Authentic-Context Learning Activities in Instrumental Music Teacher Education

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Abstract:

The purpose of this study was to examine the relationship between the frequency of particular authentic-context learning (ACL) activities during undergraduate instrumental music teacher training and the initial teaching performance (ITP) of undergraduate instrumental music student teachers. Subjects (N = 30) were instrumental music student teachers at four major universities. Four ACL activities, identified from the literature and limited to instrumental music settings, included (a) early field experience teaching episodes, (b) peer-teaching episodes, (c) episodes of subjects watching videotapes of their teaching, and (d) episodes of subjects watching videotapes of their teaching with a coaching instructor. ITP was determined by evaluating teaching episodes, which occurred within the first 3 weeks of student teaching, using the Survey of Teaching Effectiveness (Hamann & Baker, 1996). Significant correlations were found between ITP and three of the four ACL activities. In addition, an overall ACL experience value was calculated and categorized into high, medium, and low levels. Those with a high level of ACL experiences were significantly better teachers than those with medium or low levels of ACL experiences.

Keywords: authentic-context learning | instrumental music teachers | initial training performance

Article:

Authentic-context learning (ACL) activities are those in which problems that need to be solved are presented within an environment that resembles actual professional practice, thus providing for the "need to know" (Katz & Raths, 1982). Students tend to be highly motivated when working directly on problems within an authentic context (Barrows, 1986; Kinsley & McPherson, 1995). ACL activities were introduced in medical education when medical schools began looking for an improved interface between academic (fact-based) learning and clinical (patient-based care) learning (Barrows, 1986). Before the authentic-context model had been widely used, medical students would spend several years in the academic classroom, and then enter the hospital poorly equipped to deal with the realities and complexities of patient

complaints, drug interactions, supervision of nurses and other staff, and administrative paperwork demands. Implementation of authentic-context learning strategies reversed the sequence of activities. Medical students spent significantly more time at the beginning of their training dealing with actual patient cases, seeking out solutions to patients' problems. Instead of academic exercises, diagnoses became research problems for the direct benefit of patients. This approach has been found to enhance the clinical performance of medical students (Levesque, 1999), as well as the knowledge acquisition and decision-making skills of practicing physicians (Doucet, 1997).

Although not to the degree found in the medical field, music teacher education curricula include courses that typically contain ACL activities. Such courses are the student teaching practicum and courses that contain early field experience and peer teaching. Peer teaching and early field experiences typically occur in one or two teaching methods courses, while the student teaching practicum is usually the capstone experience in one's undergraduate training. Courses that contain ACL activities also typically include an element of reflective practice.

Reflective practice occurs when practitioners effectively critique their actions, both in-practice and afterward, continually working toward improved practice. Schon (1987) delineated the model of reflective practice, which is common in many professions today, and Elliott (1995) applied that model to music education, suggesting that music education professors adopt the reflective practicum (practicing in the authentic setting with opportunities for critical reflection on progress) as the model for music teacher education, both in the schools and for continuing teacher-development programs.

Reflective practice and ACL activities seem to help prospective music teachers begin to think like teachers and to take on the teaching role (L'Roy, 1983). Becker and Carper (1970) claimed that role development takes place when people are (a) seen successfully negotiating the role, (b) given opportunities to learn the professional knowledge of the role in the context of actual role performance, (c) able to identify with the group practicing the role, and (d) able to recognize the social position of teacher. Wolfgang (1990) found that early field experience had a positive effect on role identity of music education majors. Broyles (1997) found that videotaping teaching sessions helped music student teachers to take on the teacher role, and Paul (1998) found a strong connection between peer-teaching laboratory experience and commitment to professional tasks and knowledge, one of Becker and Carper's criteria for professional role development. Fant (1996) took this line of research one step further when he found a positive correlation between field experiences with feedback and scores of teacher effectiveness, measured by the Survey of Teaching Effectiveness (Hamann & Baker, 1996) during student teaching. Fant also concluded that a peer-teaching laboratory with reflective feedback is an effective setting for undergraduate teacher training in music.

From the research of Fant (1996) and Paul (1998), we identified four quantifiable ACL activity variables that were commonly included in most undergraduate instrumental music education curricula (band and orchestra tracks). These variables were (a) early field experience teaching episodes in instrumental music teaching settings, (b) peer-teaching episodes in instrumental music teaching settings, (c) episodes of subjects watching videotapes of their teaching, and (d) episodes of subjects watching videotapes of their teaching with a coaching instructor. We were

interested to discover whether participation in these ACL activities would make a difference in the initial teaching performance of undergraduate instrumental music education student teachers. The notion that activities and experiences within the undergraduate music education curriculum influence initial teaching performance is a commonsense proposition that has been seldom tested. Therefore, the purpose of this study was to examine the relationship between ACL activities and initial teaching performance in instrumental settings among undergraduate instrumental music student teachers. Five research questions were formulated for this study:

1. Is the number of early field experience episodes in instrumental music settings significantly related to initial teaching performance as measured by the Survey of Teaching Effectiveness (STE)?
2. Is the number of peer-teaching episodes in instrumental music settings significantly related to initial teaching performance as measured by the STE?
3. Is the number of times that preservice teachers watched videos of their teaching in instrumental music settings significantly related to initial teaching performance as measured by the STE?
4. Is the number of times that preservice teachers watched videos of their teaching in instrumental music settings with an instructor significantly related to initial teaching performance as measured by the STE?
5. Is there a significant difference in the initial teaching performance, as measured by the STE, among those with high, medium, and low levels of ACL activity involvement in instrumental music settings?

Method

Subjects (N= 30) were undergraduate instrumental music education majors from four large universities, diverse in location (Florida, Pennsylvania, Oklahoma, and Indiana). All subjects' undergraduate training included early field experiences in instrumental music teaching settings and instrumental music peer-teaching experiences in groups of approximately 15-20 students. Subjects were all student teaching in high school large-ensemble (concert band or orchestra) settings at the time of data collection in the spring semester of 1999.

Data for the present study were collected using the Survey of Teaching Effectiveness (STE) (Hamann & Baker, 1996) and by contacting subjects' instrumental music education professors. The STE was used to measure initial teaching performance. The STE consists of two weighted categories, with "lesson delivery skills" (posture, eye contact, use of gestures, facial expression, and vocal inflection) being weighted 40% and "planning and presentation of lesson" (evidence of lesson planning, subject-matter competence, pacing, sequential pattern rehearsal cycle, and teaching skills) being weighted 60%. Item evaluations under the two categories are accomplished using a Likert-type scale of 1 (poor) to 5 (excellent). Using the two categorical weighting factors, a final score can range from 10 to 50.

Reliability and validity of the STE has been investigated. Hamann, Lineburgh, and Paul (1998) established empirical validity for the STE using a procedure in which the adjudicators' initial rankings were compared to a subsequent ranking that was based on an administration of the STE. After ranking videotaped teaching episodes of students from "best" to "least best," a group of

adjudicators was directed to assess the videotaped teaching episodes 3 weeks later using the STE. Ranking of the teaching episodes, based on the STE scores, was compared to the ranking produced previously, and a correlation coefficient of rs = .89 was found. Fant (1996) correlated ratings of adjudicators who used the Rehearsal Effectiveness Scale by Bergee (1992) with those from the STE. A correlation of r = .89 was found between the two sets of scores. Reliability for the STE has also been examined. Hamann (1995) cited a test-retest procedure in which the reliability was found to be r= .83.

Information about subjects' involvement in ACL activities was gathered by contacting the subjects' instrumental music education professors. Specifically, the music education professors were asked to supply the following information about each subject: (a) the number of early field experience teaching episodes in instrumental music teaching settings, (b) the number of peer-teaching episodes in instrumental music teaching settings, (c) the number of times that the subjects watched videotapes of their teaching, and (d) the number of times that the subjects watched videotapes of their teaching with a coaching instructor.

Subjects were directed to submit a videotaped teaching episode of at least 10 minutes in duration during a large-group ensemble rehearsal that best represented their typical teaching performance. To best ensure that the data gathered would be reflective of teaching interaction between subjects and students, subjects were instructed to select a portion of rehearsal that occurred soon after the warm-up and that did not include a long run-through of the piece that was being rehearsed. To ensure that members of the ensemble were not affected by the presence of the camera, subjects were instructed to videotape all of their rehearsals, beginning with the first day of practicum. By the time that data were gathered using the videocamera, ensemble members were desensitized to the data-gathering conditions. To ensure that initial teaching effectiveness was a result of undergraduate training and not substantially influenced by interaction with the cooperating teachers, subjects were asked to submit a teaching episode that had occurred early in the practicum (between the third and fourth week of the student teaching experience).

Three judges used the STE to evaluate the videotaped teaching episodes. For each subject, a mean STE score was calculated by averaging the scores of the three judges. Four scores for each subject, representing the number of episodes for each of the four ACL activities, were determined. Furthermore, an overall ACL activity score was determined for each subject by summing the scores of the four ACL activities.

Table 1
Initial Teaching Performance and Authentic Context Learning (ACL) Activities Correlations

Variable	STE	1	2	3
EFETE (1)	0.74***			
PEER (2)	0.66**	0.87***		
VIDEO (3)	0.66*	0.89***	0.98***	
COACH (4)	0.48	0.63***	0.93***	0.90***

*** $p < .001$; ** $p < .01$; * $p < .05$.

STE = Survey of Teaching Effectiveness.
EFETE = Number of instrumental music early field experience teaching episodes.
PEER = Number of instrumental music peer-teaching episodes.
VIDEO = Number of times that teaching videos were watched.
COACH = Number of times that teaching videos were watched with an instructor.

Results

A series of Pearson product-moment correlation coefficients was used to determine intercorrelation of the judges' STE scores. Reliability coefficients ranged from r= .89 to r= .92. In addition, a series of Pearson product-moment correlation coefficients was also used to answer Questions 1-4. Significant relationships were found to exist between initial teaching performance, as measured by the STE, and three of the four ACL activities (see Table 1). Initial teaching performance was found to be significantly related to the number of early field experience teaching episodes in instrumental music settings, the number of peer-teaching episodes in instrumental music settings, and the number of times that preservice teachers watched videos of instrumental music peer-teaching episodes. No significant relationship ($p < .05$) was found to exist between initial teaching performance and the number of times that preservice teachers watched videos of their teaching in instrumental music settings with a coaching instructor.

A Kruskal Wallis analysis of variance (ANOVA) was used to determine whether there was a significant difference in the initial teaching performance among those with high, medium, and low levels of involvement in ACL activities in instrumental music settings. An overall level of involvement in ACL activities was determined by totaling the scores of the four ACL activities for each subject. Using naturally occurring gaps in a linear display of the overall ACL activity scores, we categorized the subjects into three groups, one representative of a low level of ACL involvement (n = 16), another representative of a medium level of ACL involvement (n = 9), and a third group representative of a high level of ACL involvement (n = 5). Significant differences in initial teaching ability were found among the three groups ($H = 13.06$, $df= 2$, $p = .001$).1 Dunn's multiple comparison procedure was used to determine that a significant difference ($p < .05$) in teaching performance existed between subjects with high and low levels of ACL involvement and between subjects with high and medium levels of ACL involvement. No significant difference ($p < .05$) in teaching performance, however, was found between subjects with medium and low levels of ACL involvement (see Table 2).

Table 2
Results of Dunn's Multiple Comparison Procedure

Level of ACL Involvement	Level 3 (High)	Level 2 (Medium)	Level 1 (Low)
STE Mean Scores	39.90	24.68	27.65

Note. ACL = Authentic Context Learning.

STE = Survey of Teaching Effectiveness

No significant difference was found between underlined mean scores.

Discussion

The use of authentic-context learning (ACL) activities has become a popular approach for acclimating prospective professionals into new fields of practice. Although researchers have

studied a variety of aspects associated with ACL (Barrows, 1986; Katz & Rath, 1982; Kinsley & McPherson, 1985), few have actually investigated ties between ACL and the effectiveness of music teaching performance. One exception is Fant (1996), who positively correlated field experience with feedback to teaching performance of student teachers. In the present study, we were initially interested in determining whether four specific ACL activities were related to the initial teaching performance ITP scores of instrumental music student teachers. Three of the four ACL activities were moderately and significantly related to ITP scores.

The number of times that subjects watched videotapes of their teaching in instrumental music settings with the coaching of an instructor was not significantly related to ITP. This was in contrast to one of the findings of Fant (1996), who determined that early field experience with feedback was positively related to student teaching performance. It is possible that the definition of "feedback" should be carefully delineated in further studies, as it may include such devices as video coaching, journals, direct instructor comments, and written instructor and peer-feedback instruments (Raiber, 1997). Also, the quality and appropriateness of the feedback needs to be carefully examined in future studies. Fuller (1969) identified three ordered levels of teacher development and characterized each by the associated concerns of the teacher: Level 1 = concerns with self, Level 2 = concerns with the task of teaching, and Level 3 = concerns with the impact of the teaching on the students. Glickman (1985) identified three ordered conferencing styles (directive, collaborative, and nondirective) and found each to be effective at a corresponding Fuller level of teacher development. A directive conferencing style worked best with those at Level 1, a collaborative style was most effective with those at Level 2, and a nondirective style worked best with those at Level 3. Drafall (1991) effectively applied the use of appropriate conferencing style to the level of development with student teachers in music and found that cooperating teachers expressed highly positive opinions toward clinical supervision regardless of their student teacher's level of development. It is apparent that the quality and appropriateness of feedback is at least as important as the quantity of coaching episodes.

When examining the correlations between teaching effectiveness and each of the various ACL activities, we noted the strong degree of association among all of the ACL activities, ranging from $r = .63$ to $r = .98$, all significant at $p < .001$. From such a strong relationship among all of the variables, one could conclude that the four variables could be combined to accurately represent a common phenomenon, an overall ACL activity value. Upon comparing initial teaching performances (ITP) using the STE scores, we found that those who had a high number of ACL experiences did, in fact, score higher on ITP than those with a medium or low level of ACL experiences. There was no difference in the teaching performance between those with medium and low levels of ACL experiences (see Table 2).

From these results, several important questions surface. Does there exist a critical number of ACL experiences, beyond which instrumental music student teachers become significantly more effective? Are there other ACL experiences that would affect the initial teaching performance of instrumental music student teachers to an even greater degree than did those in the present study?

Reflective practice is an area that, at face value, would seem to be related to ACL activities. Consequently, reflective practice might also demonstrate a similar strong relationship to initial teaching performance. The results of the present study, however, do not support this idea.

Correlations of ITP with the two more intensive "reflective practice" ACL activities (watching videotapes and coaching sessions with videotapes) were slightly lower. Again, these results can be used to support the need for further investigations into the quality and appropriateness of feedback and coaching. When feedback becomes too didactic, it may become a disincentive to incorporate the prescribed information into one's repertoire of teaching skills. Perhaps it would be beneficial to conduct more detailed investigations into reflective practice techniques and the ways such techniques are related to initial teaching performance.

Finally, the teacher-role-development literature seems promising for discovering factors that might correlate positively with ITP. The ACL activities in this study also fit into the category of role-development activities, because they offer students an opportunity to be seen in the role of teacher by peers and school pupils, give students meaningful chances to practice the role of teacher, and give students time in and around actual instrumental ensembles (Paul, 1998). Role-development factors include not only these activities, but also self-image items such as feeling like a teacher in different settings, being certain of a career choice in teaching, and acceptance of the social and institutional position of teachers (Becker & Carper, 1970). These attitudinal role development factors have been investigated for their influence on teacher self-image, but not compared with teaching performance. Perhaps a role development composite measurement could be designed that will also correlate with ITP.

Further research in the areas mentioned above is justified. Role-development and reflective practice strategies and activities could be delineated and correlated with ITP. In addition, ACL activities could be delineated for choral and general music settings, and compared with ITP scores for students in those degree tracks. Instrumental students could be divided into band and orchestra tracks, and the present study could be repeated while looking at differences and similarities between and within these two groups.

In the present era of legislatively imposed limits on credit hours in degree programs, coupled with the constraints of general education, certification, and music accrediting association rubrics, there is precious little opportunity for instrumental music education professors to have an impact on the teacher development process of undergraduates. It is incumbent on the profession to design the most effective possible activities and experiences that will enable students to fulfill their potential as teachers. Authentic-context learning activities, along with other philosophically compatible methodologies, seem promising in helping young teachers become excellent teachers.

Note

1. The H value, sometimes called the Kruskall-Wallis statistic, represents the combined discrepancies among rank sums. The H value correlates positively to the amount of discrepancy among rank sums.

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