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# Undergraduate Research Experiences in Music: Successful Strategies for Mentors and Student Researchers

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## ABSTRACT

*Undergraduate research in music is conducted in a variety of ways, utilizing different research methodology to produce a variety of products. As a high-impact process, undergraduate research provides students an opportunity to work with a faculty mentor, engage in in-depth learning, and enhance their musicianship and/or pedagogy. The purpose of this case study was to find strategies/characteristics of mentors and mentees that were helpful to successful completion of undergraduate research projects. Data collection included interviews, observations, participant reflections, and field notes. The findings indicate that there are many different factors that have an effect on the success of undergraduate research. The selection of the right student for the right project is critical. Organizational skills, musicianship and/or knowledge of the subject, enthusiasm, motivation, focus, inquisitiveness, and using feedback are important characteristics of student researchers. Effective communication skills, expertise in content, empathy, inspiration, and organizational skills are valuable characteristics of ideal mentors.*

**Keywords:** *Undergraduate Research, Faculty Mentors*

## INTRODUCTION

Undergraduate research experiences have been studied extensively in nonmusical disciplines such as the natural sciences, nursing, and health science education. The common themes in the literature include the significance and benefits, strategies, successful practices, and challenges of undergraduate research experiences. For instance, research indicates that undergraduate research is a high-impact practice with a variety of positive effects on the students who are involved, including retention, GPA, and graduation rates (Crowe and Brakke, 2008; Dahlberg et al.,2008; Gregerman et al., 1998; Ishiyama, 2001; Ishiyama, 2002; Wozniak, 2011). There has also been a variety of discourse and research related to strategies that are helpful for mentors and undergraduate researchers. For instance, time management in some form has been noted as an important component for both mentors and student researchers in the undergraduate research discourse (Alonso and Loui, 2011; Bauer and Bennett, 2003; Kruse and Taylor, 2011).

In the field of music education, many university programs promote the study of research itself as a valuable tool in undergraduates' pursuit of assimilating information related to effective teaching (Kruse and Taylor, 2011). Sheldon and DeNardo (2005) advocated that the ability to create inferences through a constructivist research approach could lead to independent lifelong learning. Strand (2006) advocated the use of action research in undergraduate methods classes to encourage reflection and critical thinking. Some studies highlight the challenges associated with research initiatives at the undergraduate level. Arguments against the inclusion of undergraduate research include the impracticality of implementing coursework, undergraduates' inability to undertake research, and conflicting teacher– researcher roles within the profession (Kruse and Taylor, 2011). According to Radocy (2001) music teacher preparation programs are already saturated with core curricula, ensemble requirements, and studio lessons and are expected to meet state certification requirements. Furthermore, faculty researchers who are active in the field are often assigned to graduate-level courses, instead of entry-level music education classes with undergraduates (Phelps et al., 1993). Additionally, there can be essential academic preparation differences between undergraduate students and graduate students. A typical requirement of graduate-level courses includes courses in research methodology and the

creation of original student scholarship (Madsen & Prickett, 1987). Conducting music research would require students to acquire the theory, application, and analysis practices that are typically not taught at the undergraduate level. Another possible reason for the gap between research and practice might stem from sophisticated research protocol and formalized language that is not consistent with practicing music teachers. In the field of music, writers have debated research practice – according to Nielsen (2009) the need for research and practice should be linked in research community.

Research in the music department may look a little different than any other department on-campus. For instance, the faculty of one music department likely includes those who have earned a Doctorate of Musical Arts (D.M.A.) who have a great deal of expertise in the performance on their instrument, creative projects, and the contextualized research of their instrument and subsequent repertoire. The musicologists likely have a Ph.D. and do extensive historical and contextual research. The D.M.A. and musicologists may not, however, have much experience with statistical analysis. The musicologists may or may not be currently doing any extensive performing. The music theory/composition faculty may have Ph.D. or D.M.A. degrees, and they, too, may not have extensive background in statistics. The music education faculty may have Ph.D. degrees. They may be more familiar with statistics and research related to teaching and learning, but they may be performing to a lesser degrees than their D.M.A. counterparts. The purpose of this case study, then, is to find common (or discrete) strategies and/or characteristics that are helpful for faculty mentors and student researchers who have successfully completed undergraduate research projects using a variety of methods to create a range of products. The research questions guiding the study include:

1) What factors effect the successful completion of undergraduate research projects?
2) Are there factors/strategies that are only applicable to certain kinds of research in music?
3) What strategies can mentors use to help student researchers successfully complete an undergraduate research project?
4) What characteristics do undergraduate researchers need that will enable them to successfully complete an undergraduate research project?

## Materials and Methods

### Design of the Study

The design of the study is an instrumental case study (Baxter & Jack, 2008), in an attempt to better understand what factors contribute to the success of undergraduate music research projects. The study was conducted in the music department at a mid-sized university in the upper Midwest region of the United States. Data was collected through interviews and observations/field notes of music faculty mentors ($N$ = 6) and music major undergraduate researchers ($N$ = 7). Each volunteered to be interviewed and observed concurrently and/or subsequently to the successful completion of one or more undergraduate music/music education research projects. Field notes were compiled related to the researchers' observations of the processes of the mentors and the undergraduate researchers. In addition, the products of the research projects were examined for type, content, and relationship to objectives. Interviews with each participant during and after the projects were also a rich source of data. All seven of the projects were completed by the time of the study. The participants were interviewed, recorded, and their responses were transcribed. Field notes from researcher observations were also compiled and sorted. Open and axial coding was used to discover themes and organize the data into common factors and strategies. The findings and analysis were sent to the participants for clarification and confirmation.

The university has an extensive undergraduate research program. 28 out of 31 undergraduate departments and programs participated in the undergraduate research program from 2012-2015. There is financial support in the form of a variety of grants – for projects that are largely conducted during a semester or a school year, for projects that are intensively started in the summer and finished in the school year, and research assistantships associated with faculty research projects. The three different tracks of undergraduate research include:

1) Research Apprenticeship Program (RAP),
2) Summer Undergraduate Research Fellowship (SURF), and
3) Undergraduate Research Grants (URG).

The RAP program is one in which students can

be hired to assist a faculty member in his/her research agenda. This program was not addressed in this study because student participation is largely assistive in nature. Instead, the data collected for the study was only for students participating in the SURF and the URG programs. These programs are similar in that they both enable undergraduate students to conduct their own research under the mentorship of a university faculty member. The SURF program allows for funding during the summer, and the URG are funded during each semester. Students who wish to participate in SURF or URG have to satisfy the following criteria;

1) Be of sophomore status or higher
2) Have a cumulative GPA of 2.75 or higher at the time of application
3) Have the project endorsed by a faculty/staff member,
4) Be an enrolled, full-time student during an undergraduate program for the completion of a project.

Once the students (with the assistance of their mentors) have submitted a proposal, other campus faculty peer-reviewers give suggestions for improvements and rate the proposals. Students may revise their proposals/projects accordingly if they wish, and a final decision is made regarding which projects are selected. Students whose projects are selected conduct the research or creative activity, do the analysis/ recording/performance, and prepare their presentations. They must present at the campus Undergraduate Research Day presentation – as a poster, through a performance, or in an oral presentation setting. In addition, students must submit an abstract and if accepted, present again at either the state Symposium on Research and Creative Activities or at the National Conference on Undergraduate Research (NCUR).

The music department at the university is actively involved in the URG and SURF projects. Since 2012 forty-nine music students have participated in undergraduate research. In the music department, SURF and URG projects tend to be proposed in one of three general designs. One research design for undergraduate music research projects pertains to historical/ musicological research. When students propose these types of projects it is often in connected to a specific composer or style of music. The final project typically includes some form of written document and/or lecture presentation of the findings. A second research design for undergraduate music research projects is an alignment of research and performance. This may mean students learn about a specific genre of music, music for a pre-determined instrument or ensemble, or the works of a specific composer. The product includes information gathered, perhaps in the form of program notes and/or a brief lecture, but it also includes a component of performance. Some of these projects lead to a recital by an individual, and others lead to performances of ensembles in a formal concert setting or a workshop setting for school-aged children. Finally, a third research design for music undergraduate research is related to experimental or mixed methods studies in music education settings. These projects commonly relate to a specific approach to music instruction and how it affects learning. The projects are typically presented in poster sessions and presentations. Projects may be structured with one student and one mentor, or they may be created for a pair or group of students with one mentor. In this case study, two of the projects were group projects, each with one faculty mentor. Three of the projects were experimental research related to music education practices. Four of the projects paired research with a performance or compositional component, often leading to one or more public performances at the university and/or in the community.

## Participants

The participants in this case study include both mentors and undergraduate music majors who are conducting and/or have completed an approved undergraduate research study. The six mentors are all instructors in the music department at the university.

Two of the mentors conduct campus ensembles, teach a couple of classes, and teach applied studio lessons. They have mentored many projects, most of which have some sort of performance component. One of the mentors is a composer, and he teaches a variety of composition and technology classes. He has largely mentored composition/arranging projects. The other three mentors are music educators with a wide variety of experience in classroom, choral, and instrumental instruction K-12. Most of the projects they have mentored have related to music education practices and strategies.

Two student researchers worked on performance projects. Both researchers worked with groups

to research background and stylistic information on repertoire for specific instrumentation or style. Both groups presented performances and made recordings. One student researcher composed the music for a Renaissance play in collaboration with an English major who was the librettist. Four student researchers conducted music education research connected with their interests in alternative string music for school-aged children, vocal jazz improvisation strategies, and early childhood pedagogy.

Despite the differences in the types of projects and how they were designed and structured, there were some common factors faculty mentors noted that appear to effect the success of the projects. Furthermore, student researchers also shared strategies that were particularly helpful for the successful completion of their projects. According to faculty mentors, student researchers benefit from some common character traits. Likewise, student researchers noted characteristics and strategies employed by their mentors that were particularly helpful. Mentors used several successful strategies to create the proposal and establish and develop the mentor/ mentee relationship. Participants indicated there are even characteristics of the project itself that has an effect on whether it can be successfully completed.

## FINDINGS

Data analysis revealed that there are specific mentor characteristics, student researcher characteristics, and project characteristics that effect the successful completion of an undergraduate research project.

### Mentor Responses

#### *Characteristics that Lead to Successful Undergraduate Research*

*The Right Students for the Right Project.* According to the mentors, the success of the project begins with the people who are conducting the research. Although there was a little variability in the faculty mentors' responses, some common themes about the mentors' characteristics and criteria emerged from the data. Each of the faculty mentors agreed it was important to know the student-researcher well. They also agreed that the mentors must be enthusiastic (related to both interest and motivation) about the project. This made it more appealing and interesting for the mentor, of course. Inherent interest in the project also created an atmosphere of enthusiasm and encouragement for the students thereby igniting the student researcher/s' energy, particularly when the student/s were discouraged or uncertain. One mentor indicated,

> It's important for me to be enthusiastic and interested in their project, too. That makes a difference because when they get discouraged or confused, they need a little extra fuel and encouragement. They may need a cheerleader to get re-started if they've bogged down.

One of the faculty mentors noted that he felt it was important the proposed project would fit into the objectives of his studio and, therefore, the educational needs of his students. Others noted similar criteria, but he was the only one that put it in the context of his studio. He indicated this was important because it was in keeping with his expertise, and therefore, his ability to mentor well.

> In my studio, I may have an idea and bring it to a student or a group of students to work together – like finding ensembles written for their instrument or a specific composer – studying works for their instrument. Then they can do the research, play the music, perform it, and maybe create a recording.

His studio curriculum includes all of these components; therefore, putting research, playing, performing, and recording together in a student research project is a high-impact approach to the objectives already in place in his studio.

Mentors also noted there are many things students must do along the way to successfully complete a research project. Obviously, they must "do" the research. They need to seek the advice of their mentors when they get stuck rather than simply waiting to be "found out" by their mentor in the next meeting. They need to heed the suggestions of their mentor unless there are very good reasons to do the task differently than they discussed. They need to stay in contact with their mentor, and they need to work professionally and positively with the members of their group in the case of a group project. The most common comments from the mentors include doing the work, and doing the work on time. Every mentor mentioned these points, and several adamantly stressed them. "It can take on a domino effect. If they [the students] don't follow the schedule, the next task is behind, then the next and the next. Pretty soon it's nearly irreparable."

*Faculty Criteria and Characteristics for Choosing Students for Undergraduate Researchers*. Mentors were divided on how they select students to participate in an undergraduate research project. Three of the mentors were quite adamant that they prefer to (or perhaps solely) handpick their student researchers and even offer them a suggestion for the direction of the project. One of these three mentors had struggled with some frustrating experiences with student-proposed research projects. After those instances, she became more selective in regards to students with whom she would work – largely based on some specific student characteristics she now regards as necessary. In addition, she indicated that she "handpicks student researchers with ideas for projects that are in alignment with her own expertise and the interests of the student researcher." She also noted (as did most of the mentors) that she is best able to mentor well if the project falls within her expertise. The other four mentors were open to student proposals. Each of these mentors, however, also indicated that he/she has also approached students to suggest they try a research project, offers to mentor or provide assistance, and often offers some ideas for projects that may align with the student/s' interests and/or needs. Since these mentors were willing to take on student proposals, however, they also had criteria that were quite specific regarding what kinds of projects and processes they were willing to mentor. For instance, one mentor has honed in quite specifically on some of the criteria she considers when a student/s suggests a project:

> Sometimes I take on a project students propose, but I always guide their process. I definitely won't let them do it if I don't believe each student (if it's a group) can handle it and will do their part for the group. If a student or a group comes with an idea, it may be a really good idea that just needs some guidance to get it up and running. On the other hand, though, lots of times it needs reining in or organization. They just don't really know how to get it up and running unless they've done a project before. Even then, each project is unique and has specific parameters.

Ultimately, the mentors agreed they needed to know the student/s well enough to know if the project was viable and aligned with their educational objectives.

The mentors also noted common characteristics that they expected from students in order to be considered for an undergraduate research project. They all agreed that students needed to be strong academically. This went beyond the skill and facility in playing their instrument, singing, or composing. They noted the need to be able to communicate their ideas verbally, particularly if they were working in groups. Ultimately, they also needed to be able to communicate in a written format. One mentor noted, "if they can't academically formulate their ideas in the written word or can't put their thoughts into words, they can't synthesize and create the presentation whether it's in a poster or lecture". Another mentor described a time when the group he mentored had not practiced their "script" for their first presentation.

> You can't wing the dialogue. As soon as you walk on stage people are watching. They got burned because they hadn't rehearsed the dialogue. After that we rehearsed everything they did from the time they got on stage. They thought I was nit-picky, but it added confidence and a level of comfort.

Additionally, those who worked on creative projects (playing, singing, or composing) noted that the student researchers needed to be strong musicians, able to rehearse alone or collaboratively, to create excellent, artistic music.

The mentors also agreed that each student and/or group has to be motivated. They needed the motivation and self-discipline to stay engaged and focused even when the project tasks were difficult or tedious and when they had many other responsibilities. Related to their motivation, mentors agreed that students should be very interested in the project. Most of the student researchers have not done this type of work or research before, and motivation is critical as they face unknown territory. If they are not entirely motivated and interested in the project, they will have a hard time working through the difficult moments.

Most of the mentors noted that students have to be organized. There is a timeline to which they must adhere from the Undergraduate Research Office. Many of the tasks are unfamiliar to the students, and/or the sequence of tasks to arrive at the product is new. They must be self-disciplined and organized to stay on-task and meet the deadlines to which they have agreed

when they submitted their proposals at the beginning of the process.

The mentors all agreed that students have to maintain good communication with their mentor. The form of communication varied depending upon the mentor, however. Several of the mentors insisted that they meet with their student researchers regularly. Some mentors arranged a weekly meeting in the same place at the same time. Some mentors were able to weave the project into their students' lessons, so they connected on the project in their weekly individual music lessons. Most of the mentors also used email, texts, phone calls, and Skype as needed to maintain contact with their student researchers.

One mentor also noted the need for students who are in a group project to really be team players. If students did not work well with others in class, it was best not to consider them for a group undergraduate research project. The mentor briefly described a project that suffered due to tensions between some of the members of the group. He had not anticipated the trouble before the project began, but he emphatically noted how important it was to its success.

*Common Characteristics for Choosing the Project.* The mentors also noted some common characteristics of the project itself that helped them to determine whether they would mentor the project. They had to determine whether the project was "do-able." This took into account the requirements of the project as well as the student/s' ability to do all the tasks in the time allotted. Sometimes the projects students proposed required too much work. This could be related to their ignorance of the process necessary to complete the project, their enthusiasm, or even the materials/sources they would need. Most of the time, the mentors noted the plans the students proposed were too big for the time frame and the scope of the project. One mentor said that sometimes students suggest projects that presuppose things that are not in place. They have not taken into account the things that need to happen before their project can even begin.

As previously noted, several mentors indicated they also felt it was best to work with projects that related to their own expertise. They noted they felt more comfortable, confident, and able to offer viable assistance. One mentor described a time she had worked with a student project in which she felt out of her element. She was quite adamant that she would not do that again – feeling she had not guided that project as well as the ones that were within her areas of expertise. Three of the mentors, however, indicated they were willing to work on projects with students that went beyond their own expertise. One noted this was only the case if he knew the student would work hard, and if the student knew he did not have expertise in the area. They had to be willing to trust each other and learn together.

Finally, several mentors noted they had to weigh whether the project was in alignment with what students needed to learn. The mentors noted all of these factors related directly to the project need to be carefully considered prior to the proposal and launch of the project in an effort to set the project on a successful trajectory.

*Mentoring strategies and student tasks recommended by faculty mentors.* Mentors shared the strategies in the process they felt were important to the successful completion of the undergraduate research projects. All of the mentors discussed meeting with the students to navigate the planning process. This included creating the objectives for the project, brainstorming research questions and study designs, creating the budget proposal, and creating the schedule. This was the point all of the mentors agreed upon – the project needs to have a clear schedule, and the mentor must hold the students responsible for the deadlines.

Other common tasks the mentors suggested are important to the process includes meeting regularly/continuous communication, pointing them to resources and contacts, helping them rehearse, asking questions, guiding the IRB and grant-writing process, and offering advice. One mentor noted how important it has been for her to teach the student/s how to do each step in the process. All undergraduate students have completed research papers in their coursework, however, very few music majors have the opportunity to do a full-scale research project in any of their classes – at least not like students in some of the hard sciences may do in the course of their degrees. This mentor has found, therefore, that although students know how to do some elements of the research process, they do not know how to put the whole process together well on their own.

Several mentors indicated it is important to see what the student/s are writing – to give them feedback on their drafts and to require re-writing. Another mentor noted that she wished

she had checked in on the student's writing more often because there was a scramble to make many corrections just before the first presentation. It became more stressful than it would have otherwise been had the mentor seen some drafts of the writing earlier in the process.

Two of the other mentors agreed, noting that it was important for the student researchers to have at least one opportunity to practice their presentation for an "audience" prior to a conference or presentation day. One mentor noted:

> My student mentee was quite flustered when she first presented it to me – alone! She stumbled over her words and had a hard time organizing her thoughts. She laughed nervously and felt embarrassed. She was completely thrown off by my questions even though I knew perfectly well that she knew the answers. This just reinforced how important that practice time was. I sent her home to do the presentation 3 more times for her family, her boyfriend, and even her stuffed animals. She needed the practice.

Two mentors indicated how important it is to build the relationship. One mentor spent a great deal of individual time with her student researchers, and it was important to be able to trust each other. She needed to be able to honestly critique the student/s' work. Furthermore, the process is so new to most student researchers they rely very heavily upon the expertise and guidance of their mentor.

There were two notable differences between the mentors' strategies/approaches dependent upon the type of research with which the students were engaged. The strategy that seemed to be research-type-specific related to the strength of student musicianship. None of the mentors belabored this point; however, the conceptualization of the musicianship for the projects was different depending on the type of research. The mentors of the music education projects noted musicianship as it related to the specific music skills needed for their particular projects. The mentors for the creative projects, however, noted the student musicianship necessary for a full performance or composition in many of the creative projects. The musicianship of all the student researchers was important, but seemed to be shaded or slanted slightly differently depending upon the needs of the study. Another primary difference to note (although it is not necessarily a strategy) is the need for the music education mentors to guide the statistical process fairly extensively. None of the undergraduate music education majors had taken any statistical coursework. Their lack of knowledge and experience in statistics made this part of the process more intimidating for the student researchers, and by necessity, more hands-on for their mentors. This process was common amongst the music education projects, but it was not part of any of the creative projects.

Although the mentors did not all include the exact same steps in the process, they shared many of the same, basic techniques. Table 1 includes the complete list of the tasks and strategies the mentors suggested for the successful completion of an undergraduate research project once the proposal had been accepted. They are not necessarily in a sequential order, although most of the mentors noted the first four steps come first. The remaining steps come in more of a spiral fashion, revisiting some of the same steps throughout the project.

**Table1.** Tasks and Strategies Employed by Mentors to Guide Undergraduate Researchers

| **Tasks and Strategies** |
|---|
| Choose the right students |
| Choose the right projects |
| Write objectives |
| Write research questions |
| Create study designs |
| Create the schedule |
| Send reminders and deadlines |
| Meet regularly |
| Use a variety of communication |
| Rehearse together in the case of a performance project |
| Ask questions and offer advice |
| Teach every step in the research process |
| Ask to see drafts/offer revision suggestions |
| Practice the presentation |
| Build positive relationship |
| Motivate and encourage |

## Student Researcher Responses

*Characteristics of an ideal mentor*. The student researchers also offered ideas regarding ideal mentorship to help students complete an undergraduate research project. According to the student researchers, they really appreciated their mentor's help in regards to the paperwork (IRB, proposal, budget, etc.) and the management of the schedule. It was the first

comment from each student participant, and it was commonly reiterated. Many indicated they had no idea how to actually go about a research project, although several sheepishly noted they had not realized how little they knew until they were in the middle of the project. Then they really relied on the expertise of their mentors to guide them through the process and many of the tasks. All of the students who worked on performance projects appreciated the assistance their mentors offered in terms of preparing the music. One student noted he was particularly appreciative of his mentor's attention to detail in all the aspects of their project.

> Our mentor made sure "that everything was done well. We did check-ups with [him], and he really helped us to be self-critical and produce a high quality music. [He] encouraged us to be "picky" to really self-evaluate to see how well we are doing, and it increased our musical skills, increased our research skills and especially time-management skills.

All of the students were appreciative of the resources their mentors provided or guided them to find. One student noted that his mentor did not just give them everything they asked, and he did not necessarily know the answers to all of their questions.

> He did know where to look for the answers, though, and that helped us more than if he had just told us everything. I learned, too, that, for our weirder questions that we couldn't find answers to in the textbooks, that people are a great resource.

Another student mentioned how important it was to her that her mentor was excited about her project and helped to keep her motivated. Finally, several students who worked in groups also noted how important it was that everyone in their group did their tasks. One student noted that, "group work can be scary and unequal at times, but we needed everyone's input and best musicianship to do this project." Commonly, the student researchers largely shaped the development of teamwork, but the mentors often played a role, as well, particularly if there were any problems within the group.

*What makes undergraduate research successful?* Student researchers had a variety of ideas in regards to what led to the successful completion of their research projects. Table 2 includes student's responses.

**Table2.** *Tasks and Characteristics of Ideal Mentor*

| **Reminders of the tasks and deadlines** |
|---|
| Rehearse with us (on performance projects)/Model for conventional research projects |
| Communication – being available to meet, email, text, talk on the phone |
| Point us to resources |
| Motivate and encourage |
| Provide feedback |
| Someone I trust and like |
| Role model |
| Knowledgeable |
| Helpful |
| Someone with whom I have a relationship |
| Expect or demand high quality |

## RESULTS AND DISCUSSION

Undergraduate research projects are an extremely viable educational opportunity for students and a high-impact process for learning. They are also an adventure into the "unknown" because every project is unique. Both mentors and student researchers offered some valuable insights into strategies and characteristics that seem to help to facilitate a successful project. For instance, both mentors and student researchers indicated having a schedule is important. Open communication, whether it is through regular meetings or email/text/phone calls, etc. are important to steady progress toward completion. Interest in the project is important for both mentors and student researchers. The mentors often take on the role of motivator in the rough patches, and the students' own interest is most significant during these times.

Mentors noted it is critical that students are self-disciplined and can follow through their tasks without constant supervision. Student researchers, however, indicated they appreciated the steady support of their mentors through the process and individual tasks. Perception may be the differing factor here – the mentors know how much work each task requires. They guide the students to the task and lay out how to do it, and the students do the work. Both perceive the other is doing all the work, when in reality both parties are critical to the process. The students see how much their mentor invests in the teaching process, but their real growth comes through doing the tasks. These complementary functions seemed satisfactory to both mentors

and student researchers despite their different perspectives.

Both mentors and student researchers noted the "human" element of this process. The mentors indicated they needed to know their students well, trusting them to do the work and follow through to the end product. Students noted they needed to be able to trust their mentors to guide them, be honest with them, encourage them, and point them in the right direction. The building of relationship may not have been one of the objectives of the research for either mentors or student researchers, but it appears it is a factor in its success.

As noted in the analysis, there are many different factors that have an effect on the success of an undergraduate research project. Perhaps the greatest achievement of a successful undergraduate research project is how the students and mentors grow and develop throughout the process. Without exception every mentor and student indicated their project was a highlight in their education, and many of the students noted it was a watershed moment in their development as a teacher or musician or composer and in the direction of their lives. According to one student researcher, his project had an impact on him in a variety of ways:

> The project definitely helped me grow as a composer. I hadn't written any vocal music before then and had never collaborated with a librettist. I also gained more experience working with performers and participating in a professional recording session. It also helped me as a researcher in learning how to write a grant application and in gaining experience presenting my work to non-music audiences.

One of the mentors also noted her growth as a teacher through the process.

> I was often reminded that my student mentee needed modeling of the tasks and steps. It was a great face-to-face reminder that students don't simply know everything just because they are good or bright or conscience. She struggled when I didn't help her, not because she wasn't bright or able. It was my responsibility to be sure she understood what to do and how to do it. That has made me ask myself these questions about my classes, too – slowing down enough to be sure my students in class also know what they need to do and how to do it before I push on.

These projects make teachers better teachers, teach students how to conduct research that significantly matters to them and their future, and strengthens relationships and programs in the music department. With a wide variety of expertise the music department could have a robust undergraduate research program, making use of this high-impact practice that would challenge and support students with a multitude of interests, skills, and experience/inexperience. Successful undergraduate research projects seem to be win-win-win opportunities for all involved.

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