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A STUDY OF THE SELF-ASSESSMENT AND PREFERENCES OF COLLEGE STUDENTS IN A BEGINNING MUSIC TECHNOLOGY CLASS

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The self-assessments, preferences, and attitudes of college students in an introductory music technology class were investigated. Students completed a survey near the end of the semester, rating their skills at the beginning and at the end of the semester. Subjects perceived significant growth ($p < .05$) in each skill item. Preferences for transfer of documents and assignments via email versus hard copies and for paper handouts versus digital help documents and functions were indicated. There were no clear preferences for working with others or for working alone; however, females with less experience generally preferred working with others and students with more experience tended to prefer working alone. All subjects reporting changes in their opinion of music technology indicated positive changes. It is suggested that an introductory music technology course can teach computer skills through music-related coursework and can positively affect students' opinions of computer usage in music.

Music students have many skills to learn while pursuing an undergraduate music degree, including how to use the myriad of technologies available to today's musician. As technology in general becomes more prevalent and accessible in society and in education, music educators need to provide students adequate training in music technology. Two of the problems in implementing such course work are the lack of understanding of the most effective pedagogies for delivery and of the learning environments necessary for optimal learning to take place (Walls, 1997).

Student's attitudes toward computers tend to influence both their achievement and their learning with computers (Byrum & Cashman, 1993; Freedman & Liu, 1996; Johnson & Liu, 1998; Koohang, 1987; Liu, 1997). Research also suggests that students learn best when they enjoy the learning experience, when they are free from anxiety, and when they believe that computers are important for learning (Cooper & Stone, 1996; Kellenberger, 1996; Liu, Johnson, & Chandler, 1998). Recent studies suggest, however, that students might enter the university unprepared to learn with computers. Laffey and Musser (1998) found that students coming into the university had few computer skills, were anxious about using computers, perceived relevancy for the work place but not for the school environment, and believed that computers would interfere with the teacher-student relationship. A survey of incoming students conducted by a university music school found that "the popular notion that most young people have advanced computer skills is not supported" (Hess, 1999). Hess suggested that a possible reason

for this conclusion may be that students have spent large amounts of time in the intense study required to become accomplished musicians.

Computer attitude studies in the past have focused on differences across gender and age groups (Ayersman, 1996; Corston & Colman, 1996; Cooper & Stone, 1996; Hagen, 1993; Klein, Knupfer, & Crooks, 1993; McCoy & Baker, 1997) and have yielded inconclusive results. Some studies in the 1980's found significant differences in computer attitudes by gender (Chen, 1986; Lloyd & Gressard, 1984). In general, these studies suggested that males knew more about computers and were more convinced of their usefulness. Males tended to be the early adopters and innovators of technology. Females were generally concerned with the social consequences of computers. Other studies found no significant differences between males and females in attitudes toward using computers (Hagen, 1993; Laffey & Musser, 1998). A ten-year analysis of computer-related data about teacher education students found that computer anxiety for both males and females significantly decreased from 1985-1995, with males' computer anxiety being consistently lower (Reed, Anderson, Ervin, Jr., & Oughton, 1995). Sheffield (1998) reported a similar rise in experience with word processing skills from 1991-1997. This same study, however, also suggested a gender difference in that males were more comfortable with applications using quantitative skills, such as spreadsheets and databases, than females. McCoy and Baker (1997) found no gender differences in attitudes of preservice teachers, and in addition, both groups self-reported significant gains in computer proficiency as well as positive attitudes.

Some researchers are attempting to define strategies for the practical use of computer technologies in music. Dobbe (1998) found that over 90% of the 166 students in a music appreciation class completing his survey indicated that the use of in-class multimedia materials was either somewhat helpful or very helpful. The use of computer assisted instruction software as an outside-of-class activity was perceived as either somewhat helpful or very helpful by 88% of the students. In addition, these students showed significant achievement gains in note and key signature recognition. Hagen (1993) found no significant differences between males and females in attitudes toward using computers for multimedia presentations of a Mozart opera in a music appreciation class. Student perceptions of the presentation and enjoyment of the process indicated that the computer made a difference in self-reported learning. Students also clearly believed in the value of the computer in the classroom.

Finally, researchers have begun to use self-assessment of skills and attitudes in preservice teacher populations as they enter (Sheffield, 1998) and exit the programs (Dobson, 1998) as well as to use these techniques to help identify students' areas of strength and weakness (Ropp, 1998). Hess (1999) found that incoming students rated their computer abilities for music notation programs at a 2.25 on a scale of 5. Self-reported assessment methods for perceived growth in skill building have grown in favor over the past few years, as authentic learning and outcome-based assessment within

student-centered learning environments require new assessment procedures. "Evaluation from a constructivistic perspective should be less of a reinforcement and/or behavior control tool and more of a self-analysis and metacognitive tool" (Jonassen, 1991, p. 32). A combination of these assessment techniques may prove valuable in evaluating students' perceptions and their skills both before and after music technology instruction.

Considering the rather dismal survey results of incoming students regarding their attitudes, perceptions, and skill levels, music educators at the undergraduate level must pay careful attention to creating a pedagogy that addresses their students' computer competencies on many levels. Some universities now have requirements for completion of a music technology course within the music programs, but these are generally confined to a single semester in which students must learn everything from how to turn on the computer in some cases to being competent with notation programs. Other institutions incorporate technology as a tool within the framework of existing courses (Goddard, 1999; Hagen, 1999; Miller & Schmidt, 1999). Green stated that "information technology has finally emerged as a permanent, respected, and increasingly essential component of the college experience" (1996, p. 24). Batson (1996) used the analogy of the "flying merge" in suggesting that technology is being integrated and studied "on the fly," just as super highways were developed as a result of studying traffic patterns. He also suggested that student-centered approaches in educational reform merging with new information technologies may create a sum greater than that of its parts. However technology is integrated into the existing program, the pedagogy should be based on research of effectiveness in the classroom, with measures extending beyond traditional student achievement scores. For example, Dobson's (1998) Technology Competency Profiler (TCP) is an exit exam in which students self-assess their abilities on various computer skills at the end of their training, resulting in passing scores or suggesting remedial needs.

The purpose of this study was to explore attitudes, preferences of teaching techniques, and self-reported learning in a beginning music technology class, required for music majors and minors, at Florida State University. The following questions were asked:

1. Does gender influence attitudes in a music technology introduction class?
2. To what degree do the students believe they have progressed in their own skills as a result of the class?
3. Does the interactivity of the newsgroup in sharing ideas about the need or use of music technology cause students to reevaluate their own position and if so, how?
4. Does the completion of software reviews change the students' perceptions of their own critical thinking skills used in evaluating software?

5. Do students prefer writing and printing out traditional papers or paperless digital transfer of assignments?
6. Do students prefer handouts with step-by-step directions or taking their own notes and using online help?
7. Do students prefer to work alone or cooperatively with peers?
8. Do the music technology skills transfer to other areas of the students' lives?
9. Does the class positively or negatively affect student attitudes toward music technology?
10. Does the music technology class have an effect in the students' lives outside of the classroom?

Method

Based upon the research questions, the researcher prepared the survey instrument containing four sections (survey included at the end of this article). The first section gathered background information including the student's year in school, gender, previous technology educational experiences, and plans for taking any future music technology courses. In section two, a Likert-type scale from 1 to 10 was used for student assessment of growth, which included an item for each objective of the course, from file management to using sequencing software. The third section was a series of preference and opinion questions regarding teaching strategies and class participation. In the last section, the students were asked to write about any facet of the music technology class that had transferred into their personal lives or within their studies at the university.

The survey was given once as part of a regular class period in three different sections of the Introduction to Music Technology class, a required course for music majors and minors, near the end of the term. A total of 42 students (females, $n = 21$; and male, $n = 21$) completed the survey.

The class was held in a lab of 10 computers with CD-ROM drives, MIDI keyboards, and a projection unit with a speaker system for presentation purposes. The syllabus and directions for all projects with supporting documents and web sites were available online.

While there were no organized group projects, many students did work together, particularly since each section had more students than computers.

All reports and projects were sent via E-mail attachment to the instructor. No hard copies were required. Students were given space on the local server to house their projects and files. Some students requested access rights from off-campus and were granted those codes, making it possible to work at home as well as in the lab. Most students completed the projects during open lab hours with a monitor present for help with any hardware or network problems.

A handout was provided for creating a web page in addition to the presentations in class; however, these handouts were kept in a folder in the lab and were not allowed to leave the lab. In addition, a handout was provided that explained how to save files on the server using both a shared class

folder and individual student web page folders. All other projects were demonstrated in class with the presentation equipment, and were supported by the online help, support services provided by the instructor, and the help sections of various software packages. Students were allowed to print these materials for their own use.

A newsgroup was created especially for the class through the university resource center. All three sections shared the same newsgroup, so interactions among students who may not have known one another were possible. The specific assignment was to discuss their opinions of music technology and to try to relate their opinions to those of others, based on an initial thesis statement provided by the instructor.

A project using the sequencing software, *Cakewalk Home Studio*, was completed as well as a Web-based test covering basic MIDI concepts. The only other test the students took was a technology terms matching test. A *Finale* notation project was incomplete at the time the survey was taken, so data related to the project were eliminated from the study.

Each student was required to give a presentation on a musical subject using *PowerPoint*. Two additional projects involved the evaluation of commercially prepared music software products. The students were required to keep a log of their navigation choices, observations, and comments. They were asked to write a 300-word report on each product. A criteria list was discussed in class and was linked to the syllabus for their use in evaluating the products.

These reports, along with the other projects were saved as Web documents, creating a digital portfolio of student work as the semester progressed. The web page was a continuous project throughout the semester, allowing students ample time to explore resources, retrieve graphics and sounds from the Internet, and create a meaningful, individualized documentation of their work.

Results

This study examined student attitudes and self-assessment of skill acquisition in an introduction to music technology class. Chi-square and Pearson correlations were used to determine significant relationships, if any, at the predetermined .05 alpha level with the categorical data from the survey. Paired *t*-tests were used to determine significant differences, if any, between beginning and ending self-assessed scores on skill items. Open-ended transfer questions were summarized with a frequency count of responses.

Regarding Question 1, there were no significant correlations among gender and the preference variables of paper versus digital homework and handouts versus online help. However, there were significant correlations between gender and student's prior experience ($\chi^2[1, N = 40] = 6.366$, $p = .012$). Females had far less experience upon entering the course, but showed no significant differences on attitude or preference items as compared to the males. Two-thirds of the males had prior technology training, as opposed to

only one-fourth of the females. However, 40% of females plan further music technology education coursework as compared to 43% of the males.

While there was no correlation of gender on future plans, the relationship of experience to future plans indicated that the more experience a student had, the more likely they were to continue their studies in music technology areas ($\chi^2[1, N = 40] = 8.881, p = .003$). Again, as a group, females had much less experience upon entering the course, but nearly equaled the males in their choice to continue. Several areas of study were indicated as possible choices in the future: (a) music technology for educators, (b) electronic composition, (c) MIDI and sound design, (d) multimedia, and (e) several who listed "undecided." Independent *t*-tests revealed no significant differences in any of the preference items for gender.

The results relating to Question 2 regarding self-assessments were overwhelming. Every category item showed significant growth according to the student self-assessment scale using paired sample *t*-tests. Table 1 shows the means, standard deviations, and paired differences for each of the skill items in the self-assessment section, both before and after instruction.

Question 3 results suggested that students did not find the newsgroup experience to be a significant change agent in their opinion ($\chi^2[1, N = 40] = 3.429, p = .064$).; however, many students found the experience to be enlightening. Some of the responses as to the "why" or "why not" were:

1. "Music technology is going to influence many parts of the music course, even the performers. Everyone should learn the basic concept on computer[s]."
2. "It made me realize why I need to know more in this area."
3. "[I realized] that it would be hard not to encounter computer [sic] whether I want to or not."
4. "I think I've got a wider view of the whole music in [student's emphasis] technology aspect. It's been great reading other's input."

The instructor offered only a few messages on the newsgroup to encourage interaction, partly because availability was provided late in the term and was secondary to the main projects at the time. Future classes will have more responsibilities in this area.

Question 4 results indicated that students perceived an improvement in their ability to think critically about music software for computer-assisted instruction ($\chi^2[1, N = 40] = 18.667, p < .001$). Most of the students did not refer back to the criteria list provided as a link to the syllabus on the web. Following are a few of their statements as to why they might have improved:

1. "It gave me a chance to see how different software work [sic], bad or good. Now I can tell the difference between a well [designed] program to another."
2. "Before I looked at the criteria, I did not really know what to evaluate. This web page helped me to pick things apart."

Table 1

Skills Category Items With Mean, SD, and Paired t-Test Results

	Retrospective Beginning Scores		End Scores		Paired Differences		
Skills	*M*	*SD*	*M*	*SD*	*t*	*df*	Sig. (2-tailed)
File management: floppy/hard disk	5.8571	2.9679	7.6548	1.9831	-6.100	41	.000
File management: server	3.9512	2.8719	6.8537	2.3829	-8.319	40	.000
Technology terms	4.2619	2.6784	7.3333	1.5408	-10.449	41	.000
How computers work	4.6429	2.6116	7.4762	1.6115	-8.867	41	.000
Email with *PINE*	3.9048	3.1298	6.7857	2.4844	-6.246	41	.000
Email with *Messenger*	3.0238	2.5708	7.3571	2.1507	-9.909	41	.000
Attachments in email	5.3571	3.4416	8.0952	2.1277	-4.827	41	.000
Using a newsgroup	2.5238	2.4717	7.0714	2.0169	-11.074	41	.000
Internet searches	6.5714	2.7510	8.6429	1.2459	-5.323	41	.000
Creating web pages	1.7857	1.7743	7.1905	1.9158	-14.915	41	.000
Retrieval of graphics/sound on WWW	4.2381	3.5187	7.9048	1.9357	-7.939	41	.000
Using *PowerPoint*	2.7619	2.8866	7.9286	1.6586	-12.637	41	.000
Using *Cakewalk*	2.4762	2.3914	7.0714	1.8131	-11.733	41	.000
Understanding of MIDI	3.6190	2.8538	7.1905	1.8111	-9.521	41	.000
Word processing	7.6667	2.5535	8.5357	1.8819	-2.226	41	.032
Using computer assisted instruction software (CAI)	4.7381	2.8971	7.2381	2.0696	-6.924	41	.000
Evaluating CAI	3.2143	2.5331	6.5476	2.4614	-8.492	41	.000

Note. The beginning and ending self-evaluations were collected at the same time with the beginning scores as retrospective perceptions of the students' entry-level skills.

3. "It made me think about what to look for in a helpful product."
4. "It allowed me to look [at] software in an analytical point of view, giving my opinion how it ran—smooth or rough. It was fun."
5. "It helped me focus more on everything, not what caught my attention."

Question 6 results indicated that the students preferred digital transfer of documents versus printing out and handing in hard copies ($\chi^2[1, N = 40] = 24.780$, $p < .001$). Results for Question 7 indicated that they preferred handouts with step-by-step directions to using the online help features or relying on taking their own notes from class demonstrations and presentations ($\chi^2[1, N = 40] = 5.488$, $p = .019$).

Question 8 results showed that students in the present study had no clear preference for working alone or with others ($\chi^2[1, N = 40] = 1.600$, $p = .206$). As one student commented, "We end up helping each other anyways." The group that most preferred to work with others was the inexperienced females (gender was not a significant factor in this preference issue). The experienced group seemed to prefer working alone. In addition, one student gave the following comment: "I think by working alone, I might learn more. Otherwise the other person may take over and do the project by him/herself."

There was a significant difference in the opinions of the students toward music technology as a result of the class, $\chi^2[1, N = 40] = 10.00$, $p = .002$, for Question 9. All subjects' responses indicating that their opinions had changed were 100% positive in nature. Many of the transfer statements relating to Question 10 reflected the positive ways in which the students now use the technology, as evidenced in a few of the comments as follows:

1. "Since I arrived here at ...all my classes envolve [sic] using the computer. I [was] so fortunate for taking this class because It [sic] helped me tremendously. I now can find emails from my professor. I can find my classes web sites. It helped my learning by giving me a new wonderful way to find information. On a personal note this class taught me about email and now I can keep in touch with my family far away from me."
2. "Because this class improved my computer skills and knowledge of using the web, I've used what I've learned for other classes and also for just playing around. An example of this is using the web to locate a book I needed for my Baroque Flute class."
3. "I am a composition major, so I spend a lot of time editing and entering music on my computer. I got my parents to buy *Cakewalk* for my birthday present and I realized how badly I needed to upgrade my MIDI interaction on my computer. I am planning on publishing my music online as MP3's once I have a converter program for MIDI to WAV files."

The remaining transfer statement responses are summarized in Table 2.

Table 2

Frequency Count of Transfer Statement Responses

Response	Frequency
Web searching	6
general knowledge	6
composing	4
email	3
building web pages	2
word processing	2
file management	1
recreation	1
sharing music on the Web	1

Discussion

This study examined how students would assess their own growth in the various projects contained within the required Introduction to Music Technology course. In addition, relationships of gender and preferences were explored to begin to develop a pedagogy for teaching music technology. Indirectly, experience was also explored as the females and males were separated into smaller groups for more careful study. Finally, the study collected statements from the students regarding their usage outside of the class in their personal lives or in their ongoing coursework.

While no significant differences were found among gender and preference items on the survey, females did make some general gains. They came into the class with less experience, but ended with no differences in attitudes or preferences when compared to males. In addition, nearly equal numbers of females and males plan to continue their studies of music technology, indicating that enough interest was sparked from the experience that females were motivated to further their skills. The implication for music technology classrooms is to be aware that females generally have less experience, but not necessarily less interest.

The self-assessed improvement scores were perhaps the most surprising finding in this study. With every item, students believed they had significantly gained expertise and knowledge. Word processing had the highest mean at the beginning and still showed significant gains. This may have been due to the unusual activities associated with the word processing project, such as using the drawing tools to create a picture of a typical MIDI setup and using the review and comment tools to discuss ideas between student and instructor. These were novel experiences for nearly all of the students.

Novelty is a motivating factor in using new technologies, so keeping the activities fresh and interesting may be another important strategy to consider when developing a pedagogy for music technology. Promoting successful experiences by keeping the projects simple and easily attained is possibly another reason why the students felt such a positive attitude about their learning. Each activity was carefully planned with a criteria list of elements for inclusion in the final project as a checklist. Students could control how much of each project they felt they could manage.

In addition, many students with some familiarity with computers found that they were able to raise their level of functionality by filling the gaps in their understanding, generally as a result of their own self-teaching. One of the transfer statements provided insight into this phenomenon of perceived growth as follows:

> I think that my computer skills in general have been raised in this class. I was familiar with many of the programs before taking the class. I figured things out by myself and didn't really fully understand or know fully what these programs could do. I think I understand more about the programs now.

The newsgroup activity, while influential for some, was more of an exercise for others. Most students preferred to "lurk," the common term used for those who observe rather than participate in online discussions, stating that they most enjoyed reading other's responses. While lurking is an excellent way to get to know an online discussion group on the web, it is not helpful in a classroom setting. One of the ways to improve interactivity is to give extra points for additional newsgroup responses, according to the number or quality of responses. This strategy may motivate students by "forcing" them to find ways to interact with one another, like "ice-breaker" party games.

The software evaluation experience proved to be invaluable for the students in providing them with an opportunity to critique commercially prepared software through the eyes of a designer. The students were asked to identify the target audiences and educational objectives of the software as well as navigational structures. Once identified, they were to comment on the effectiveness of the interface, graphics, sounds, and so forth, in support of those objectives and structures. Their comments revealed new insights into not only software, but how other things work as well, like the Internet browsers. Being able to transfer learning from one situation to another is an important aspect of teaching and suggests that these kinds of evaluative activities may be helpful to students as they navigate through the myriad of software available to them. These transfers can also provide them with some good ideas for designing their own web portfolios.

Students preferred digital documents and transfers to hard copies by an overwhelming margin. While few papers were required, their short reports sent via email attachments were easy to send and they were able to document the day and time of their completion using the time stamp on the email

and on the documents. Review tools in Microsoft Word were used to share comments. This was a novel experience for even the most experienced computer users of the group. These findings suggest that strategies for sharing documents and feedback can be effectively handled with technology. Since word processing is fairly familiar to most students, novel experiences with that medium may be an important strategy to extend students' knowledge in that area.

Students preferred handouts to digital help functions at a significant level as well. This survey item had perhaps one of the greatest implications toward a music technology pedagogy. There seems to be a positive relationship between the ability to work from digital help and prior computer experience. However, for those who are just beginning to learn the processes of computers, handouts should be used for instruction on file saving, email, and for navigating new software programs. This is especially important in a class such as the one in this study where only one semester credit is given for all of the projects that students are required to complete. In order to save the students time and frustration, it is probably best to give more, rather than less, structural support. For those projects requiring less structure, a constructivist approach may be appropriate. In other words, the handouts may be necessary, for instance, to learn the basics of PowerPoint; but, once established, handouts may be eliminated as students progress through the process of constructing a music project that is meaningful to them.

Although most students did work with others at some point in the class, most preferred to have their own computer and to work alone, stating they could learn more if they did the activities themselves. Most educators intuitively know that students learn with hands-on activities, in accordance with the constructivist active learning model of "learning by doing." The implication for music technology education is to provide as much one-on-one time with computers as possible and perhaps have fewer students at a time, if necessary, in order to provide that environment. Inexperienced females preferred to work in groups, so being sensitive to that difference may increase their opportunities for a supportive learning environment as well.

Finally, the group consensus of a 100% positive attitude change toward music technology and its uses was good news for music technology education. If students are positive about subject matter, they are better learners and will most likely remain lifelong learners. By providing new ways to access music and ways to share music, students are exposed to new possibilities and given tools that will help them in the future. Their transfer statements about how the class affected their behavior in other classes or in their personal lives mostly revolved around the Internet. Implications for all of music education are enormous. Music is a large part of the Internet culture and music education should take a very serious look at how best to include those structures into a curriculum that includes music technology coursework.

Implications for music education suggest that an introductory music technology course is a viable way to teach many computer skills through

musically related projects and that by doing so, students are positively affected in their opinions of computer usage in music. As students gain experience with computers and participate in various types of activities, the more comfortable they become with computers. These findings support previous research that found length of experience and variety of activity to be conditions of perceived comfort at the computer (Liao, 1993; Huang, Waxman, & Padron, 1995). In addition, the present study corroborates other studies that found that students like using computers with music (McArthur, 1992; Norman, 1999). While only three projects listed in this study directly involved "music" technology (the music notation project was incomplete at the time the survey was taken), it should be pointed out that this course also satisfies the requirements of the university's general computer literacy requirements. This study suggests that it is possible to combine the two areas successfully, nesting musical content within the general requirements.

Further investigations should be undertaken to determine what aspects of the projects were most effective in satisfying the feeling of accomplishment as well as the influences in choosing to take additional music technology courses. In addition, studies such as this should be extended to the advanced technology courses to develop long-term strategies for an integrated music technology curriculum over the course of a four-year degree program.

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Intro to Music Technology Research Survey

1. What year are you in school?
   ☐ freshman ☐ sophomore ☐ junior ☐ senior ☐ graduate

2. Male ☐ Female ☐

3. Is this your first technology class? Yes ☐ No ☐

4. Do you plan to take more music technology classes? Yes ☐ No ☐

Rate your knowledge of the following skills that will be covered in this class.
Insert the number that best describes <u>your self-evaluation</u> of your skills.
1 is least knowledgeable, 10 is most knowledgeable. Do not use zero.

1 2 3 4 5 6 7 8 9 10

File management with floppy/hard drive _____
File management with server _____
Technology terminology _____
Understanding of how computers work _____
Email on PINE _____
Email in *Messenger* _____
Internet searching with search engines _____
Creating web pages in *Composer* _____
Retrieval of graphics, sound, and text from WWW _____
Using *Powerpoint* _____
Using a newsgroup _____
Using *Cakewalk* _____
Understanding MIDI _____
Using *Finale* _____
Word processing _____
Sending attachments in email _____
Using Computer Assisted Instruction(CAI)software _____
Evaluating CAI software _____

5. Did the newsgroup experience, reading other's ideas and expressing your own, cause you to reevaluate your opinion of music technology? Yes ☐ No ☐

   5a. If yes, in what way(s) did your opinion change?

(continued)

6. Did the software evaluation experience sharpen your critical thinking about software products?

Yes ☐ No ☐

6a. If yes, describe the ways you think you improved.

6b. If no, why do you think you did not improve your software evaluation skills?

6c. Did you use the Williams and Webster criteria list to help in your evaluations?

Yes ☐ No ☐

7. Given a choice, do you prefer digital papers sent to the instructor via email attachments with digital feedback, or hard copies and traditional written comments?

Digital ☐ Hard copies ☐

8. Do you prefer written instruction with step-by-step directions or taking your own notes and using online help as needed?

Written-out instructions ☐ Own notes with online help ☐

9. Did you work with another student in class at any time? Yes ☐ No ☐

If yes, check all that apply:

____sharing a computer

____emailing a student for help

____giving helpful advice in the lab

____asking for advice in the lab from a fellow student

____demonstrating a process to another student

____other_____

9b. Do you prefer to work alone or with others on music technology projects?

Alone ☐ With others ☐

10. Do you have a different opinion of the uses of music technology as a result of this class?

Yes ☐ No ☐

10a. If your answer was "Yes" to number 10, did your opinion change positively or negatively? Positively ☐ Negatively ☐

Please make a transfer. What other area of your studies or of your life skills have been affected by your learning in this class?

Figure 1. The Survey