

## Solving Problems Through Action Research

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### Abstract

*Action research is a practical tool that is often used by leaders of organizations to answer questions or solve problems. This article serves as a brief primer on what action research is and how it may help OLLI programs deal with issues they are currently facing or may encounter in the future.*

As Osher Lifelong Learning Programs across the United States continue to expand and grow, issues arise that need to be addressed. These may be related to marketing, registration procedures, recruiting qualified faculty, managing volunteers, ensuring high-quality curriculum, and other matters important to the operation of a successful lifelong learning program.

Sometimes problems can be faced and decisions made based on plain common sense. Directors and other leaders are usually practical people and have a wealth of personal and professional experience from which to weigh alternative decisions and make the best one for their OLLI program. But there are other situations in which leaders need a more in-depth and systematic approach to problem solving. If this occurs, you have considered entering the world of action research.

### What is action research?

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Stringer (2007), who has written voluminously about action research, defines it as “a systematic approach to investigation that enables people to find effective solutions to problems they confront in their everyday lives” (Stringer, 2007, p. 1). Stringer goes on to suggest that action research provides the means by which people in schools, businesses, and community organizations may increase the effectiveness of the work in which they are engaged. It assists them in working through the sometimes puzzling

complexity of the issues they confront to make their work more meaningful and fulfilling (p.1).

Action research is both similar to and different than more traditional kinds of basic and applied research. Action research is similar to these more well-known types of research in that it involves careful and systematic examination of key questions or variables. Like other kinds of investigations action research may be substantially influenced by a rigorous review of research already done in the area to be studied (although it's also true that not all action research involves in-depth literature reviews). In most cases action research involves interaction with human subjects. And, once the investigation is complete, results are communicated through a written report or presentation to key stakeholders and decision makers and in rare situations may even find its way into a published article.

It differs from most basic and applied research, however, in one important respect. These more traditional types of research tend to be conducted in such a way that the results may be generalized to a broad range of contexts and variables. Action research, in contrast, focuses on specific situations and localized solutions (this is one reason why much action research is not published and read by wider audiences. It is intended from the start to focus on a specific institution/program/set of issues).

The broad range of practical problems that may be addressed through action research may require any one of a number of different specific data collection techniques or some combination thereof. For example, some action research investigations are looking for descriptive and statistical "answers" to questions and thus lend themselves to survey research. Others may desire an in-depth understanding of opinions or behaviors and therefore use interviews and/or focus groups. There is no "single method" with action research, and, in fact, in many studies using multiple or "mixed" methods is the preferred approach.

## Working With Human Subjects

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One of the factors that makes action research especially challenging, albeit also rich in possibility, is that it almost inevitably involves surveying, interviewing, or otherwise communicating with people. Twenty years ago university staff could whip up a survey or pull together a focus group, invite participants to respond, and never have to undergo a review of their procedures by a third party. Because of changes in Federal Law this is no longer the case.

Nearly every college and university in the United States that has a federal student loan program or that accepts US Government research grants has an Institutional Review Board (IRB). This body has the responsibility for reviewing any sociological, psychological, or biological research undertaken by the university in order to ensure that the interests

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of human subjects are protected. In most cases the IRB consists of experienced professionals from the institution and volunteers from the local community. Because many OLLIs are located at large research universities, chances are that IRB procedures at your institution are well established and documented.

The best advice we can give with regard to this important (and legally necessary) aspect of conducting action research is to get in touch with the IRB in your college or university. Begin a conversation about what kind of research you wish to conduct, who the human subjects are with whom you'd like to communicate, how you plan to collect data, and related matters. The job of the professional staff in an Office of Research Compliance (or related departments in which the review boards themselves are often situated) is to help colleagues in academic departments and programs such as OLLI to succeed in undertaking human subjects research. You may also wish to familiarize yourself with IRB functions by reviewing a Wikipedia article on this topic: [http://en.wikipedia.org/wiki/Institutional\\_review\\_board](http://en.wikipedia.org/wiki/Institutional_review_board).

### Use of Surveys (Quantitative Research)

Perhaps the most frequent approach to action research within OLLI and other lifelong learning programs is through the use of a survey. Surveys may be employed to judge the effectiveness of individual instructors, the likely popularity of a proposed course offering or offerings in previously unaddressed topical areas, the possible impact of changes in the fee structure on the number of courses taken by members, and to answer a host of other practical questions that may arise in the operation of a successful OLLI program. Numerous textbooks and papers describe survey research and can be located through a World Wide Web search using the keywords "conducting surveys."

Until recently surveys were conducted primarily by mailing questionnaires to a target population. More recently, numerous companies have made online survey tools available, including Survey Monkey, Survey-Gizmo, Zoomerang, and a host of others that can be located through a World Wide Web search of "online survey tools." These online tools are useful when the target audience is somewhat computer literate and has access to the Internet.

Our own experience with the use of surveys is that great care is often taken in developing the questions for such surveys, but inadequate attention is paid to performing the analyses that contribute most to the correct interpretation of the results. (Moreover, the online survey programs do not necessarily offer a full suite of relevant analysis tools, though such tools are usually accessible in spreadsheet programs). In this section we shall explore the most common and useful analysis methods for answering specific and

practical questions about the survey results. We shall do this by discussing a hypothetical survey question, the key question that must be answered to interpret the results, and the nature of the method that yields this answer.

Consider first a survey question to evaluate the satisfaction of students with various courses. For purposes of a simple example, suppose each of three courses is evaluated by five students who took that particular course, and the results are as follows:

	<b>Student 1</b>	<b>Student 2</b>	<b>Student 3</b>	<b>Student 4</b>	<b>Student 5</b>
Course 1	3	3	3	3	3
Course 2	1	1	3	5	5
Course 3	1	2	3	4	5

The survey asks the students to rank the course on a scale of 1 to 5, where 1 is unsatisfactory and 5 is highly satisfactory. In this example, all five students who took Course 1 give it a ranking of 3. The response to Course 2 is rather different, with two students ranking it as 1, one as 3, and two as 5. And finally for Course three, each of the students rank the course differently (1, 2, 3, 4, and 5.) Intuitively, we might realize that the evaluations of the three courses tell three different stories, even though the average evaluation of the three courses is the same. (The average evaluation of each course is simply the sum of the evaluations by each student divided by the number of students.) Given that all five students give Course 1 the same evaluation of 3, we may be confident that this evaluation is representative of student attitude toward the course. Course 2 is a very different story, with some students very positively disposed and others very negative about the course. This may suggest that we need to dig deeper to find out what student population likes and dislikes the course. And the evaluations for Course 3 tell no consistent story.

A common way to quantify the variability in survey responses is the so-called sample standard deviation. It is a rather simple calculation for which the formula is included in the Appendix. Its usefulness in the context of evaluating survey results is that it quantifies the variability among responses, which was easy to do in the notional example given above because we assumed a small number of participants but harder in a typical survey with many participants. In the example above the standard deviation among responses for course 1 is 0, for course 2 is 2, and for course 3 is 1.58.

A substantially different kind of question, in which we are seeking to determine if there is a relationship between two quantities, also requires a different analysis method. For example, we might wish to see if the number of courses taken in a term by a student is related to how far they drive or

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how long they have been retired. This could be accomplished by asking three questions on a survey:

- (1) How many courses did you take last term?
- (2) How far do you drive (one way) to get to class? Answer 1 if you drive between 0 to 5 miles, 2 if 5 to 10 miles, 3 if 10 to 15 miles, and 4 if over 15 miles.
- (3) How long have you been retired? Answer 1 if you have been retired 2 years or less, 2 if retired between 3 and 5 years, three if between 6 and 10 years, and 4 if over 10 years.

Table 2 shows the hypothetical response of five students to these questions. Just looking at the numerical responses, one might conclude that number of courses and distance driven trend in opposite directions, or in other words, that people who drive further take fewer courses. In contrast, there seems to be no consistent relationship between number of courses taken and years since retirement.

	<b>Courses</b>	<b>Distance</b>	<b>Years Retired</b>
Student 1	1	4	1
Student 2	2	4	4
Student 3	2	3	3
Student 4	3	2	2
Student 5	4	1	1

The most common way to characterize the actual relationship, or lack thereof, between two quantities in a survey is called the correlation coefficient. This quantity varies from a value of minus one to plus one. A value near minus one indicates that the two quantities are closely related, with one increasing as the other decreases. Likewise, a value near plus one shows the two quantities closely related in such a way that one increases as the other increases. In contrast, a value nearer zero indicates that the two quantities are not closely related. In the current examples, the number of courses taken has a correlation coefficient of -0.942 with distance driven to class. In other words, we can conclude from this hypothetical survey result that a strong relationship exists between driving distance and course load, with the number of courses taken increasing with decreasing driving distance. In contrast, the correlation coefficient between the number of courses taken and the number of years since retirement is only -0.235. In this example, there is a weak relationship between the two quantities.

One caution is offered when using measures of correlation. Correlation does not equal causation. In other words, in the example of number of courses taken and driving distance, the two quantities are related, but this does not prove that increased driving distance causes a change in the number of courses taken. A cause-effect relationship is much more difficult to establish. It can sometimes be done with mathematical methods such as that developed at Carnegie Mellon University. See the following web site for details: <http://www.phil.cmu.edu/projects/tetrad/tetrad4.html>. These methods are in general more complex than will be utilized in an OLLI program for survey analysis. Most often, it will be sufficient to simply note that quantities are correlated and compute the correlation coefficients.

Qualitative researchers are interested in understanding how people interpret and derive meaning from their experience.

### Use of Interviews and Focus Groups (Qualitative Research)

Qualitative research is fundamentally different from quantitative research in that it tends to use words as compared with numbers, although in some situations numbers may also be used (to a moderate degree) in more qualitatively-focused studies. Qualitative researchers are interested in understanding how people interpret and derive meaning from their experience. While quantitative research would be appropriate to answer the kinds of questions posed in the previous section and other questions (e.g., What percentage of our OLLI program membership is retired from full-time employment? What is the female-to-male ratio? How many members leave OLLI after one year of participation?), qualitative research would be the approach best suited to ask and answer questions related to the nature of the experience people are having at OLLI.

A common practice is to gather qualitative data by way of interviews. The adult education researcher Merriam (2009) defines a research interview as a process in which an investigator and participant engage in a conversation focused on questions related to a research study (Merriam, 2009). The most common form of interview is the person-to-person encounter in which one person elicits information from another. Such interviews may be undertaken in person (face-to-face), by telephone, via computer (using Skype or some other two-way video technology), or solely through writing using email communication.

Person-to-person interviews can be designed in a number of ways ranging from highly structured (standardized) all the way to informal. There are distinct advantages and disadvantages to each approach. In highly structured interviews the specific wording of questions is predetermined and their order is strictly prescribed. Such a process helps to ensure consistency and diminishes the influence the researcher can have on the data being collected. On the other end of the continuum is the unstructured interview which has open-ended questions, is flexible and exploratory, and more conversational in tone. The advantage here is that research

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subjects get to express themselves freely which can often yield a rich set of data. However, free-ranging interviews may be difficult to keep focused and also sometimes generate information that is challenging to analyze and make sense of. A middle option between these extremes is called the semi-structured interview in which the researcher uses a guide that involves both more and less structured questions.

An alternative to the individual interview is the group interview, often called focus groups. A focus group is an interview on a topic with a group of people who have some knowledge of that topic. The interactions that take place between people in the group are an important aspect of this research. In other words, what someone in the group says may be reacted to by another member, and that person's response reacted to by yet another person. One of the authors of this article (Brady) has used focus group research to explore several issues related to lifelong learning institutes including teaching styles (Brady, Holt, and Welt, 2003) and the overall experience of learning among OLLI members at the University of Southern Maine (Lamb and Brady, 2005). An excellent guidebook to help the inexperienced action researcher design and conduct a focus group study is *Focus Groups: A Practical Guide for Applied Research* by Richard Krueger and Mary Anne Casey (2009).

## Potential Research Topics

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Whereas a significant body of scholarly research has been done on the topic of aging, making the transition to life beyond full-time work and living productively in this new phase of life has received much less attention by the research community. OLLI programs and their host institutions have the potential to contribute significantly to this rich research area. The following areas are representative examples.

- Popularity of various types of course offerings and other programs: One very useful kind of information from member surveys might be the kinds of courses or programs that are most popular or growing in popularity among OLLI participants. This information, which particularly trends over time, might help OLLI programs think about new offerings or increased emphasis on certain types of course offerings or programs.
- Emerging retirement trends: There is a lot of speculation about how retirees of the baby-boomer generation might approach this phase of life differently than their predecessors, but not much that is concrete. A better understanding of these trends is important both societally and, more specifically, for OLLI programs. Such an understanding would assist these programs to be proactive in positioning themselves for their coming

membership as well as the current membership.

- Improved understanding of the personal dimensions of retirement: In writing *Shaping a Life of Significance for Retirement*, one of the current authors (Hansen, 2010) sought to elucidate the impact of retirement on such personal matters as family relationships, friendships, personal growth, and feelings of self worth. While we were able to identify a number of important personal transitions, opportunities, and challenges associated with this phase of life, much remains to be done. The research literature, as well as the popular literature, is quite deficient on this topic, but it has real implications for OLLI programs.
- Variability in current and emerging retirement attitudes among different ethnic and other groups of retirees and pre-retirees: Very little has been done on this topic to date. It could be relevant to OLLI programs in understanding how to reach and serve different retiree populations. Other groups and organizations that seek to serve retirees could benefit from this information as well.
- The potential for electronic course delivery and community building among retirees: We are in a period of rapid transition in terms of computer literacy and social networking among retirees. Any steps that might clarify how to employ these trends to serve retiree populations would be welcome.

As we noted at the beginning of this article, OLLIs and other lifelong learning institutes across the United States are growing and oftentimes this growth will be accompanied by questions and problems that will need to be addressed. These questions and problems may relate to program marketing, quality control, volunteer management, registration and other administrative tasks, or a whole host of other important matters. With a modest commitment of time and energy, action research could help administrators and volunteer leaders in OLLIs to answer key questions and pose useful solutions to problems.

## Appendix

The Sample Standard Deviation (SD) is computed using the following formula:

$SD = \text{Square Root}\{\text{Sum}[X-M]^2/(N-1)\}$ , for all values of X in the survey,  
where X is the value for a given response

M is the average of all responses

N is the number of responses.

The correlation coefficient,  $R^2$ , is given by the following quotient:

$R = (S_{XY}) / \text{SquareRoot}[(S_{XX})(S_{YY})]$

where X and Y are the two variables for which correlation is being tested. In

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the first example in the text X and Y would be driving distance and number of courses taken, whereas in the second example X would be the number of years retired and Y again the number of courses taken.

$$S_{XY} = \text{Sum}[(X - X_{AVE})(Y - Y_{AVE})]$$

for all values of X and Y in the survey.

$$S_{XX} = \text{Sum}[(X - X_{AVE})^2]$$

$$S_{YY} = \text{Sum}[(Y - Y_{AVE})^2]$$

It should be noted that such quantities as average, variance, and correlation coefficient, are readily computed from tabular data by functions available in common spreadsheet programs (e.g., Excel) as well as statistical programs. It should also be noted that some texts refer to the correlation coefficient as R and others define it as R2. In our view the use of R is preferable because its sign (plus or minus) indicates whether one variable increases or decreases as the other increases.

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