

Cooperating Teachers' Perceptions of Technology Preparation and Use During Music Student Teaching

By

Jay Dorfman
Kent State University
Kent, Ohio

Abstract

The purpose of this study was to examine cooperating teachers' perspectives regarding music student-teachers' preparation to integrate technology during student teaching. Cooperating teachers (N=155) responded to an online survey designed to gauge their own technology integration practices and their attitudes regarding student teachers' abilities to integrate technology over the last five years. Results indicated that cooperating teachers viewed student teachers' development of technology skills as important and that they were generally pleased with several dimensions of their student teachers' preparedness to integrate technology into instruction. Discussion focuses on the role of the university supervisor in emphasizing technology integration, and on ways that cooperating teachers might further mentor student teachers in this area.

Keywords: technology, student teaching, cooperating teacher, music teacher preparation

Student teaching is typically the culminating experience in pre-service music teachers' preparation for their careers in the classroom. A substantial body of research has examined the music student teaching process from the perspectives of the student teacher (ST), the university supervisor (US), and the cooperating teacher (CT), collectively known as the "student teaching triad". The student teaching semester, along with the concurrent seminar courses that many universities require, allow students to apply their pre-service learning and reflect collaboratively on their teaching (Baumgartner, 2014). Foundational research on music student teaching led Legette (1997) to describe a set of competencies developed before and during student teaching which can enhance student teachers' experiences, including the development of self-confidence, emotional maturity, broad preparation, and tools for handling disciplinary situations. Legette suggested it was important for all stakeholders in music student teaching processes to understand concerns arise during student teaching.

Far more research about student teaching has been conducted outside the field of music education than within it. Recent scholarship has examined issues related to student teachers' preparedness to integrate technology into their teaching. For example, Butler and Wiebe (2003) examined student teachers' implementation of project-based learning in science teaching and found that, while sophisticated uses of technology are less common than mundane ones, student teachers have positive attitudes about implementing complex technologies (such as multimedia simulations). Similar studies have been conducted in mathematics education, where researchers determined that "simply using technology in learning mathematics will not guarantee that student teachers will use it in their teaching, for many factors confound the initiative to use technology" (Juersevich, Garofalo, & Frasier, 2009). A number of factors may influence the extent of technology integration by student teachers, including accrediting expectations (Stuhlmann &

Taylor, 1999), comfort level, prior technical knowledge, mentoring (Grove, Strudler, & Odell, 2007; Weitzenkamp, 2004), personal technology ownership (Altun & Akyildiz, 2017), or personal characteristics (Ronfeldt, Reininger, & Kwok, 2013). Technology might also serve as a support mechanism for student teachers to network with peers and mentors (Fry, 2006). While some researchers have observed gender-based differences in student teachers' technology use, others have found this variable to have no significant effect (Sang, Valcke, van Braak, & Tondeur, 2010).

Researchers across disciplines studying student teachers' integration of technology have found a general misalignment between what happens in classrooms, and the skills and knowledge that teacher preparation programs are expected to foster in pre-service teachers (Ottenbreit-Leftwich et al., 2012). Researchers have provided evidence that student teachers develop technology integration skills as part of a "constructivist" (Margerum-Leys, 2001, p. 219) experience because it allows student teachers to build on their prior knowledge in a real (or as close to real as possible) teaching environment. Such evidence, however, does not explicitly show alignment between student teachers' technology preparation and the expectations of the classroom. Sun, Strobel and Newby (2017) suggested that cooperating teachers are influential in student teachers' acquisition of technology skills and knowledge, and emphasized that "technology skill and knowledge alone [do] not enable teachers to become ready for technology integration" (p. 599). Further, student teaching contexts, which include the influence and technology adeptness of cooperating teachers, are essential components in determining whether student teachers will continue to develop technology skills initially learned as part of teacher preparation (Dexter & Riedel, 2003; Grove, Strudler, & Odell, 2004).

In music education, Kelly (2010) followed up on Legette's idea of *competencies* of music student teachers, referring to them as *skills and behaviors*. Survey responses from several subgroups of practicing music teachers ranked "Has knowledge of technology and can apply skills in a variety of manners" near the bottom of the list of important traits.ⁱ In the decade or so since Kelly's survey, however, teachers' attitudes about the importance of technology preparation and its effectiveness relative to various teaching-related tasks and dispositions have changed. Teachers now see technology as important educational and motivational tool (Hassan & Geys, 2016; Kim, Kim, Lee, Spector, & Demeester, 2013; Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, 2016). Because student teaching is such a formative experience, and because cooperating teachers have tremendous influence over their mentee's development, it is important that researchers evaluate how cooperating teachers view technology, their experiences with it, how their student teachers prepare to teach with it, and how effective they are in practice.

Purpose and Research Questions

The purpose of this study is to examine cooperating teachers' perceptions regarding the student teachers' ability to integrate technology into music teaching.

Research questions which guided this study are:

1. What are cooperating teachers' views regarding the preparation that student teachers receive in their music teacher preparation programs to integrate technology into their practice?
2. Do student teachers use technology effectively to facilitate music teaching and learning?

Method

I collected data using a survey instrument, comprised of sections which address each research question (see Appendix A). Opening questions served to collect demographic data such

as the number of years of teaching experience and primary teaching area. I also included questions that followed up on Kelly's (2010) findings regarding cooperating teachers' views on the importance of technology in music student teaching. Survey items also addressed respondents' views regarding the general purpose of technology in classrooms (Otterbreit-Leftwich et al., 2012), along with items adapted from McDonald, Tassell and Stobaugh's (2011) survey examining how student teachers use technology.

The types of technologies that cooperating and student teachers use as part of their daily teaching activities were not defined in the questionnaire. In general, I define "technology" as computer-based technology; however, other types of technology were certainly relevant in this study. A narrower definition of technology would have unnecessarily limited responses. While it would have been possible to refer to particular hardware (iPads, Chromebooks, or laptops) or software (GarageBand, Sibelius, or FaceTime), doing so would have directed respondents to provide information about those particular technologies rather than tools they have access to or those they use regularly. Rather than provide such definitions, the term "technology" was left to the interpretations of the respondents, as has been done in educational technology research for many years.

The survey was developed using Qualtrics and was distributed via email to all teachers who had mentored students through my university at least once in the last five years. I also contacted music education colleagues at eight other universities and asked them to send the survey link to a similar group from their universities. In total, 632 teachers who had served as cooperating teachers in the last five years, according to university records, received the link. Of this group, 155 cooperating teachers completed the questionnaire, resulting in a response rate of 24.5%.

Results

The respondents reported teaching careers of a mean of 20.63 years, ranging from a minimum of 4 years to a maximum of 48 years ($SD = 8.77$). Table 1 displays respondents' reported primary teaching areas (those topics which teachers spend the most time teaching during the school year).

Respondents primary teaching areas were not normally distributed; as such, no parametric tests were conducted to determine differences among groups according to this variable.

Table 1

Respondents' Primary Teaching Areas

	Frequency	Percent
Secondary Instrumental	81	52.3
Elementary General	35	22.6
Secondary Vocal	22	14.2
Secondary General	6	3.9
Elementary Instrumental	5	3.2
Elementary Vocal	3	1.9
Other	3	1.9

The first set of items on the survey instrument was designed to solicit respondents' attitudes toward technology in their own teaching and in student teaching experiences. The results of these items are displayed in Table 2.

Table 2

Respondents' Attitudes regarding Technology Preparation and Integration

	Strongly agree		Somewhat agree		Neither agree nor disagree		Somewhat disagree		Strongly disagree	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
I feel well prepared to integrate technology into my teaching	51	32.9	77	49.7	10	6.5	12	7.7	3	1.9
I frequently integrate technology into my teaching	50	32.3	69	44.5	10	6.5	19	12.3	5	3.2

It is extremely important for experienced music teachers to have knowledge of technology and how to apply it to their teaching situation.	77	49.7	61	39.4	7	4.5	6	3.9	2	1.3
It is extremely important for student teachers to have knowledge of technology and how to apply it to their student teaching situations.	81	52.3	60	38.7	8	5.2	8	5.2	1	1.3

Overall, the respondents felt well prepared to integrate technology into their teaching, with 82.6% ($n=128$) responding in the two most positive categories. Respondents reported that they integrate technology frequently, and generally agreed it was important that experienced teachers and student teachers know technology and its applications in teaching situations. Questions regarding the cooperating teachers' perceptions of student teachers' preparation to use technology in their teaching, and about their effectiveness in doing so comprised the final set of items of the survey instrument. The results of these items are displayed in Table 3.

Table 3

Cooperating Teachers' Perceptions of Technology Preparation

	Strongly agree		Somewhat agree		Neither agree nor disagree		Somewhat disagree		Strongly disagree	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
The program from which these students came did an excellent job of preparing them to use technology in their teaching.	27	17.4	64	41.3	41	26.5	9	5.8	3	1.9
The students were eager to use technology in their teaching.	31	20.0	52	33.5	36	23.2	21	13.5	4	2.6
The students understood technology's place in the life of a music teacher.	31	20.0	65	41.9	36	23.2	10	6.5	2	1.3
The university supervisor emphasized technology as important in the development of these student teachers.	19	12.3	33	21.3	55	35.5	29	18.7	8	5.2
The university's expectations make it clear that technology is an important part of student teaching.	20	12.9	43	27.7	52	33.5	22	14.2	7	4.5

The student teacher(s) knew a lot about technology and how to use it for themselves.	45	29.0	56	36.1	22	14.2	10	6.5	3	1.9
The student teacher(s) knew a lot about how to integrate technology into their teaching.	21	13.5	56	36.1	30	19.4	24	15.5	5	3.2
The student teacher(s) showed examples of using technology to introduce musical concepts or skills effectively.	21	13.5	50	32.3	29	18.7	30	19.4	6	3.9
The student teacher(s) showed examples of using technology to effectively provide students with the practice of concepts or skills.	16	10.3	46	29.7	37	23.9	28	18.1	9	5.8
The student teacher(s) showed examples of using technology to assess or evaluate students effectively.	15	9.7	36	23.2	35	22.6	40	25.8	10	6.5
The student teacher(s) used technology to communicate effectively.	37	23.9	53	34.2	24	15.5	18	11.6	4	2.6

Findings from this set of items showed that cooperating teachers generally have positive perceptions of student teachers' preparation to integrate technology into their teaching. Of note is that the strongest positive response was to the item: *The student teacher(s) knew a lot about technology and how to use it for themselves*, to which 29% of the respondents strongly agreed. This suggests a perception that student teachers' knowledge of pedagogical technology use lags behind personal use, which is supported by previous literature on technology in music teacher preparation (Bauer & Dammers, 2016; Dorfman, 2016).

Discussion

Findings regarding cooperating teachers' comfort with technology and their frequency of integration largely support previous researchers' findings (Inan & Lowther, 2010; Liu & Ritzhaupt, 2017). In general, respondents agreed that it is important for both experienced teachers and student teachers to have extensive knowledge of technology and to be able to make

use of technology in their teaching. Despite the respondents' apparent comfort with integrating technology into their teaching, as evidenced by the findings in Table 2, their perceptions of student teachers' preparation to integrate technology into their teaching were somewhat less enthusiastic. However, it is evident that respondents viewed student teachers' integration of technology as a strength. There is an apparent lack of clarity regarding the importance of technology in music teacher preparation programs and of the expectations of faculty for the regular integration of technology into student teaching.

While it was not the purpose of this study to evaluate the performance of music teacher preparation programs in helping student teachers to become adept at using technology for their teaching, the respondents' evaluations of the preservice programs' ability to prepare student teachers to use technology were neutral. It may be that technology is integrated inconsistently into music teacher preparation programs, which could influence the results of this item. In addition, it is not certain from the results that university supervisors are emphasizing the use of technology in their interactions with student teachers or cooperating teachers. Additionally, respondents were neutral regarding their perceptions of the university supervisors' emphasis on using technology. It is possible that, were university supervisors to place greater expectations on the student teachers' uses of technology, student teachers would obtain more practice in doing so. This might positively influence cooperating teachers' perceptions of student teachers' abilities to integrate technology into teaching.

Results indicate that, according to cooperating teacher participants, student teachers generally knew how to use technology to introduce, provide practice with, and evaluate musical skills. Cooperating teachers' assessments of these skills were not overwhelmingly positive, but

they generally agreed that student teachers were prepared to use technology for these pedagogical tasks.

Implications for Music Education and Suggestions for Further Research

Findings of this study indicate that, for the sample, it is important that student teachers develop skills in integrating technology into teaching. This shows a change in the perspectives of teachers since the Kelly (2010) study, in which technology skills were ranked low among skills a teacher should develop, and supports previously cited research documenting this change in teachers' attitudes. Cooperating teachers' perceptions of the importance of technology in music teacher preparation may indicate a response to reliance on technology for the day-to-day management of music programs and school or district mandates for technology integration. Music teacher preparation programs should make a note of this change, and work to integrate technology into all aspects of pre-service preparation further. Music teacher educators might also clarify the importance of technology in their programs, and the expectations for its use during student teaching.

It is possible that the characteristics of the sample skewed the results of this study. Many teachers in secondary ensemble directing positions may rely on administrative technologies more than they do on technologies that engage students in music learning activities. While administrative technologies should not be overlooked because of their usefulness, student teachers may be less familiar with these than they are with technologies that allow for creative engagement. Future research might examine more deeply the kinds of technologies that teachers use in light of their roles and responsibilities.

In addition, findings regarding the university supervisor's roles may be of interest. University supervisors may play a key role in emphasizing the importance of technology during

student teaching experiences. Supervisors might suggest to student teachers and cooperating teachers ways of integrating technology. Supervisors typically bring a wealth of experience from their own teaching careers and might, for example, suggest tools that student teachers could experiment with for classroom management, communication, or engaging students in music learning. Supervisors can also seek out resources to help both student teachers and cooperating teachers to integrate technology.

Grove et al. (2004) identified several key trends related to best practices for cooperating teachers to help student teachers develop technology skills that would transfer to and enhance pedagogy. Cooperating teachers should provide one-on-one help so that student teachers can ask questions about and practice using software and hardware before using it in their teaching. Cooperating teachers should model technology use for student teachers and should provide opportunities for discussion and reflection about technology integration. Finally, in addition to resources that a university supervisor might provide, cooperating teachers can connect student teachers to resources—specifically technology coaches or support staff—within the school or district. Cooperating teachers can serve as mentors for general music teaching development, and can also provide mentorship for learning to integrate technology.

Future researchers examining the subject of cooperating teachers' perceptions as they relate to technology integration might strive to recruit a more balanced sample of cooperating teachers. Doing so would allow for comparison of groups according to primary teaching area and, therefore, may produce valid findings about the relative importance of technology integration for student teachers across various types of music teaching. Besides, examining the preparation of student teachers to integrate technology in music teaching may reveal qualities of teacher education programs from which they come. Several researchers have suggested that

models of technology integration in teacher preparation programs can influence readiness (Bird & Rosean, 2005; Dexter & Riedel, 2003; Gronseth et al., 2010; Ottenbreit-Leftwich et al., 2012; Schnackenberg & Still III, 2014); the perspectives of cooperating teachers may provide an authentic view of the quality of technology integration models.

References

- Altun, T., & Akyildiz, S. (2017). Investigating student teachers' technological pedagogical content knowledge (TPACK) levels based on some variables. *European Journal of Education Studies*, 3(5), 467-485. doi: 10.5281/zenodo.555996
- Bauer, W. I., & Dammers, R. J. (2016). Technology in music teacher education: A national survey. *Research Perspectives in Music Education*, 18(1), 2-15.
- Baumgartner, C. M. (2014). An examination of music student teaching seminars at Midwestern universities. *Journal of Music Teacher Education*, 24(1), 51-64.
doi: 10.1177/1057083713494013
- Bird, T., & Rosean, C. L. (2005). Providing authentic contexts for learning information technology in teacher preparation. *Journal of Technology and Teacher Education*, 13(2), 211-231.
- Butler, S. M., & Wiebe, E. N. (2003). Designing a technology-based science lesson: Student teachers grapple with an authentic problem of practice. *Journal of Technology and Teacher Education*, 11(4), 463-481.
- Dexter, S., & Riedel, E. (2003). Why improving preservice teacher educational technology preparation must go beyond the college's walls. *Journal of Teacher Education*, 54(4), 334-346. doi: 10.1177/0022487103255319
- Dorfman, J. (2016). Exploring models of technology integration into music teacher education programs. *Visions of Research in Music Education*, 28. Retrieved from http://www-usr.rider.edu/%7Evrme/v28n1/visions/Dorfman_Models_of_Technology_Integration.pdf

- Fry, S. (2006). *Promoting student teacher success in isolated rural areas*. Paper presented at the Society for Information Technology & Teacher Education International Conference, Orlando, FL.
- Gronseth, S., Brush, T., Ottenbreit-Leftwich, A., Strycker, J., Abaci, S., Easterling, W., . . . van Leusen, P. (2010). Equipping the next generation of teachers: Technology preparation and practice. *Journal of Digital Learning in Teacher Education*, 27(1), 30-36.
- Grove, K., Strudler, N., & Odell, S. (2004). Mentoring toward technology use. *Journal of Research on Technology in Education*, 37(1), 85-109.
doi: 10.1080/15391523.2004.10782427
- Grove, K., Strudler, N., & Odell, S. (2007). Assessing technology integration in mentoring practices during student teaching: Multi-case analyses. *International Journal of Technology in Teaching and Learning*, 3(1), 66-82.
- Hassan, M., & Geys, B. (2016). Expectations, realizations, and approval of tablet computers in an educational setting. *Journal of Educational Change*, 17, 171-190.
doi: 10.1007/s10833-015-9270-4
- Inan, F. A., & Lowther, D. L. (2010). Factors affecting technology integration in K-12 classrooms: A path model. *Educational Technology Research and Development*, 58(2), 137-154. doi: <https://doi.org/10.1007/s11423-009-9132-y>
- Juersevich, N., Garofalo, J., & Fraswer, V. (2009). Student teachers' use of technology-generated representations: Exemplars and rationales. *Journal of Technology & Teacher Education*, 17(2), 149-173.

- Kelly, S. N. (2010). Public school supervising teachers' perceptions of skills and behaviors necessary in the development of effective music student teachers. *Bulletin of the Council for Research in Music Education, 185*, 21-32.
- Kim, C., Kim, M. K., Lee, C., Spector, J. M., & Demeester, K. (2013). Teacher beliefs and technology integration. *Teaching and Teacher Education, 29*, 76-85.
doi: 10.1016/j.tate.2012.08.005
- Legette, R. M. (1997). Enhancing the music student-teaching experience: A research review. *Update: Applications of research in music education, 16*(1), 25-28.
- Liu, F., & Ritzhaupt, A. D. (2017). Explaining technology integration in K-12 classrooms: A multilevel path analysis model. *Educational Technology Research and Development, 65*(4), 795-813. doi: <https://doi.org/10.1007/s11423-016-9487-9>
- Margerum-Leys, J. (2001). *Teacher knowledge of educational technology: A case study of student teacher/mentor pairs*. (PhD dissertation), The University of Michigan.
- McDonald, M., Tassell, J. L., & Stobaugh, R. R. (2011). *Student and teacher use of technology: A state and national comparison*. Paper presented at the Society for Information Technology & Teacher Education International Conference, Nashville, TN.
- Ottenbreit-Leftwich, A. T., Brush, T. A., Strycker, J., Gronseth, S., Roman, T., Abaci, S., . . . Plucker, J. (2012). Preparation versus practice: How do teacher education programs and practicing teachers align in their use of technology to support teaching and learning? *Computers & Education, 59*, 399-411. doi: 10.1016/j.compedu.2012.01.014
- Ronfeldt, M., Reininger, M., & Kwok, A. (2013). Recruitment or preparation? Investigating the effects of teacher characteristics and student teaching. *Journal of Teacher Education, 64*(4), 319-337. doi: 10.1177/0022487113488143

- Sang, G., Valcke, M., van Braak, J., & Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers & Education, 54*, 103-112.
- Schnackenberg, H. L., & Still III, G. (2014). Teacher preparation programs and technology integration: Best practices for curriculum design. *International Journal of Education and Practice, 2*(7), 147-158.
- Stuhlmann, J. M., & Taylor, H. G. (1999). Preparing technically competent student teachers: A three-year study of interventions and experiences. *Journal of Technology & Teacher Education, 7*(4).
- Sun, Y., Strobel, J., & Newby, T. J. (2017). The impact of student teaching experience on pre-service teachers' readiness for technology integration: A mixed methods study with growth curve modeling. *Education Technology Research Development, 65*, 597-629. doi: 10.1007/s11423-016-9486-x
- Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2016). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational Technology Research and Development, 65*(3), 555-575. doi: 10.1007/s11423-016-9481-2
- Weitzenkamp, D. J. (2004). *Efficacy of the student teaching triad on student teacher technology use*. (PhD dissertation), The University of Nebraska.

Appendix A

Survey Items

Name

University from which you were asked to complete this survey

Years teaching

Area of music teaching in which you spend the most time this year

Please indicate how strongly you agree or disagree with each of these statements (responses were Strongly agree, Somewhat agree, Neither agree nor disagree, somewhat agree, Strongly agree):

- I feel well prepared to integrate technology into my teaching
- I frequently integrate technology into my teaching
- It is extremely important for experienced music teachers to have knowledge of technology and how to apply it to their own teaching situation.
- It is extremely important for student teachers to have knowledge of technology and how to apply it to their own student teaching situations.

Please respond to these questions regarding the preparation of the last one or two student teachers for whom you have served as a cooperating teacher (including any you are currently supervising) (responses were Strongly agree, Somewhat agree, Neither agree nor disagree, somewhat agree, Strongly agree):

- The program from which these students came did an excellent job of preparing them to use technology in their teaching.
- The students were eager to use technology in their teaching.
- The students understood technology's place in the life of a music teacher.

For this next set of questions, think about the last one or two student teachers for whom you served as a cooperating teacher. Indicate how strongly you agree or disagree with each of these statements (including any you are currently supervising):

- The student teacher(s) knew a lot about technology and how to use it for themselves.
- The student teacher(s) knew a lot about how to integrate technology into their teaching.
- The student teacher(s) showed examples of using technology to effectively introduce students to musical concepts.
- The student teacher(s) showed examples of using technology to effectively provide students with practice with concepts.
- The student teacher(s) showed examples of using technology to effectively assess or evaluate students.

Note

1. Mean scores for this trait ranged from 3.479-3.646 on a scale of 1-5.

Jay Dorfman (jdorfma2@kent.edu) is Associate Professor and Coordinator of Music Education at Kent State University where he teaches classes in music technology, instrumental music, popular music, and graduate research. His research interests include the uses of technology in music teaching and learning and music teacher education. He holds BM and MM degrees from the University of Miami (Florida) and a PhD from Northwestern University.