ACTION RESEARCH

SESSION 4.2

PAPER-AND-PENCIL INSTRUMENTS

Objectives

At the end of the session, teachers should be able to:

1. enumerate different paper-and-pencil instruments for data collection in Action Research;
2. cite the advantages and disadvantages of using paper-and-pencil instruments;
3. determine the appropriate paper-and-pencil instrument for specific Action Research topics;
4. acquire item-writing skills for paper-and-pencil instruments; and
5. state ethical practices in administering paper-and-pencil instruments.

Key Understandings

- Paper-and-pencil instruments involve the use of tests (standardized tests and teacher-made tests), rating scales, checklists, questionnaires, and similar tools that require research participants to mark or write their responses on paper.
- Instruments administered online such as questionnaires sent through email or through websites are also considered paper-and-pencil instruments. The computer screen and keyboard serve as "virtual" paper and pencil.

Materials

- Laptop
- LCD projector
- Manila paper sheets
- Marking pens
- Masking tape
- Copies of the "Questionnaire on the Use of Internet Use and Action Research"
- Samples of standardized tests (can be borrowed from a Guidance Counselor or Psychologist), teacher-made test, Likert scale, Likert-type scale, checklist, and questionnaire to be shown to the participants

TIME ALLOTMENT
120 minutes or 2 hours

References

Buck Institute for Education. n.d. "Advantages and Disadvantages of Assessment Methods." PBL-Online (website). Accessed May 12, 2018. http://archive.pbl-online.org/PlanTheAssessment/explore/planexplore1Charts/assessmentmethods.htm

Mertler, Craig A. (2011) 2014. Action Research: Improving Schools and Empowering Educators. Thousand Oaks, CA: SAGE Publications.

Mills, Geoffrey E. (1999) 2003. Action Research: A Guide for the Teacher Researcher. New Jersey: Pearson.

Anonymous. 2007. "Paper-and-Pencil Instruments: An Efficient Method of Assessment." Government of Canada (website). Accessed May 12, 2018. https://www.canada.ca/en/public-service-commission/services/staffing-assessment-tools-resources/human-resources-specialists-hiring-managers/management-toolkit/assessing-competence-series/paper-pencil-instruments-efficient-method-assessment.html

Introduction

Begin the learning session by saying: "Good _____, everyone. Welcome to our _____ LAC session. I am your facilitator for today. We will be continuing our discussion on data collection methods for Action Research. Our specific focus will be the different paper-and-pencil instruments that can be used in Action Research.

At the end of this section, you are expected to be able to enumerate different paper-and-pencil instruments for data collection; cite the advantages and disadvantages of using paper-and-pencil instruments; acquire item-writing skills for paper-and-pencil instruments; determine the appropriate paper-and-pencil instrument for specific Action Research topics; and state ethical practices in administering paper-and-pencil instruments."

Activity (15 minutes)

Lead the conduct of the pre-discussion activity. Observe the following instructions.

1. Distribute copies of the questionnaire on the use of the internet in general and in relation to Action Research to the participants. Ask them to answer the given questionnaire.

2. Remind the participants to write their names on the top part of the questionnaire. Inform them that they have five (5) minutes to finish their task.

3. As the participants answer the questionnaire, go around the room and invigilate. Be sure to exhibit the following:
   a. talk to and/or laugh loudly at a participant or with someone on the corridor;
   b. read or watch closely the response of a participant;
   c. move an empty chair loudly;
   d. tap your hand on the teacher's table;
   e. prod the participants to answer quickly;
   f. ask someone to create a loud noise outside the room; and
   g. keep reminding the participants of the time left.

4. After 5 minutes, collect the questionnaires quickly. Then, inform the participants that you will be processing their output by asking them some questions. You may show the questionnaire on the screen or you may provide blank copies of it for everyone's reference.

QUESTIONNAIRE ON THE USE OF INTERNET AND ACTION RESEARCH

Name (Last, First, Middle) (optional): _____

This survey is designed to collect information about your use of the internet.
Your responses to this questionnaire will be held in strictest confidentiality. The questionnaire will be used only for our LAC session and will not be used for any other purpose. Your responding to this Questionnaire will be most appreciated. Thank you.

Part I. Internet Use

Q1 Which websites do you regularly access?
- Youtube.com
- Vimeo.com
- Facebook.com
- Google.com
- Wikipedia.com
- Others. Please specify: _____

Q4 During which part of the day do you usually access the internet?
- Morning
- Afternoon
- Evening
- No definite time

Q2 What is your purpose for accessing the internet?
- Communication
- Research
- Education
- Entertainment
- Others. Please specify: _____

Q3 When do you usually access the internet?
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday
- Everyday

Q5 How often do you usually access the internet?
- Daily
- Weekly
- Monthly

Q6 What gadget do you usually use in accessing the Internet?
- Mobile phone
- Tablet computer
- Laptop computer
- Desktop computer

Part II. In this part of the questionnaire, mark your answer by writing the number that corresponds to the degree of your agreement with each statement.

Note: Strongly Agree—5; Agree—4; Neither Agree nor Disagree—3; Disagree—2; Strongly Disagree—1

No.	Statement	Response
1	I would rather not do Action Research.	
2	I do not have the skills to conduct Action Research.	
3	Action Research is very, very important for teachers.	
4	Results of Action Research are not really that useful.	
5	There are many benefits for Action Research.	

Analysis (10 minutes)

Lead the processing of the participants' responses to the questionnaire by asking them the following guide questions.

1 How did you feel when I first announced that I will be administering a questionnaire at the beginning of our session? (surprised, afraid, self-conscious, intimidated, excited, etc.)

2 How many of you did not hesitate to write their full names on the questionnaire? (Maybe some did hesitate; maybe others did not write their names at all because it is optional)

3 What is the advantage of placing "optional" when asking for the name of a respondent?

4 What thoughts did you have as you were responding to the questionnaire? (curious, confused, etc.)

5 In Part I, did some of you have multiple responses? Which items? (maybe; questions 1–4 and 6)

6 What did you notice about the directions on how to mark your responses in Part I/II? (There were no such directions for Part I; Part II had clearer directions.)

7 What can you say about the two parts of the instrument? (Do not seem related with each other)

8 Is it wise to have two different topics in one questionnaire? (Not really, there should have been two separate instruments; There should have been some connection between the two parts)

9 What similarities did you notice between the two parts of the instrument? (They are both closed-ended)

10 What about differences between the two parts? (Part I is more factual while Part II is more of opinions or sentiments, subjective.)

11 What did you notice while the questionnaire was being administered? Can you name some of the no-no's that occurred? (lack of privacy in responding; many distracting noises; reminders and movements)

12 How did you feel when I kept telling you about the remaining time for you to answer then I quickly collected the questionnaires? (annoyed, disappointed, etc.)

13 What should I have done? (kept quiet; given us privacy; allowed us to answer quietly; avoided interruptions and too many reminders; gave enough time for us to respond; been patient, etc.)

14 Look back at the questionnaire. If you were to edit it, which part will you revise? (statements in Part II; equal number of positively and negatively stated items; not make statements so that there is a response set; simplify statements)

Abstraction (45 minutes)

Proceed to the session's discussion proper by saying: "Let us now go to the focus of our session today—the different paper-and-pencil instruments used as data collection techniques".

UNDERSTANDING PAPER-AND-PENCIL INSTRUMENTS

As the name implies, paper-and-pencil instruments are those data collection methods that require a respondent or research participant to mark or write his or her answers on paper with a pen or pencil. As teachers, we are most familiar with this type of data collection method because we give a lot of tests in our classes.

One of the characteristics of paper-and-pencil instruments is that they usually yield quantitative data. Quantitative data are those that can be counted, calculated, tallied, or rated. In tests, the number of correct answers can be counted. In rating scales, one indicates the degree of his or her feelings, attitudes, interests, or perceptions using a numerical scale. In checklists, the number of items marked are also counted.

Collecting data as accurately as one can is an important aspect of Action Research. When data collected is not accurate, the information obtained through or from the study might ultimately lead to invalid results. The accuracy of information associated with quantitative data collected from paper-and-pencil instruments is one of the advantages in using these methods for Research.

The following are some of the most frequently used forms of paper-and-pencil instruments.

1   Standardized Tests. These tests undergo rigid development and research to obtain high quality in terms of reliability and validity. These are often produced by private corporations and are available commercially to psychologists and clinicians. Some of the popular ones are those that measure either a student's aptitude or achievement such as the Iowa Assessments, California Achievement Tests, Terranova Tests, and Scholastic Aptitude Tests. These tests come with a manual that contains instructions for administration, scoring, and norm-referenced interpretation. The Department of Education (DepEd) has the Philippine Informal Reading Inventory (PHIL-IRI), Early Language and Numeracy Assessment (ELLNA), and National Achievement Test (NAT). These are called "standardized" because these are administered under the same conditions to warrant fair comparison of student performance through the use of interpretation tables based on data collected from a normative sample.

2   Teacher–Made Tests. Also known as "classroom-made tests," these are tests developed by teachers to measure the achievement of students in their classrooms. These are similar in format and content to standardized tests except that their psychometric properties (such as reliability and validity) are not as rigidly determined.

3   Rating Scales. A rating scale is a set of categories designed to elicit information about a qualitative and quantitative attribute. The most common rating scales are Likert Scales, which present statements that are to be appraised according to the degree of one's agreement or disagreement with them. Other rating scales, called Likert-type Scales, present characteristics, behaviors, skills, or other similar attributes. Respondents are then asked to indicate the frequency of these traits.

4   Checklists. These are lists of things, that can include psychological or personal qualities, things, or objects that respondents have to mark (usually with a check mark) to indicate their presence or existence.

5   Questionnaires. These are sets of questions that research participants are asked to answer. Questions may be closed ended; respondents are provided with choices from which they are to select. They may also be open-ended; respondents supply or construct their own responses. Some questionnaires contain both closed-ended and open-ended questions.

Other paper-and-pencil instruments that may be used for data collection in Action Research are the semantic differential, sentence completion techniques, and sociometric devices. If you think these are suitable for your Action Research, you may find information about these and how they are constructed on the Internet.

The following table shows the advantages and disadvantages of using paper-and-pencil Instruments for your research.

TABLE 1. ADVANTAGES AND DISADVANTAGES OF PAPER-AND-PENCIL INSTRUMENTS

Advantages	Disadvantages
• Allows for administration to large groups of students • Suitable for appraising intelligence, scholastic aptitude, intellectual ability, attitude, reflections, and thinking processes • Useful for assessing individual students • Can be encoded and analyzed easily	• Limited to measuring knowledge, mental abilities, observable behaviors, and other psychological characteristics • Can be faked; respondents may not give truthful responses • Susceptible to guessing for objective tests • Difficulty in writing good items/ statements • May require lengthy procedures for development to ascertain psychometric qualities like reliability and validity • Not appropriate for assessing skills

PREPARING PAPER-AND-PENCIL INSTRUMENTS

Paper-and-pencil instruments created by an Action Researcher, such as teacher-made tests, rating scales, checklists, and questionnaires, are most effective if they are constructed with clear and succinctly stated questions; if the attributes they measure are well-defined; and if they sufficiently cover the topic of the research. The following are points to consider when developing paper-and-pencil instruments.

1   Specify the objective/s of the test, rating scale, checklist, or questionnaire.
2   Define the ability, content knowledge, skill, or attribute that you want to measure. For ability, content knowledge, or skill, examine the competencies expected. For any other personal attribute, read literature published on the trait.
3   Develop the table of specifications (for the test or rating scale) or outline of the content of the questionnaire. The table of specifications is a two-way grid that shows the specific contents of the test or dimensions of the trait to be measured with the proposed number of items for each.

4 Create potential test items or item pool. It is better to prepare more items than needed to give room for selecting good items. For teacher-made tests, there are specific guidelines for different types of objective items. For rating scales, it is advised to have about equal number of positively stated and negatively stated items to avoid response sets. For questionnaires, items should be logically sequenced. Items or statements should be brief, concise, and direct to the point.

5 Select items from the item pool for the draft of the instrument.

6 Prepare an answer key or scoring plan for the items selected.

7 Submit the draft of the test for content validation by subject matter expert and, if possible, by a test or measurement expert.

8 Revise the items based on expert review/s.

9 Prepare master copy of the test, rating scale, or questionnaire.

10 Make a final review of the master copy.

11 Prepare also the final answer key or scoring based on the master copy.

12 Reproduce copies for administration.

Ethical Considerations

Below are the ethical considerations in collecting data through paper and pencil instruments.

1 Permissions
Before administering a paper-and-pencil instrument to research participants, it is important to notify and get permission from your principal and schools division superintendent (see Appendix ___ and ___ for sample letter and endorsement). Usually, a research proposal is required along with the data collection instrument. Since Action Research participants are students, it is also necessary to obtain parental consent for their involvement in your research.

2 Anonymity and Confidentiality
In administering a paper-and-pencil instrument, it is important to make sure that respondents remain anonymous and that the information they give for the research are kept confidential. These should be strictly adhered to particularly if the data to be collected are sensitive and/or extremely personal in nature. Anonymity of the respondents enable us to get more honest responses. However, it is quite difficult to guarantee the anonymity because respondents can be easily identified using three or more demographic data points available. It is our responsibility as researchers to ensure their anonymity at all times.

In most research activities, the identity of the respondents is deemed to be protected by stating in the data collection instrument that the information provided will be "treated with utmost confidentiality." Such a clause allows us as researchers to analyze responses along a variety of demographic factors, but also gives us the responsibility of guarding sensitive information.

Application (30 minutes)

Have the participants put to use what they have learned about paper-and-pencil tests by doing the following activity.

1 Divide the participants into groups of four (4) by having them count off. Moderate the counting off and seat the participants by group.

2 Distribute copies of the following worksheet that contains different research situations to each of the participants. Have them discuss with the members of their groups the given situations and answer the guide questions that follow. Give them manila paper and marking pens too.

WORKSHEET

Below are different research situations that require data collection instruments. Discuss and decide on the appropriate paper-and-pencil instrument for each of the research questions.

1 Mr. X, Grade 7 Mathematics teacher in a special science high school, noticed that the number of probationary students had increased from first to second quarter. Many of these students were absent for more than five (5) consecutive days. The school has stringent policies on student retention; one of which is on the grade requirement for Mathematics and Science subjects. To address this problem, he and fellow Grade 7 teachers decided to meet to discuss what intervention program might help improve student engagement and, consequently, performance in Mathematics and Science subjects.

a If you were the Grade 7 teachers proposing this Action Research, what paper-and-pencil instruments will you suggest the group use to collect data on student engagement and performance in Mathematics?

b What are the advantage/s and disadvantage/s of using these instruments?

c Write at least two (2) items for each of these paper-and-pencil instruments.

2 One month after classes started, a group of Grade 4 Araling Panlipunan teachers in a regular elementary school wished to assess the performance of their students and their perceptions of the subject. They were interested to determine these information so that they could adjust their teaching strategies and improve the discussion in their classes. They formulated the following research questions. For each research question, specify the paper-and-pencil instrument that can be used to answer it. Then, cite the advantages and disadvantages of each instrument. Finally, write at least two (2) items for each instrument.

Research Questions	Instrument	Advantage/s	Disadvantage/s	Sample Items
a What is the level of student performance in Araling Panlipunan?				

b What are the perceptions of pupils on Araling Panlipunan as a subject?				
c What activities would students like to do in Araling Panlipunan to help them learn the lessons better?				

3 After the group discussion, ask them to prepare a poster of their responses using a separate manila paper for each situation. Give them 20 minutes to discuss their answers and prepare their posters.

4 After 20 minutes, ask the groups to share their output. If there are redundancies, ask them to share only what has not been mentioned by others.

Suggested instruments: a–test; b–rating scale; c–checklist

Closing (5 minutes)

End the learning session by saying: "Thank you for your participation in today's LAC session. Do study the other forms of data collection techniques that were not captured in our session. Goodbye for now and see you again soon."

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