 4 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing | Lab Required
Grade Mode: Standard Letter

CHEM 4371. Directed Study.
Independent study on a particular subject area in chemistry or biochemistry. The specific study area, resource material, goals, and achievements will be approved by the instructor. Prerequisites: CHEM 2342 with a "C" or better, and permission of department.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Standard Letter

CHEM 4382. Advanced Biochemistry Research Laboratory II. This course is the second of two laboratory courses providing instruction in the modern techniques of biochemistry. Students will perform independent research projects involving isolation, manipulation and characterization of biomolecules. Results of these experiments and the scientific literature investigations will be used to prepare formal written reports and oral presentations. Prerequisite: CHEM 4481 with a grade of "C" or better. (WI).
3 Credit Hours. 2 Lecture Contact Hours. 4 Lab Contact Hours.
Course Attribute(s): Writing Intensive
Grade Mode: Standard Letter

CHEM 4481. Advanced Biochemistry Lab I.
The first of two laboratory courses providing instruction in the modern techniques of biochemistry. Experiments are performed on the isolation, manipulation and characterization of DNA, RNA and proteins. Students will prepare formal written reports and oral presentations. Prerequisites: CHEM 3381 with a grade of "C" or better; CHEM 3380. (WI).
4 Credit Hours. 2 Lecture Contact Hours. 8 Lab Contact Hours.
Course Attribute(s): Lab Required | Writing Intensive
Grade Mode: Standard Letter
Course Fee: $6; Fee - Lab CHEM

CS 4298. Undergraduate Research I.
Supervised individual research project in a mentor-student relationship with a computer science faculty member. Cannot be given degree credit until the satisfactory completion of CS 4299. Prerequisites: Junior standing; major GPA of 3.00; departmental approval.
2 Credit Hours. 1 Lecture Contact Hour. 2 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Credit/No Credit

CS 4299. Undergraduate Research II.
Supervised individual research projects in a mentor-student relationship with a computer science faculty member. Prerequisites: CS 4298 and departmental approval.
2 Credit Hours. 1 Lecture Contact Hour. 2 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Standard Letter

IE 4392. Industrial Engineering Design I.
Student teams apply engineering principles and standards under realistic constraints to develop solutions for industrial problems and/or systems engineering issues. This course is the first part of a two-course sequence and is followed by Industrial Engineering Design II (IE 4393). Prerequisite: IE 3330, IE 3340, and IE 3360. Corequisite: At least two of: IE 4310, IE 4355, and IE 4370.
3 Credit Hours. 2 Lecture Contact Hours. 2 Lab Contact Hours.
Course Attribute(s): Writing Intensive
Grade Mode: Standard Letter

IE 4393. Industrial Engineering Design II.
Student teams complete implementation of solutions to industrial problems and/or systems engineering issues with realistic constraints. This course is the second in a two-course sequence, and is continuation of Industrial Engineering Design I (IE 4392). Prerequisite: IE 4392, at least two of: IE 4310, IE 4355, or IE 4370. Corequisite: At least two of IE 4320, IE 4350, and MFGE 4396.
3 Credit Hours. 2 Lecture Contact Hours. 2 Lab Contact Hours.
Course Attribute(s): Writing Intensive
Grade Mode: Standard Letter

TECH 4397. Special Problems.
The investigation of a special topic by developing the problem, researching the topic, and presenting the findings as they apply to industry/technology. This course will be applicable to all areas of technology, and must be done only with the approval of the cooperating faculty member and Department Chair. Repeatable for credit with different emphasis.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Standard Letter

TECH 4398. Senior Design.
This course deals with application of technical and non-technical skills and knowledge using a multidisciplinary team-based approach for solving real-world problems related to product and process development. The topics include systematic product development, development of business plans, project management, cost estimation, documentation and presentation, prototyping, fabrication and concurrent engineering. (WI) Prerequisites: TECH 4395 or TECH 4372 or EE 3400 or GEO 4313 or TECH 3340.
3 Credit Hours. 2 Lecture Contact Hours. 2 Lab Contact Hours.
Course Attribute(s): Lab Required | Writing Intensive
Grade Mode: Standard Letter

PHYS 4121. Undergraduate Research.
This course represents a student's research project in physics to be carried out under the supervision of a faculty member. The student must contact a faculty member in advance to arrange the topic and specific course objectives. This course may be repeated for credit. Instructor's approval required.
1 Credit Hour. 0 Lecture Contact Hours. 3 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Standard Letter

PHYS 4221. Undergraduate Research.
This course represents a student's research project in physics to be carried out under the supervision of a faculty member. The student must contact a faculty member in advance to arrange the topic and specific course objectives. This course may be repeated for credit. Instructor's approval required.
2 Credit Hours. 0 Lecture Contact Hours. 6 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Standard Letter

PHYS 4321. Undergraduate Research.
A research project in physics to be carried out under the supervision of a faculty member by upper division physics majors. Student must contact a faculty member in advance to arrange topic and specific course objective. Course may be repeated only as an elective towards the BS or BA in physics. Prerequisite: Instructor approval.
3 Credit Hours. 0 Lecture Contact Hours. 9 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Standard Letter

Appendix III: Sample job announcements and job duties for IDEA Center leadership

Sample job announcements

Director, IDEA Center job announcement

Texas State University is home to more than 38,000 students and 2,000 faculty members in the growing Austin-San Antonio corridor. A member of the Doctoral Universities: Higher Research Activity Carnegie classification, the university creates new knowledge, fosters cultural and economic development, and prepares its growing population of diverse students for the endless possibilities that await them as citizens of Texas, the nation, and the world.

Texas State invites outstanding applications for a director of its Innovation, Discovery, Exploration, and Analysis (IDEA) Center. The university is particularly interested in applicants who have experience working with students from diverse backgrounds and a demonstrated commitment to improving access to higher education for under-represented groups.

The newly formed IDEA Center is designed to support students, faculty, and departments in expanding research opportunities for undergraduate students across the disciplines. The center will coordinate, promote, and evaluate research-supportive curriculum, workshops, training, collaborations, and programs so that undergraduates can graduate with a research-intensive designation on their transcripts. The IDEA Center will provide staffing and organizational support for student research publications, symposia, and conferences—including the Research, Inquiry, and Creative Expression (RICE) showcase. The director's role will be to lead the newly implemented center and seek funding to sustain it. The successful candidate will work with and be sensitive to the educational needs of a diverse student population. The position will be 50% administration as director of the IDEA Center and 50% faculty in their home department. In their administrative role, the director reports to the dean of University College.

Duties/Responsibilities
50%
- Provides leadership and management for the IDEA Center
- Coordinate the efforts of the IDEA Center with other units on campus as appropriate
- Oversee the center's staff including assistant director, administrative assistant, student development specialist, research grants coordinator, graduate assistants, and undergraduate student workers
- Plan, monitor, and control budget and expenditures
- Collaborate with faculty and administration to obtain external funding to support undergraduate research programs, including those targeting underrepresented students
- Support and promote undergraduate opportunities to engage in mentored research experiences
- Collaborate with offices across campus to train faculty in mentorship related to undergraduate research
- Oversee undergraduate research program components including online tutorial on the utility of research, informational event and panel discussion on research, online tutorial on research's ethical aspects, and workshop on ethical research practices
- Assist in evaluation of outcomes related to research-intensive designated independent study courses
- Oversee the campus undergraduate research showcase
- Monitor and report on program participation and results

- Teach undergraduate research courses
- Support faculty and students in maintaining research compliance (IRB, IACUC, Hazardous Waste Training, or requirements outlined by NSF/NIH)

50%

- Participates in activities inherent in the role of a faculty member including:
  o Teach at least one course per year
  o Teaching responsibilities may be negotiated with the chair of the candidate's home school/department
- Active in academic department
  o Maintain an active research program in their academic discipline
  o Engage in professional opportunities and associations

Required Qualifications:

- An earned terminal degree in a research-based program from an accredited institution
- Demonstrated record of teaching, scholarship, and service to merit a faculty appointment at the rank of professor or associate professor
- Relevant teaching and research experience at a four-year university
- Excellent verbal and written communication skills
- Strong research and analytical skills
- Ability to understand and synthesize information from a wide variety of disciplines
- Demonstrated ability to work effectively with faculty and staff across the academic community
- Demonstrated passion for undergraduate research
- Experience successfully mentoring undergraduate research
- Experience working with diverse, first-generation, and non-traditional undergraduate students
- Experience with program evaluation and outcomes assessment

Preferred Qualifications:

- Experience with organizational budget management
- Experience designing and planning new programs in a university setting
- Excellent human relation skills that support negotiating with multiple stake holders
- Experience in supervising or mentoring graduate students and staff members
- An outstanding record of publication
- A significant record of successful grant acquisition and management

To Apply:

Only applications submitted through the Texas State University website will be accepted and considered. To ensure full consideration for the position, online applications must be received by XX/XX/XX. Interested applicants should submit the following materials: 1. letter of application; 2. current curriculum vitae; 3. statement of philosophy that addresses administrative leadership at a large public university with a diverse student body; 4. research statement; 5. pdfs of up to five relevant publications; and 6. contact information for five individuals willing to serve as references. The selected candidate will be required to provide official transcripts from all degree granting universities.

Texas State University, to the extent not in conflict with federal or state law, prohibits discrimination or harassment on the basis of race, color, national origin, age, sex, religion, disability, veterans' status, sexual orientation, gender identity or expression.

Employment with Texas State University is contingent upon the outcome of record checks and verifications including criminal history, driving records, education records, employment verifications, reference checks, and employment eligibility verifications.

Texas State University is a tobacco-free campus. Smoking and the use of any tobacco product will not be allowed anywhere on Texas State property or in university owned or leased vehicles.

Texas State University is a member of the Texas State University System. Texas State University is an EOE.

Assistant Director, IDEA Center job announcement

Texas State University is home to more than 38,000 students and 2,000 faculty members in the growing Austin-San Antonio corridor. A member of the Doctoral Universities: Higher Research Activity Carnegie classification, the university creates new knowledge, fosters cultural and economic development, and prepares its growing population of diverse students for the endless possibilities that await them as citizens of Texas, the nation, and the world.

Texas State University invites outstanding applications for the assistant director of the IDEA Center. The university is particularly interested in applicants who have experience working with students from diverse backgrounds and a demonstrated commitment to improving access to higher education for under-represented groups.

The newly formed IDEA Center for Undergraduate Research (an acronym for Innovation, Discovery, Exploration, and Analysis) is designed to support students, faculty, and departments in expanding research opportunities for undergraduate students across the disciplines. The center will coordinate, promote, and evaluate research-supportive curriculum, workshops, training, collaborations, and programs so that undergraduates can graduate with a research-intensive designation on their transcripts. The IDEA Center will provide staffing and organizational support for student research publications, symposia, and conferences—including the Research, Inquiry, and Creative Expression (RICE) showcase. The successful candidate will work with and be sensitive to the educational needs of a diverse student population. The assistant director assists in all aspects of the IDEA Center's operations. The position is a 100% program faculty position. The position reports to the Director of the IDEA Center.

Duties/Responsibilities
- Supervise the center's graduate assistants and undergraduate student workers
- Collaborate with faculty and administration to obtain external funding to support undergraduate research programs, including those targeted to underrepresented students
- Assist students in identifying opportunities for and preparing proposals and applications for internal and external research funding, including nationally competitive undergraduate research opportunities and other internships
- Meet with and assist students who are interested in undergraduate research
- Assist in the marketing and communication of IDEA Center activities and programs to students, faculty, advisors, and other administrators

- Oversee the IDEA Center website
- Prepare informational and promotional materials for use in outreach activities for all aspects of the IDEA Center's programming
- Work with university offices in the disbursement of funds to support undergraduate student research and creative endeavors
- Process and maintain necessary paperwork, records, and files to support program, including fiscal records
- Create, schedule, prepare materials for, and present workshops for students and faculty
- Assist in the execution of the undergraduate research showcase, designed to share and publicize undergraduate students' research achievements. This activity includes advertising exhibitions, securing space, event planning, processing proposals, creating programs, and managing and monitoring event
- Provide on-site supervision of other IDEA Center events, oversee facilities use, provide support and assist in problem resolution
- Maintain a collection of resource materials and program information
- Facilitate undergraduate research workshops for students and faculty
- Confer with and assist IDEA Center director in the performance of program administration and activities
- Assist with assessment efforts, assemble data, write and/or edits reports
- Assist in preparing program budgets and annual report for approval of supervisor and manage and monitor expenditures
- Assist in evaluating effectiveness of programs and recommend improvements or changes
- Attend relevant national conferences and regional events

Required Qualifications:
- An earned master's degree or higher in a research-based program from an accredited institution
- Excellent communication, interpersonal, and organizational skills
- Experience in conducting independent research or scholarship
- Ability to understand and synthesize information from a wide variety of disciplines
- Demonstrated ability to work effectively with faculty and staff across the academic community
- Demonstrated ability to work independently and regularly exercise sound judgment in addressing program issues
- Ability to efficiently multitask and prioritize workload

Preferred Qualifications:
- Demonstrated passion for undergraduate research
- Record of obtaining external funding
- Experience working with diverse, first-generation, and non-traditional undergraduate students
- Experience working with faculty across disciplines
- Experience at a large university
- Experience with outcomes assessment
- Experience in designing or updating web pages and social media using relevant software

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Research grant coordinator job duties

The job duties for the research grants coordinator will include:

- Creating and maintaining a database of external funding opportunities for undergraduate students tailored to the undergraduate degree programs at Texas State University
- Identifying students engaged in undergraduate research with the potential to apply for competitive external funding through targeted outreach activities
- Conducting workshops, training, and presentations (both face-to-face and online) on finding and applying for external funding and promoting external funding services
- Providing one-on-one writing feedback to undergraduates during the external funding application process
- Supporting the faculty and graduate students who are mentoring undergraduate students through the external funding application process
- Establishing connections with external funding agencies for undergraduate student research
- Cultivating relationships with campus partners and faculty advisors to publicize external funding opportunities and support services
- Drafting student success stories and news releases
- Maintaining meticulous records of advising and grant support activities and outcomes for annual reporting purposes

Appendix IV: Sample assessment assignments

Sample assessment assignment, first example

Goal II: To help students synthesize research

Student Learning Outcome II.3: Students will analyze a body of research, inquiry, or creative expression that they have collected.

Action: II.3.A: Students will assemble an annotated bibliography.

 Assessment Method: As part of the introductory research course, **RES 3399, Research and Creative Expression**, students will produce an annotated bibliography that demonstrates their ability to assemble and analyze a body of literature pertaining to their field of study or creative expression. Students will be expected to illustrate how a source is relevant to their research question; identify and employ a consistent annotation style; and demonstrate understanding of the uses of an annotated bibliography. The annotated bibliographies will be assessed by the IDEA Assessment Team recruited from all colleges and trained by the IDEA Center. The IDEA Assessment Team will use a common rubric derived from AAC&U VALUE rubrics and developed by the IDEA Center in collaboration with faculty teaching RES 3399.

 Annotated Bibliography Assignment Instructions

 1. Assemble a list of the most substantial and significant scholarly articles, books, and conference proceedings relating to your project, no less than five items, no more than 10, all of which must be peer-reviewed. None of your sources should be from non-peer reviewed internet sites. Remember that while the internet may be a good place to begin your research, it is not where you want to end it.

 2. Read the pertinent parts of all of the items on your list and create an annotated bibliography. In each entry, you should briefly summarize the author's argument and type of approach as well as analyze how it relates to your specific project. Your bibliography will be assessed on the following components: (1) Quality of sources (consider the validity of the sources and what lends them credibility); (2) Accuracy of entries; (3) Content of your annotations; (4) Annotation structure; and (5) The overall quality of the bibliography, to include quality of writing. Additionally, consider which aspects of your research topic the author chooses to emphasize and which the author chooses to ignore. What kinds of terms and categories does the author(s) use to describe your research topic? How does the argument of each author(s) compare to the others? Do their approaches emulate any aspects of the approaches taken by the author(s) we have discussed in class? If so, why?

 3. Your annotated bibliography should be single-spaced within each individual entry and double-spaced between entries. You should consult the MLA style guide (or other styles according to the practice of each discipline) to format your bibliographic entries. See the handout resources on *Canvas* for citation examples. No entry should be longer than one half of a single-spaced page. The entire assignment should be typed. Please check for spelling and grammatical errors before turning it in.

 Rubric. The annotated bibliographies will be assessed by graduate students recruited and trained by the IDEA Center. See sample rubric for assessing annotated bibliographies below.

Rubric for Assessing Annotated Bibliography/Discography/Videography

Criteria	Exceeds Standards (4 pts)	Meets Standards (3 pts)	Needs Improvement (2 pts)	Unsatisfactory (1 pt)
Quality of Sources	All sources demonstrate careful consideration of validity and are current, and sources do not repeat the same information.	Most sources are credible but 1-2 sources are not current, have questionable validity, or repeat information.	Sources generally meet guidelines; however, several are not current, are of questionable validity, or are redundant.	Several sources are not current, have questionable validity, or repeat the same information.
Accuracy	Includes the complete and accurate bibliographic citation for each source and is consistently organized according to the style sheet used.	Makes 1-2 errors on bibliographic citations. Is generally well organized according to the style sheet used.	Makes 2-4 errors on citations as well as other grammatical and spelling errors. Not well organized.	Makes more than 4 errors on citations, including grammar/spelling mistakes. Lack of organization detracts from coherence of the bibliography.
Annotations Content	Summaries address all components expected and citations display deep understanding of how the source is relevant to the student's research question.	Summaries generally address all components expected; however, at least one component of the annotation is missing in a few of the citations. Citations demonstrate understanding of the sources' relevance.	Summaries do not address all required components; one component of the annotation is missing or not adequately presented in several citations. Citations fail to demonstrate the sources' relevance in some instances.	Summaries are inadequate; one or more components are missing in most citations. Many citations lack clarity in their presentation and fail to demonstrate relevance of the sources.
Annotations Structure	Citations are well-written, unique to the source, avoid vague statements, and appropriate length.	Citations are well written but contain some generic statements. A few citations are not of the appropriate length.	Citations are adequately written, though lacking clarity and specificity. Many citations are not of the appropriate length.	Citations are very poorly written, include many generic statements, are too short.
Overall Quality	Annotated bibliography could be used to generate a comprehensive literature review with excellent sources.	Annotated bibliography provides sources to create a paper on the topic but is missing some information. Will serve as foundation for a research paper.	Annotated bibliography provides sources, but their overall quality and the analysis of their relevance is lacking. A good start, but more development is needed to form the basis of a research project.	Annotated bibliography misses several key topics required by assignment. Overall lack of quality prohibits document from forming basis of research project.

Sample assessment assignment, second example

Goal II: To help students synthesize research

Student Learning Outcome II.4: Students will develop a research question or problem derived from the body of research, inquiry, or creative expression that they have analyzed.

Action II.4.A: Students will assemble a proposal on their synthesized research

     Assessment Method. As part of the introductory research course, RES 3399, students will develop a research or creative expression proposal based on the synthesized research they have conducted throughout the semester. Along with an overall description of the project, the research proposal will include a field- or discipline-specific statement of the research question, a review of the pertinent literature, and a proposed methodology of research. The research or creative expression proposal will be assessed by the IDEA Assessment Team recruited from all colleges specifically for their experience in research. The IDEA Assessment Team will use a common rubric which assesses the proposal across the following key performance indicators: relevance of the topic, thoroughness of the literature review, and the description of the project including adequacy of the design, the feasibility and likelihood of success, and the potential for learning.

     Written Research Proposal Assignment Instructions.

     The research proposal requires you to document a plan for developing and conducting an investigation. The research proposal should be formatted according to the *Publication Manual of the American Psychological Association* (7th edition) and should contain a maximum of 15 pages of text. Specifically, your proposal should contain the following sections.

     I. **Context/Purpose/Relevance**: Describe the real-world context within which your research problem is situated, the purpose of the proposed investigation, and convincing real-world benefits of the proposed research.

     II. **Background:** Describe, as extensively as possible, prior research concerning the problem that you propose to investigate. The literature should be coherently related to the context, purpose, and relevance that you state in the previous section.

     III. **Research Problem/Question**: Formally state the research problem or question that you will answer as a result of your investigation. The problem stated should be coherently related to the context, purpose, relevance, and background that you present in the previous sections.

     IV. **Analytic Tool(s)**: Identify the potential type of analytic tools you will use (for example, surveys, observational rubrics, interview protocols, focus groups). Be sure to describe why this is the most appropriate choice, given the purpose and research problem or question for the proposed research.

     VII. **Schedule:** Delineate a schedule for completing the tasks involved in developing and conducting your proposed investigation. Be sure to describe the tasks to be completed, the begin- and end-dates for each task, the finished product(s) that will result from each task, and the individuals (and/or their qualifications) who will complete the tasks. Also, provide an estimate of the cost for completing each task (including materials and personnel).

VIII. **References:** Provide a complete list of references cited in the proposal.
Reference should be cited in an appropriate writing style as discussed in class.

Rubric. The proposals will be assessed by faculty teaching the RES 3399 course, using a common rubric derived from AAC&U VALUE rubrics and developed by the IDEA Center in collaboration with faculty. See sample rubric for assessing undergraduate research proposals below.

Rubric for Assessing Undergraduate Research Proposals

Criteria	Exceeds Standards (4 pts)	Meets Standards (3 pts)	Needs Improvement (2 pts)	Unsatisfactory (1 pt)
Context, Relevance, and Significance of Topic	It is clear how the proposed activities fit into the broader scholarly or creative field. Others will benefit from the new knowledge, applications, or creative works produced through the project.	It is clear how the proposed activities fit into the broader scholarly or creative field and make a contribution to the field.	A link is made between the proposed work and the broader creative or research field. It is not clear how the proposed activities will further the field as a whole, or how the scholarly community or others will benefit from the proposed activities.	Contributions of the proposed activity to the broader field or community are not clearly stated.
Description of research project or question including adequacy of design, feasibility, schedule of tasks, and likelihood of success	Description is very clear and concise; easy to understand. Processes are well stated, manageable, appropriate, and comprehensive.	Description is clear and generally easy to understand. There is a logical and thoughtful plan for executing the project.	Description of what is being proposed is not entirely clear. Processes and procedures outlined are also not entirely clear or do not follow from objectives. Schedule not feasible in time allotted.	It is unclear what is being proposed. Processes and procedures are either omitted, only vaguely stated, or do not relate to the project proposed. The project as designed has little chance of being successful.
Potential for learning in terms of academic and personal development	Project will significantly enhance student's academic development.	Project will enhance student's academic development.	Ability to enhance student's academic development is less clearly demonstrated or less likely.	Project is unlikely to speak to the student's development.
Appropriateness and justification of budget (If applicable)	Budget is entirely reasonable and very directly related to project activities. All costs are justified in the budget narrative project.	Budget is generally reasonable and related to project activities. Majority of costs are justified in the budget narrative or notes.	Budget is not fully reasonable and less clearly related to project activities. Some costs are justified in the budget narrative or notes.	Budget expenses are not reasonable and not clearly related to project activities. Many costs are not relevant and essential to this project.

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