The purpose of this paper is to explain how to read a music education research article. As part of the presentation, the basics of a music education research study are explained. A three-stage strategy for reading research articles is presented so that no matter what the level of research expertise, the reader can intelligently read a music education research article and apply the results of the article in their own teaching.

Edward P. Asmus and Stephen F. Zdzinski
University of Miami

How to Read a Research Article from A to Z

This is an article about how to read research articles if you have never read them before, or if you wish to be a better reader of research and be able to apply the results of research to your own teaching. This is not a paper about doing research, but about reading research. In order to do research, you need specialized training in research methods, and that is beyond the scope of the article. In order to read research, just apply the concepts and strategies presented here.

WHAT IS RESEARCH?

Research is the systematic asking and answering of questions focused on a specific purpose. Research asks and answers questions through a wide variety of research methods that result in the creation of new knowledge. Research is used to better understand our world and to improve practice. In music education for example, research is used to understand how teachers teach music, how people learn music, musical perception, and the many factors that improve music education practice.

Research as a Puzzle-Building Process. The late Jean Sinor of Indiana University referred to research as a puzzle building process. Each study contributes a piece of the puzzle and is related to other similar studies. Individual studies by themselves give an incomplete picture of a problem, but if studies are related to one another and build upon each other, the picture in the puzzle begins to emerge from all of the various pieces. Only by relating studies do researchers make a real contribution to practice and advance our field. Unless it is a new topic, most research is related to other research.

The results of one study are better understood if the results can be placed in context. Context is important in reading research.

Who does research, and why do they do it?

Many people conduct research related to their professional expertise. In a certain sense, we all may function as researchers when we systematically seek answers for questions. University professors conduct research as part of their positions and are expected to “publish or perish” research to advance in their profession. Graduate students conduct research as part of their degree programs and music teachers can conduct research in their own classrooms in the form of action research projects. The two authors of this article are a percussionist and French hornist who used to teach instrumental music at the junior and high school levels. Most researchers in music education are music educators themselves and are interested in the issues facing music educators.

One of the reasons researchers conduct research is because they are creating new knowledge that may be useful for music teachers as they advance their own practice. Most researchers select topics of interest to them and may conduct a series of studies in that area. If you find a researcher that has an interesting topic, you may wish to find other articles on the topic written by this author. Research is fun to do and when a new finding emerges, it’s exciting. In addition to satisfying their own curiosity, researchers become “experts” in the area they are studying, that brings them personal and professional recognition. One of those perks is to be able to present their research in journals and at professional conferences all over the world. This combination of intrinsic satisfaction and external reward makes researchers tick.

Importance of Reading Research

The reading of research is stressed in virtually every introductory research class in music education. In the preface of one of the newest textbooks on research, Phillips (2008, p. xiii) states that his book “aims to help students explore research by deepening their understanding of and interest in professional journal articles.” Professors who teach the ubiquitous Introduction to Music Education Research courses that most masters degree programs require can frequently be heard making statements such as, “My purpose for the class is to get students to read, understand, and hopefully apply research.” To encourage the reading of research articles, most courses include reading assignments that involve the writing of an abstract describing what has been read. A generally stated reason that professional organizations cite for supporting research journals in music education is that research can have important positive influence on teaching practice. To be able to achieve this goal, the vast majority of the music education profession must be able to read research.

Teachers’ Views of Research Articles

Most teachers will generally agree that research in the field of music education is valuable. However, they don’t read it because it does not have practical applicability in
their music classrooms. Brand (2006), in a thorough inquiry into his music teacher graduate students’ beliefs, found that they viewed research as using unintelligible language, contains hard to comprehend statistics, makes conflicting conclusions, and covers topics that are not related to what the working music teacher does. Brand’s students felt that the best research was that which leads to improvement in music teaching and learning. Shearer, Lundeborg, and Coballes-Vega (1997, p. 594) found that teachers read research articles for four reasons: “(a) to expand their knowledge, (b) to understand or solve an instructional problem, (c) to improve their instruction, and (d) to garner support for a current instructional practice.”

Others have commented on this disconnect between music education researchers and music education practitioners. Kemp (1987) has called on researchers to be concerned about the needs of the teacher and their role in applying research. Hultberg (2005) indicates that researchers need practitioners for without them, there would be nothing to explore. Swanwick (1984) points out that doing quality research yields three positive outcomes: (a) the researcher’s professional involvement is enlightened by the activity, (b) the profession is strengthened through the insights that are provided, and (c) all are better able to respond to the needs of planning and accountability. Flowers, Gallant, and Single (1995) in their analysis of graduate students who are practicing music educators, found that these individuals are willing to read research articles when they are interested in the topic.

The Research Article

As you begin to make sense of a research article, the first thing you should know is that most articles follow a standard format with distinct sections that have particular functions (Table 1). Some of these sections are easier to understand if you have specialized knowledge, but many sections can be read and understood by a reader with little or no technical research knowledge. These sections provide a structure in which the writer can convey to the reader all the important information necessary to understand and evaluate the research being described. Table 2 presents criteria that can be applied in evaluating a research article.

Bem (1987) has noted that the construction of a research article is very much like an hourglass. The broadest most generalized information is at the beginning and end of the article and the most narrowly focused is in the middle of the article. The broad initial parts of the article are the abstract and introduction sections. The narrower parts that follow are the method and results sections. Finally, the discussion and conclusion sections end the body of the article. The reference citations and any tables or figures complete the article.

The Role of the Purpose

The purpose statement is the most important statement in the research article. It clearly describes what the research article is all about. From the purpose, all other aspects of the research article are derived. It provides the reader with an anchor to hold while traversing the remainder of the article. It also provides the basis for making value judgments about the article and its various parts. A good purpose statement clearly describes the focus of the research and why it is being done. In general, the more compact the purpose statement, the better the author understands what the research is about.

The purpose statement spawns the other parts of the research article. The thread of this influence is described in Figure 1. The purpose statement leads directly to the research questions and/or the null hypotheses. The research questions and/or null hypotheses clarify and further illuminate exactly how the purpose will be pursued within the research strategy employed in the article. From them, the methodology of the

<table>
<thead>
<tr>
<th>Article Section</th>
<th>Description</th>
<th>Layman Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>States Main Idea of Study</td>
<td>Should I read the Abstract??</td>
</tr>
<tr>
<td>Abstract</td>
<td>Summary of Purpose, Method, &amp; Results</td>
<td>Do I need to Read this study?</td>
</tr>
<tr>
<td>Introduction</td>
<td>Background of Problem, Related Literature on Problem, and justification</td>
<td>What do we already know?</td>
</tr>
<tr>
<td>Purpose &amp; Research Questions</td>
<td>Purpose that runs the study, and specific questions related to purpose</td>
<td>What is the Point?</td>
</tr>
<tr>
<td>Method</td>
<td>Describes the participants, the measures, and data collection procedures</td>
<td>How did the researcher do it?</td>
</tr>
<tr>
<td>Results</td>
<td>Technical presentation of research results.</td>
<td>What did they find?</td>
</tr>
<tr>
<td>Discussion</td>
<td>Non-technical presentation of research results placed in context with other research</td>
<td>How does what they find fit with what we already know</td>
</tr>
<tr>
<td>Conclusion</td>
<td>Implications and Suggestions for Further Research</td>
<td>What’s Next, What Can We do with This, and So What?</td>
</tr>
<tr>
<td>References</td>
<td>Other studies cited in Article</td>
<td>What is the research related this study?</td>
</tr>
</tbody>
</table>

Table 1
Breakdown of the Article Sections
Table 2: Characteristics of Empirical Research Quality

<table>
<thead>
<tr>
<th>Good Research</th>
<th>Not as Good Research</th>
<th>Bad Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear, concise writing</td>
<td>Sometimes unclear</td>
<td>Unclear or wordy writing</td>
</tr>
<tr>
<td>Research Questions are clear &amp; related to a clear purpose</td>
<td>Purpose is not stated, but research questions are (perhaps unfocused)</td>
<td>There are no questions, or the questions do not relate to the purpose of the study</td>
</tr>
<tr>
<td>Method is related to research questions</td>
<td>Method is awkwardly presented, has insufficient sample size, or</td>
<td>Method unrelated to purpose or research questions</td>
</tr>
<tr>
<td>Results are organized by research question</td>
<td>Results reporting goes beyond research questions</td>
<td>Results have no relation to research questions</td>
</tr>
<tr>
<td>Results reporting tied directly to answering research questions</td>
<td>Results reporting goes beyond research questions</td>
<td>Results have no relation to research questions</td>
</tr>
<tr>
<td>Statistics correspond to research question asked (i.e., description, relationship, or difference)</td>
<td>Statistical Errors in Analyses</td>
<td>Improper statistics used to answer stated research questions</td>
</tr>
<tr>
<td>Discussion provides a non-technical explanation of the results, as well as relating results to other research</td>
<td>Emphasis is on results not related to research questions</td>
<td>Discussion does not relate results to other research, and interpretation is hard to follow</td>
</tr>
<tr>
<td>Discussion uses results as the basis for departure</td>
<td>Results and Discussion appear not to be related</td>
<td>Discussion presents results not related to data collected, or related to author’s “pet” theory even if the data does not support his conclusions</td>
</tr>
<tr>
<td>Provides applications for practice and recommendation for further research</td>
<td>Provides applications or recommendations, but not both</td>
<td>No implications or recommendations for research given</td>
</tr>
</tbody>
</table>

Figure 1. The influence of purpose throughout the research article.

research is derived while continually referencing the original purpose statement. In addition, these questions/statements provide the basis for determining the broad general families of statistics that will be employed. The specific statistics chosen within these families are based in concert with the methodology chosen to investigate the problem the purpose defines. The results of the research should be presented to answer the research questions and/or null hypotheses. This helps organize the presentation of the results and leads logically to the presentation of the discussion with its incorporated conclusions. By thoroughly discussing each research question and/or null hypothesis, the reader is left with a very clear picture of the outcome of the study. This finally should lead to a return of the original purpose statement upon which more generalized conclusions are drawn.
The purpose statement allows the reader to make a clear judgment about the quality of the research. If the research questions and/or null hypotheses do not match the purpose statement, the research is faulty. If the methodology or the statistics do not match the research questions and/or null hypotheses, the research is faulty. If the discussion does not directly address the research questions and/or null hypotheses and if the purpose statement is not directly addressed in the conclusion within the discussion, the research is faulty. One of the authors of this paper recently read a very well written and presented piece of research where the purpose statement did not match the research questions that did not match the statistics that did not match the conclusions drawn. Certainly this does not reflect a quality piece of research.

Strategies for Reading a Research Article

Learning how to read a research article does not require having to learn everything about research before reading. Rather, a strategic process can be employed that allows the reader to use the current level of research understanding to comprehend the major concepts and findings of any quality research article. If the writer of the article has followed the generally accepted principles of how a research article is to be written, the reader should have no problem in reading and understanding the major aspects of the research. The generally accepted principles of research writing are detailed in an array of style manuals such as those of the American Psychological Association (American Psychological Association, 2001), The Chicago Manual of Style (Chicago University Press, 2003), the Modern Language Association or MLA Style (Gibaldi, 2008), and the style of Turabian, Booth, Colomb, and Williams (2007). With continued reading of articles using the strategic process, the reader will acquire not only expanded knowledge of the profession, but will also enhance skills and knowledge in reading research.

In this presentation, we have created a strategic process of reading a research article for three different levels of reader: novice, intermediate, and advanced. The novice level assumes the reader has no knowledge of the research process save that incorporated into this paper. The intermediate level assumes the acquisition of some knowledge of the research process including basic research terminology. It does not require knowledge of how to implement research or how to analyze research data. The advanced level assumes some acquaintance with the methodology used to perform research and techniques to analyze the data that results from the methodology. For those who have no expertise in research, the three levels provide a long-term strategy for enhancing the capability of reading research and an understanding of the totality of the research process. Of course, every article that is read enhances an individual’s knowledge of the profession and if some thought is given to what has been read, the improvement of professional practice should result.

The strategic process for reading a research article involves selective reading of specific selected parts of the article. Unlike the reading of popular fiction, one does not simply start at the beginning and go to the end. The reader using the strategic process reads only those parts of the research article that are appropriate for their reading level. The process assumes that the reader understands that reading a research article is more difficult than reading a popular article. Research reading requires focus and concentration because the author is attempting to convey concepts that may be technical in nature and may require some thought to grasp. By selectively reading those parts of an article that are appropriate, the reader will be less frustrated, more likely to extract from the reading the understandings that are desired, and more likely to enjoy the reading of research articles. Hopefully, this more humanistic process will result in individuals who seek out the reading of research articles that enhance their professional knowledge and skills that can lead to better results in the music classroom.

NOVICE LEVEL

The novice should read only three parts of a research article: the abstract, introduction, and conclusions. These sections require the least understanding of the research process yet will provide the vast majority of information to understand and to be able to apply the research. Over a period of time, the reader who thoroughly digests these three sections will acquire the terminology necessary to grasp the other major sections of a research article.

Abstract

The first place to start in reading an article is the abstract (Oleson & Arkin, 1996). The abstract is a short summary of the article. The current Publication Manual of the American Psychological Association (2001), to which many journals in music education follow, limits the number of words to 120. This is perfect for the novice reader because the abstract presents in summary form all of the major aspects of the study: the purpose, method, results, and conclusions. In one paragraph, the writer informs the reader of the topic, how it was approached, and what happened. Using this information, the reader can quickly determine if the article is of interest, the complexity of the research process, and the value of the outcomes. Because of the limit in the number of words while being self-contained and providing a total overview of the article, the abstract provides the greatest concentration of information about an article in a compact yet digestible form.

An abstract that does its job well will entice the reader to read further and provides a basis for understanding the remainder of the article (Roediger & Gallo, 2004). As you peruse the abstract you should determine what the purpose of the article is and whether the purpose is important and relevant to your needs (Edyburn, 2005; Oleson & Arkin, 1996). Knowing the purpose of the article and the basic strategy used to attain the purpose will provide you with a basis for understanding the remainder of the material in the article. In addition, it will let you know quickly whether the article is of value to you.

The Publication Manual of the American Psychological Association (2001, p. 15) states, “An abstract that is accurate, succinct, quickly comprehensible, and informative will increase the audience and the future retrievability of your article.” This statement indicates that it is to the author’s advantage to write the abstract well so that the vast majority of people can understand it. It also indicates to the author that the electronic retrieval systems available today will allow readers interested in the topic, the method, and the results to electronically locate the article if the author includes all the major elements of the work. This clearly indicates to the novice reader that a great place to start in reading
any article is the abstract because of its comprehensive overview of the article and its readable, compact form.

Introduction

The introduction consists of three related subsections: an introduction to the problem, a discussion of the background to the problem, and a statement of the problem (APA, 2001). The novice reader should easily grasp the first paragraph of the introduction. It is this paragraph that introduces the specific problem that the article addresses. This section of the article is not labeled “Introduction” because this is understood by the position the section occupies in the article. The first task of the author is to define the problem presented in the article (Bem, 1987; Crocker, 1977). From this, the background of the problem is presented that includes a review of relevant literature so that the reader can fully understand the context of the research, the theoretical basis for the research, and the relevance of the present research in light of the work of others. From the contextual, theoretical, and historical basis, the purpose is more narrowly stated through the use of research questions and/or null hypotheses. Note the ever more detailed logic of this order. A novice reader who spends the time to develop an understanding of the material covered by these subsections will be very much enlightened as to the substance of the article.

Introduction to the Problem. The introduction of the problem begins the body of the paper. It is here that the specific problem covered by the article is defined. This is best done by a clear declarative statement of the purpose of the article. Supporting this statement will be a clear indication of the importance of the problem, null hypotheses and/or research questions, some essence of the theoretical basis of the article, how the theory was derived, and how it is to be tested. This is all done in the first few paragraphs of the article body.

The novice reader should assure that the purpose statement is clearly understood before proceeding further. A well-written purpose statement will be clearly articulated and easily understood. If the purpose statement requires considerable time to digest and understand, this may be an indication that the research is faulty.

Background to the Problem. The background of a research problem is best presented through what is known as a review of literature. This is where the researcher traces the work of other researchers or authors in the development of the professions understanding of the concepts necessary to perform and understand the research. This is an excellent opportunity for the novice reader to acquire the fundamental concepts of a research topic, who the major researchers in the area are, and what has been learned about the topic. Of course, this provides numerous reference resources for those readers who want to learn more about the topic (Edyburn, 2005).

A good background to the problem will provide the reader with a logical progression of what has previously been known about the topic through to what is known today. These can be quite difficult to write when there is a considerable amount known about a topic. A good writer, however, can provide this information in a manner that is easily grasped while motivating the reader to continue reading and acquiring the information necessary to understand the research that the writer is undertaking.

Conclusions

The novice reader should now jump over to the very last one or two paragraphs of the article. It is here that the author’s conclusions about the research are stated. The author will provide a statement of the importance of the findings and how these findings might be applied. Frequently the conclusions will focus on the problem choice and what has been found regarding the problem in this research and how the knowledge can be linked to other research findings (APA, 2001). In short, the novice reader can quickly determine what happened, what might be necessary in the future, and how the knowledge could be applied while avoiding all the complexities inherent in the methodology and results sections.

INTERMEDIATE LEVEL

As has been previously discussed, when you first are attempting to read research articles you may not have the specialized expertise to fully understand certain sections, but you can still extract a great deal of useful information. As you gain more experience reading articles, as an Intermediate Reader, the next step is to add the discussion section to your article reading. As an intermediate reader, you would then first look at the abstract, then the introduction, the discussion, and finally the conclusions.

Discussion. The discussion is a non-technical reporting and interpretation of the results of the study. This section should create a complete narrative along with the introduction section of the article (Bem, 1987). The discussion should both report the findings and place them in context with other research, and should correspond to the research questions posed at end of introduction. The conclusion section read at the novice level is frequently included in the discussion section.

As you read the discussion, there are several things to look for yourself. Edyburn (2005) suggests that you determine the major findings of the study and the limitations that may have impacted the validity of the findings. Also note what further research is suggested, as well as the implications for classroom practice and the applicability of these findings to your own classrooms and other classrooms that are similar to yours.
Once you have completed reading the entire article, you may also find it helpful to read the beginning of the discussion along with the abstract as a way to strengthen your understanding of the article (Jordan & Zanna, 1999). These sections will provide both a concise summary of the research as well as an interpretation of what the findings mean for the intermediate reader.

ADVANCED LEVEL

An advanced level reader can read the article in its entirety from beginning to end, though most probably do not. Rather, most advanced readers will follow the strategies of the novice reader and then go backward to read the method, results, and discussion section in consecutive order. That way, the strategy provides for the advanced reader to identify specifically what the study investigated and exactly what was found prior to returning and determining how the study was conducted and analyzed that lead to the author's discussion. The advanced level assumes that the reader has the terminology of the area under investigation, has an understanding of the research process and knows how to comprehend the results of statistical analysis. Such knowledge is usually acquired through course work, but this is not really necessary. If the reader has read heavily in a research topic area, the reader has probably learned what the main research methodology and statistics that are used in the area. Using the referencing and resource power of the internet, a conscientious reader can look up the methodologies and statistics quickly and acquire the knowledge of what they are. The discussion below assumes that the advanced reader is reading sequentially all the parts of an article in the order they appear. The abstract, introduction, discussion, and conclusion sections have been covered in-depth previously and will not be covered here.

Method

The method section provides a thorough, detailed description of how the study was conducted (APA, 2001, p. 17). It is here that the research design is described (Edyburn, 2005). The reader’s task when reading an article critically is to determine if the methods used are appropriate to the stated purpose of the research and the conclusions drawn from the research. All research methodologies influence the data that are produced by a study. This fact makes it imperative for the writer to include in the method section a clear identification of the subjects, what measures, apparatus, or materials were used, and what procedures were applied to collect the data. This is so that others can replicate the study to see if the same results occur. Most authors provide subheadings within the method section to help organize the presentation and to give the reader reference points for understanding what had transpired through the course of the study.

Participants. The participants who are the focus of the study must be described thoroughly and clearly. This allows the reader to determine if the results of the research will apply to situations in which the reader is interested. This also allows others to determine the applicability of the results to different populations. The author should also provide an indication of how the participants were selected and how they were divided into different groups if that is part of the research strategy. Bem (1987, p. 181) notes that the author should provide a sense of what it was like to be a subject in the study.

Measures. The various measures that are applied to the subjects to acquire the data for the study are described here. It is important that the reader focus on the quality of the measures used in terms of reliability and validity. Reliability is the consistency with which a test measures one or more traits. A test with low reliability will have low validity. Validity is how well a test measures what it is supposed to measure. It is the author’s responsibility to provide this information. Sometimes validity and reliability are discussed in the results section because that is where the author presents the validity and reliability statistics for the particular participants of the study.

Procedure. The steps undertaken to implement the study are described within the procedure section. Often, the instructions provided the subjects are critical to the quality of the data the subjects provide. Thus, the instructions used should be made clear to the reader. The procedures section can become quite detailed because of the necessity to clearly indicate all of what transpired in conducting the research so that others can reasonably replicate the study. This often makes the reading somewhat tedious when the reader is not familiar with the procedures used in studying a particular topic. The more a reader reads research articles in a topic field and becomes familiar with the research strategies employed, the easier this reading will become. In addition, the reader will be able to make important critical judgments as to the appropriateness of the research strategies employed in achieving the purpose of the study.

Results

The results section is where the data are presented that support the conclusions of the study (APA, 2001 p. 20). Usually, the data are presented in the form of statistics that include tables and figures to display the information. It is the author’s responsibility to pick the best manner of presenting the data so that the results are clear and economically presented. As you read this section, the author will frequently direct you to one or more of tables and figures. This is done for the sake of economy and also makes the material easier to read.

Typically, an author will restate each research question/null hypothesis and describe the data that is directly associated with this question/null hypothesis. This provides the reader with convenient anchor points throughout the results section. When reading the results, the reader should keep in mind the subjects that provided the data. In addition to other characteristics that can effect the results, the larger the number of subjects is the easier it is to obtain “significant” results in statistical terms. It is also true that the smaller the number of subjects, the more difficult it is to obtain this “significance.” In most experimental research, the primary function of the results section is to determine if any differences are found between groups at a rate greater than chance (Edyburn, 2005, p. 48). It is the role of statistics to provide evidence of this judgment.
OTHER PARTS OF A RESEARCH ARTICLE

Title

The title is to provide the reader with a summary of the main idea of the article in a simple manner that has style (APA, 2001, p. 10). By its very nature it must be very concise and be able to stand on its own as a fully explanatory statement. Like the abstract, the title has a role of informing the reader of what the topic of the article is and provide a basis for search engines to be able to locate the article by those interested in the topic. Researchers who quickly wish to identify the most important articles on a topic will search for the topic within a title. The logic being that if a topic is important enough to be in the title, the article is probably contains important information about that topic.

References

All articles regardless of what style manual is being used provide a list of all the references cited in the article at the article’s end. The purpose of these references is to support the statements that the author has made throughout the article. The reference list provides a valuable source for those who wish to do future reading on a topic. Such lists are often used to build a bibliography from which a researcher can embark upon a research topic. Each reference should provide all the information necessary to locate the work being cited. Following the requirements for reference citations for a given style manual assures that all the relevant information will be present for the interested reader.

STATISTICS MADE SIMPLE

The most daunting task for an individual learning to read a research article is to comprehend the statistics being used. In the vast majority of empirical research studies there are three families of statistics: those that describe, those that tell a difference, and those that show a relationship. Normally, the results section begins with a variety of statistics that describe the variables and groups that were studied. Three statistics of this type to look for are the mean, standard deviation, and reliability. The mean is the arithmetic average for a variable or group. The standard deviation is the degree of spread of the measurements on the normal curve. Add the standard deviation to the mean and subtract the standard deviation from the mean and you have the range of scores that 68% of the time where scores will fall when similar people are tested. The reliability indicates how consistent a measure is: on a scale of zero to one, the higher the value the better the reliability. In general, you would want to see a major standardized test produce reliabilities in excess of .90, for tests made by researchers for a particular project reliabilities should be in excess of .80, and classroom tests made by teachers to be in excess of .70 for the measures to be viable in a research setting.

The remaining two statistics families, those that tell a difference and those that show a relationship, are used to evaluate the research questions or null hypothesis. If a research question or null hypothesis contains the word “difference,” then one of the statistics that look for differences between groups should be employed like a t-test, chi-square, analysis of variance, or multivariate analysis of variance. When a research question or null hypothesis contains the word “relationship,” then one of the statistics that determines relationships between variables should be employed like a correlation coefficient, multiple-regression, discriminant analysis, and canonical analysis.

The statistics of these two families are usually presented with levels of significance that indicate whether the difference or relationship is “significant.” Being “significant” is a very relative concept and can have two meanings. Statistical significance answers the question, “Is the result real, or is it due to chance?” In education and psychology it is traditional for statistical significance to occur when the significance level or probability is less than .05. Today’s computer systems calculate the significance level as part of the statistical computation. Prior to modern computer systems the significance level was determined by looking up values in a table that typically had values for the .05, .01, and .001 levels of significance. That historical fact can be seen today in research articles that declare significance was obtained at any one of these three levels.

Practical significance answers the question, “How large is the difference or relationship?” It examines the magnitude of the difference or relationship tested. It is important to keep these two meanings of significance clear, because the common dictionary definition for significance being “importance” does not necessarily apply when talking about statistical significance as it might when examining practical significance. An author may mention statistical significance or may discuss practical significance, and can sometimes confuse these two types of significance in their presentation of results.

Summary and Conclusions

Research is the systematic asking and answering of questions related to a specific purpose. Articles that report the results of research follow a standard format that readers at various levels of expertise can successfully read, understand, and apply to their own teaching practice. For the novice reader, reading the title, abstract, introduction, and conclusions will provide the purpose, the rationale, and the conclusions of the study. The knowledge gained can be applied to the novice reader’s own teaching situation without having to deal with the technical aspects of the study. As the reader gains more experience, the discussion section can be added to article reading. This section provides a non-technical presentation and interpretation of the study results that places the results in the context of other research and provides a fuller understanding of the results. For the advanced reader with more research knowledge, adding the reading of the method and the results sections will provide in-depth information that will allow them to better determine the quality of the research.

Through the use of the strategies described here, music teachers with various levels of research expertise can learn to successfully comprehend research articles. With this new source of information, music teachers will be able to take the results of research and apply the knowledge gained to their own teaching situations. Thus research is directly applied to improve teaching.
References


