Arts Education And Instrumental Outcomes: An Introduction To Research Methods

Larry O’Farrell and Margaret Meban¹

Qualitative Research

While quantitative research tests the claims of its advocates through controlled, experimental methods, qualitative research methods is applied using more interpretive means. In the case of studies of arts education, quantitative research aims to measure the impact of the arts on student learning while qualitative research is heuristic and operates within the world of arts education practice, a world in which random factors tend to impede the effectiveness of experimental design.

Beginning with assumptions derived from the theoretical literature, qualitative researchers look directly into the arts classroom or community setting. They are especially interested in the development of theory through interpretive, inductive analysis of data.

Thomas Barone expressed the motivation that has led many arts education researchers to follow qualitative methods, focused specifically on the interpersonal and aesthetic experience of the arts, as follows:

Most of all, can we, who are interested in what the theatrical and other arts offer those children, imagine a research programme that is not guided exclusively by scientific premises, principles and procedures but sometimes built upon a real appreciation of what art itself can provide? (Barone 1997, 114)

In a typical qualitative study, the researcher will spend a substantial length of time observing practical work and instructional interactions in an arts education setting, recording his or her observations in the form of detailed field notes. In addition to this direct observation, the researcher may interview teachers and school administrators, examine lesson plans and support materials, interview students and parents and conduct focus group discussions with selected participants. The researcher may make sound or video recordings or take photographs of lessons, performances, exhibitions or community events related to the arts education programme. An important outcome of such a study is a richly detailed description of the arts programme and an articulation of the impressions of those involved as students, teachers, etc. The summary report may include extensive excerpts from statements made by participants in interviews, journals, working sessions or group discussions. In some cases, one of the participants (often the researcher in the dual role of participant observer) will make use of insights discovered at one stage of the study to initiate improvements to the programme that will affect the outcome of a subsequent phase of the research. In such an instance, the study may be identified as action research.

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¹ Larry O’Farrell is the President of the International Drama/Theatre and Education Association (IDEA) and is a Professor at Queen’s University, Kingston, Canada. Margaret Meban is a visual artist and educator with varied teaching experiences including as an elementary school teacher, a trainer in professional development workshops for teachers, and an artist-in-residence in schools.
An imperative of qualitative research is that the study must respond to the nature of reality as it emerges in the course of the research. The researcher is expected to begin the study with a specific purpose – an aspect of teaching or learning that is intended to be the focus of the study. However, implicit in the approach is an understanding that the dynamics of arts education practice are likely to produce unexpected themes and issues that the researcher cannot ignore when they appear. This means that the researcher may find it necessary to respond by shifting the emphasis of the study onto the emerging theme either as a relevant side issue or as a major focus of the research. Also, if factors are discovered which diverge from the original aim, then the objective may have to be modified or changed altogether.

Qualitative methods can be extremely flexible, allowing the researcher to effectively capture important aspects of the ephemeral life of an arts education programme that might be overlooked in a controlled experimental study. They also permit considerable latitude for the researcher in reporting the insights provided by the study. These insights can be reported through a wide range of literary and theatrical devices, graphic images and artistic presentations. The strength of the methodology is its capacity to convey personal interaction, mood and aesthetic effect in a direct and vivid way.

It is important to acknowledge, however, that these flexible methods effectively limit the general applicability of the findings of each study. Whereas a quantitative study will aim to make general statements that are supported by verifiable statistics and results that can be replicated in future studies conducted in other settings, qualitative research aims to present an in-depth portrait of a single, localized programme, event or situation. This is not to suggest that qualitative studies lack rigour. Qualitative insights and conclusions can be validated by the extent and diversity of the researcher’s data collection and by the systematic approach that he or she applies to analyzing the data. Researchers are expected to analyze and communicate their impressions using methodical, transparent procedures. The best qualitative research can be demonstrably as rigorous as the best quantitative research. The difference lies in the intended outcome of each approach.

Examples of Qualitative Studies

An exemplary qualitative study dealing with the impact of the arts in education was conducted by Laura A. McCammon and David Betts of the University of Arizona (McCammon and Betts, 1999 and 2001). This study, entitled, “Helping Kids to ‘Imaginate’: The story of drama education in one elementary school”, won a prestigious research award presented by the American Alliance for Theatre and Education in 1999. What makes this study particularly interesting as an example for other researchers is the way it combines case-study research with action research elements in one, continuous, study. The background paper demonstrates how the methodical approach taken by McCammon and Betts led to rich insight which subsequently led to corrective action.

The study was divided into two components. The first was a rich description of the culture of the school and its effect on teacher’s capacity to adopt new teaching methods and the impact that the arts lessons had on students, teachers and the school
community. The emphasis was on giving a reliable description of the impact from the perspective of the participants rather than on trying to quantify the impact according to external criteria. The second component of the research was the description of a staff development programme that was established to meet teacher needs (identified earlier in the case study).

This exemplary study exhibited the key components that characterize qualitative research:

- Careful selection of a subject (in this case a school with a demonstrated commitment to the arts),
- A clearly articulated initial focus of enquiry,
- A substantive theoretical foundation,
- A diversified and methodical approach to the collection and analysis of data,
- An openness to emergent themes and issues, and
- A method of reporting results that reveals the complexity of the human environment and that respects the voices of all participants.

Beyond this, the study illustrated how the findings of a qualitative study can form the basis for practical intervention to solve a problem or pursue a recognized goal.

The qualitative methods exemplified in the study by McCammon and Betts have been used by researchers to examine a wide range of issues arising in arts education programmes around the world. Some examples include: Mentzer and Boswell 1995; Wilhelm 1995; Kariuki and Honeycutt 1998; Lo 1989; and Ng and Morris 1999.

**Quantitative Research**

While qualitative research focuses on interpreting the construction of meaning in social processes, quantitative research emphasizes the measurement and analysis of relationships between and among variables. Rather than creating richly detailed accounts of particular cases of social phenomena as in qualitative research, quantitative research results in statistical relationships that communicate the amount, intensity, or frequency of particular variables.

In quantitative studies researchers test or verify a theory by engaging in deductive logic rather than developing a theory through the use of inductive reasoning. A theory guides the entire research framework: hypothesis or research questions, data collection procedures, and ultimately, the interpretation of the results as a confirmation or disconfirmation of the theory under investigation. Based on theory, the researcher selects a construct(s) to be empirically examined through observable behaviours and responses. A construct is an abstract theoretical construction that is not directly observable, in other words a concept. For example, creativity, motivation, mental ability, and self-esteem are examples of constructs. Because constructs are not directly observable, quantitative researchers employ indicators to measure the construct in question. For instance, a researcher may select flexibility, originality, and elaboration of thought as indicators of the construct “creativity”.

Indicators of the particular construct in question are referred to as variables in quantitative research. Creswell (2002: p.93) defines a variable as “a characteristic or
attribute of an individual or an organization that can be measured or observed and that varies among the people or organization being studied”.

In quantitative research the variable that is considered to cause or influence a particular outcome is referred to as the independent variable (also termed treatment, manipulated, antecedent, or predictor variable). The variable that is considered to be the outcome of the influence of the independent variable is referred to as the dependent variable (also termed criterion, outcome, and effect variable). For example, in a study that examines the effect of arts study (for example, as measured by number of arts courses taken or number of years of arts study) on students’ performance on a creativity test, the dependent variable is “performance on the creativity test” and it is dependent upon the student’s “arts study” (the independent variable). In other words, creativity test scores in this case are considered to be an outcome of the variable “arts study”.

There are several other variables important in quantitative research: mediating, control, and confounding variables. A mediating variable is a one that comes between the independent and dependent variable. For example, in a study that examines the effect of “arts study” (independent variable) on students’ “performance on a mathematics test” (dependent variable), there may be other mediating variables such as the type of arts instruction (for example: integrated-arts approach; discipline-based approach) that influence the independent variable. Thus, the type of arts instruction (mediating variable) affects how much effect “arts study” has on “performance on a mathematics test”. Further, other variables that may influence the independent variable such as demographic or personal variables (for example: socio-economic status (SES); parental education) that may be controlled through statistical analysis (e.g. analysis of covariance) are called control variables. By controlling such variables the influence of the independent variable may be seen more clearly and the internal validity of study increased.

Variables that may influence the independent variable but cannot be easily detected or were not statistically controlled for in a study are considered confounding variables. To continue our example, in a study examining the impact of arts study on students’ mathematics performance a researcher may have controlled for SES, but may not have controlled for previous mathematics achievement. Previous mathematics achievement would likely have an effect on the independent variable and in this case would be considered a confounding variable.

**Experimental research**

Quantitative research studies may be one of two types: experimental or non-experimental. Experimental research is concerned with establishing cause-and-effect relationships and involves a high degree of control in that the researcher manipulates particular conditions that the participants do and do not experience. This type of research involves an experimental group of participants who receives a particular treatment (e.g., arts study) and a control group (also termed “comparison group”) of participants who does not receive treatment. Researchers then compare the experimental and the control group with respect to a particular variable(s). In true
experimental research, participants are randomly assigned to groups (experimental and control).

A true experimental design is the best approach for examining cause-and-effect relationships as random assignment of participants increases the chances of there being no differences between the control and experimental groups prior to treatment. Thus a clearer indication of the impact of the treatment (independent variable) is more likely in true experimental research. Through rigorous attention to issues of control and the manipulation of particular variables experimental research provides the best research approach for determining causal relationships in social phenomena.

**Quasi-experimental research**

The degree of control becomes an issue within the context of educational research. The need for a high degree of control in experimental research means that the research setting may become artificial and restricted and thus does not accurately represent the natural setting to which the results will be generalized (e.g. a classroom setting). In applied research, such as educational research, it is often difficult to conduct true experimental research as the process of random assignment is difficult in educational contexts. Thus, experimental research in education often employs a quasi-experimental design in which intact groups of participants are used such as a school, a classroom, or a group of students participating in particular programming. A quasi-experimental design is similar to a true experimental design in that experimental and control groups are employed and conditions are manipulated. However, participants are not randomly assigned to control and experimental groups. Researchers conducting a quasi-experimental study must employ statistical measures to control for group differences (control variables) that may impact the results of the study. While cause-and-effect relationships are still the focus of quasi-experimental research, the lack of random assignment of participants decreases the ability to generalize results. Further, Rosenthal and Rosnow (1991) state “When dealing with studies in the natural setting and with humans, researchers cannot absolutely ‘prove’ cause and effect (Rosenthal & Rosnow, 1991)” (Creswell, 2003, p.94). Thus, as Creswell states, a more apt research statement is one that states “probable causation” between variables (p. 94).

**Example of quasi-experimental research**

Park’s (2003) study of the impact of a music programme on students’ creativity is as an example of quasi-experimental research. This study employed the basic features of quasi-experimental research and also described an initiative in Korea for developing students’ creativity. Park stated that “a creative learning atmosphere in music education has not been effectively implemented in Korea” (p. 306). Thus, in an effort to address this shortcoming in Korean music education, the Creativity-Enhancing Music Programme (CEMP) was developed with the aim of cultivating elementary students’ creative abilities. Park’s study of the effectiveness of the CEMP in enhancing creativity as measured by pre-and post-tests of creativity was part of a larger research project that initially involved the development of a preliminary CEMP based on the creativity literature, the Seventh Curriculum of Music for Elementary Schools in Korea, and the recommendations of teachers and experts in the educational field.
Park’s study illustrated the need to state the specific purpose of a quantitative study and the need to select quasi-experimental groups that contain no initial group differences, or if differences exist, statistically controlling for them, as initial group differences jeopardize the integrity of the results. The study made use of pretest-posttest quasi-experimental design. The instrument used for pre- and post-test measures of creativity in this study were Im’s (1998) Personality Trait test of creativity (PT) and Torrance’s (1988) Tests of Creative Thinking (TTCT Verbal Forms-A type & TTCT Figural Forms-A type).

The study’s findings showed that the experimental group (CEMP) increased significantly on cognitive creativity measures of verbal-fluency, figural fluency, flexibility, verbal-originality, figural originality whereas the control group did not. Elaboration was the only creativity trait that showed no significant difference. However, an analysis of observations revealed that elaboration was beginning to develop in the later stages of the CEMP. A post-test analysis of the PT test however, did not show a significant difference from pre-test scores for the two groups. An analysis of observation and interview data, however, showed enhancement of the creative personality traits (it must be noted that in this case Park’s addition of qualitative interview and observational methods to the experimental design actually make this study overall a mixed-methods study).

Further, with respect to creativity research, Park’s finding that creative personality traits (independence, risk-taking, persistence, openness) did not develop in the three month period of CEMP is consistent with current literature that states that creative personality traits generally do not show changes in a short period of time, i.e. the three month period of the CEMP. (Wilson, 1976; Allen, 1997; Feist, 1999). However, interview and observation data did reveal improvements in creative personality traits.

This may indicate that different types of measures are needed to tap into the impact of the arts on personality traits. Further, Park’s effort to assess creative personality traits is a step in the right direction for arts education research as such traits are often overlooked in favour of the more cognitive traits. If we are to assess the instrumental impact of the arts, an assessment of creative personality traits such as independence, risk-taking, persistence, and openness, are critical to understanding the positive impact of the arts. Another Asian example of quantitative research is Kim (1998) and an Asian example of a survey is that by Lam (2003).

Meta-Analysis and Research Reviews

In order to examine what the research actually shows with respect to transfer of arts learning, an extensive survey of quantitative research that examined the effects of arts education on academic achievement was conducted by Harvard’s Project Zero under the direction of Ellen Winner and Lois Hetland (2000). In this research review, comprehensive and exhaustive searches were conducted to find all relevant research, published and unpublished, that linked an individual art form (music, drama, visual art, and dance) or the arts generally (all forms combined) with specific cognitive and academic outcomes. The studies were analyzed using the method of meta-analysis.
Meta-analysis is a group of quantitative methods used to integrate the statistical results from a number of quantitative studies to assess the size of the effect of some variable or condition (e.g., the effect of learning in the arts on academic achievement). The key data for meta-analysis is the “effect size”, which indicates the degree of relationship between two variables. An effect size is calculated for each study and then combined and compared with the effect sizes calculated for all the studies included in the analysis. Meta-analysis can show the moderating effect of sample size, research design, specific outcome measures, and other moderating variables that may impact the results. Thus, meta-analysis provides a valuable means for identifying possible explanatory variables in the area of research being examined.

In brief summary, some of the conclusions of these meta-analyses are respectively:

- There is evidence of a positive correlation between arts study and enhanced academic achievement (Winner & Cooper, 2000).
- There is evidence of a positive correlation between students who take art classes in high school and higher SAT scores (math and verbal) in the United States (Vaughn & Winner, 2000).
- There is evidence of a positive correlation between students who study music and higher scores on standardized reading tests (Butzlaff, 2000).
- There is evidence for a causal relationship between enhanced spatial-temporal reasoning performance and listening to music (i.e., the “Mozart” effect). This effect is limited to the particular spatial task of mental rotation in the absence of a physical model. Music other than Mozart was also found to enhance spatial-temporal performance (Hetland, 2000).
- There is evidence for a correlation between drama study and enhanced verbal skills performance (story understanding, reading achievement, reading readiness, and writing) (Podlozny, 2000).
- There is evidence that when reading is taught through art (visual) projects children may be more motivated to read and as a result their reading performance may improve (Burger & Winner, 2000).

However, one of the central points that Winner and Hetland emphasize in this report is that a correlation between arts study and academic achievement does not provide evidence for a causal link.

**The Arts Education Partnership Review**

Another substantial and important survey of research in arts education was recently conducted by the Arts Education Partnership (Deasy, 2002) in the United States, which examined the impact of arts education on student academic achievement and social development: *Critical Links: Learning in the Arts and Student Academic and Social Development*. The purpose of this research survey was to provide researchers and funding agencies with guidance and recommendations for the most promising directions for future research in arts education. As well, this research survey provides valuable insights for those designing curriculum and for teaching practices in the arts. The review process resulted in 62 studies that the committee deemed as being representative of the best work in the field at the time of the review.
The studies (quantitative and qualitative) reviewed for the multi-arts section of the Critical Links Compendium revealed a positive link between experience in the arts and improved academic achievement. General cognitive and social capacities such as creative thinking, decision-making, perceptiveness, motivation, and verbal skills were also linked with arts participation (Horowitz & Webb-Dempsey, 2002). The review of dance education research suggests that dance is an effective means for developing creative thinking skills and a possible means for improving reading skills (Bradley, 2002). The most significant finding in the review of research in drama and theatre education was that research to date shows a positive relationship between drama and narrative understanding. Specific skills such as reading comprehension and oral and written story understanding were consistently related to dramatic enactment of a story (Catterall, 2002b). The music education research reviewed in the Critical Links Compendium reveals significant evidence for a strong positive link between music and spatial-temporal reasoning, mathematics achievement, and reading achievement (Scripp, 2002) (this conclusion is primarily based upon the meta-analyses studies conducted by Project Zero discussed above). And further, there is evidence of a positive relationship between music and the reinforcement of social and learning behaviour.

Due to methodological criteria guidelines for the review and to the paucity of research addressing the instrumental outcomes of visual arts education, the Critical Links Compendium only contains four studies concerning the visual arts. Thus while the evidence for the instrumental outcomes of visual arts learning is limited at the present, the research studies included in the Compendium indicate that certain writing and reading skills, reading readiness, and reasoning about scientific images may be enhanced through the visual arts.

While the authors of the Critical Links Compendium state that the research reviewed suggests a positive link between rich arts learning experiences and positive social and academic performance, they also state that there is an urgent need for research to address the specific nature of the arts teaching and learning experiences that produce such positive effects.

**Recommendations for Future Research**

The Project Zero meta-analyses and the Critical Links Compendium respectively conclude that there is a need for more “good” research - both quantitative and qualitative. The research reviewed in this paper indicates that the arts have the capacity to cultivate habits of mind such as persistence, focused perception, and divergent thinking, and personal and social capacities such as empathy for others, collaboration, self-esteem, and positive-risk taking. While these outcomes may be more difficult to assess, they are more authentic indicators of the cognitive, social, and personal capacities that rich arts experiences may cultivate than outcomes measured on standardized tests. Standardized tests do not lend themselves to creative solutions, alternative means of expression, and the affective dimensions that the arts engender.

Further, it is also recommended that arts programme evaluations assess the effect that the arts have on school culture. For example, students may become more engaged and motivated to learn in a school where the arts have a lively presence which may impact
learning in non-arts areas of study. Thus there is a strong recommendation for more “richly textured” qualitative research that attends to the complexity and contextual nature of the arts learning experience and the diversity of outcomes (cognitive, emotional, and social) that the arts may foster (Deasy, 2002). A better understanding of the nature of arts learning, and how arts learning outcomes transfer to other domains of learning and life may be generated through descriptive ethnographic accounts.

The nature of learning transfer is central to any research addressing the instrumental outcomes of the arts. Thus it is recommended that future research be based upon a theoretical framework that reflects current perspectives of learning transfer (e.g., see Catterall, 2000c; Bransford & Schwartz, 2000). Contemporary perspectives of transfer reflect the current situated and interactive perspectives of learning and knowledge (e.g., Brown, Collins & Duguid, 1989; Lave, 1988; Kirshner & Whitson, 1997; Resnick, Levine, & Teasley, 1991). Such perspectives suggest that transfer is extremely complex, not necessarily direct, and may not be detected in a short period of time (Catterall, 2000c). Catterall states that “current studies on the roles of the arts in academic and social development do not unpack either in fine detail or within comprehensive cognitive models the learning processes accounting for transfer” (p. 156).

References


Deasy, R. J. (2002b) “Themes and variations: Future directions for arts education research and practice” in R. J. Deasy (Ed.), *Critical Links: Learning in the Arts and Student Academic and Social Development* (pp. 3-4) Arts Education Partnership, Washington DC


