Understanding the Steps to Developing a LEND Leadership/Research Project

UC DAVIS HEALTH | MIND INSTITUTE
Leadership Education in Neurodevelopmental and Related Disabilities
SACRAMENTO STATE

This module was developed by Aubyn Stahmer, PhD, BCBA-D and Allison Nahmias, PhD for the Focused Assistance to Support Training (FAST) Project awarded to the Northern California LEND Program by the Interdisciplinary Technical Assistance Center on Autism and Developmental Disabilities (ITAC).

Module Description

This module provides education and activities related to understanding research methods and use of quality improvement science to inform LEND leadership/research project development. The module is organized around 9 topics to assist trainees in project development, implementation, and dissemination. Each topic is accompanied by associated materials including readings, assignments, activities, and (when applicable) sample slide decks. The module was originally conducted as four 90 minute seminars with the goal to assist trainees in developing meaningful, manageable projects that will extend beyond the training year, help them partner with other trainees, and gather input from each other and faculty. However, topics and materials can be combined flexibly as suits the needs of individual LEND programs. The module also includes editable templates to assist LEND programs in supporting trainees in developing their projects.

Note: You can click on any hyperlinks using "CTRL + Left click" to navigate this document or open the link

Module Objectives

After completing this module, the learner should be able to:

1. Explain the general features of the scientific method and quality improvement methods.
2. Identify whether or not a project includes human subjects research and whether approval from an Institutional Review Board is required.
3. Identify whether outcome measures are appropriate and valid for a research or quality improvement question.
4. Describe strategies used for analyzing and interpreting project data.
5. Develop a clear presentation summarizing the results of a leadership/research project.

Module Contents

Sample Leadership/Research Project templates:

General Preparatory activities for **Faculty**

Topics:

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Templates

LEND Leadership Project Agreement

All long term, full time and advanced LEND trainees are required to complete a leadership/research project under the guidance of their faculty mentor or other LEND faculty. Leadership/Research Projects are developed in collaboration between the trainee and the faculty mentor to address an area of interest that fulfills some of the goals on the trainees individual training plan (ITP). There are many options for projects. For example, projects may be completed within a faculty research project or program, may be an ongoing LEND project, may involve specific resource development, or may be an evaluation of a new or existing program. Participating in a LEND leadership project provides trainees with fundamental evaluation skills and mentored research training to help develop their understanding of the use of the scientific method and/or quality improvement. Mentored leadership projects encourage creativity and provide an opportunity for trainees to collaborate across disciplines and expertise to contribute to advances in programs, services and research for individuals with neurodevelopmental disorders. One goal of leadership projects is dissemination and sustainment of programs and information.

Leadership projects are varied and most projects are conducted within the context of the LEND training framework. Some projects may be conducted in a faculty research lab or be part of a trainee's educational work. Many projects will be done in collaboration with other LEND trainees. In all cases the trainee benefits from mentorship, experiences and resources provided by the LEND program.

If this leadership project involves the recruitment and testing of human participants, the trainee must submit the project to the Institutional Review Board at [Insert Institution] (depending upon the faculty mentor) or the trainee must be added to an existing IRB protocol. In either case the trainee must take a tutorial on the protection of human participants. See https://research.ucdavis.edu/policiescompliance/irb-admin/outreach/citi/ for more details. Trainees will work with their faculty mentor to determine which on-line trainings are needed.

Unless otherwise specified, all project data (e.g., questionnaires, data files, records, observations) and materials (e.g., program development materials) from this project become the property of the home institution and will be retained by the LEND faculty mentor who will determine who and under what circumstances others may have access to such data. Authorship of any resulting conference presentation or journal article will depend on the extent of faculty and trainee contributions to this project as stipulated in Standard 8.12 of the APA Ethics Code. Project materials and data may be used by future LEND trainees to ensure sustainment of program-based projects. *If a LEND trainee is using thesis or dissertation project data to complete the LEND requirements, this agreement should be developed with the LEND faculty mentor in collaboration with the trainee's thesis or dissertation advisor.*

The following acknowledgement should be included on all presentations and publications using data from a LEND project or supported by LEND mentorship or funding:

This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number 1T73MC30113-01-00 Leadership training in Autism Spectrum Disorder and other Developmental Disorders: [Insert LEND Program Name]. The information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

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LEND Leadership Project Agreement

Project Title: ____

LEND Faculty Mentor:____

Project Supervisor (if different):_____________________________________

LEND Trainee: ____

Other trainees involved in the project (each will complete a separate agreement):

____

Leadership project is:

- ☐ An ongoing LEND project/program
- ☐ A new project designed as part of the LEND experience
- ☐ Part of a faculty program of research
- ☐ Thesis or Dissertation project

Data from this project will belong to (check all that apply):

- ☐ The LEND program
- ☐ Faculty Mentor
- ☐ Lend Trainee educational institution
- ☐ Other:________________________

Project involves human participant research

- ☐ Yes
  - ☐ Trainee will complete human participant research training & abide by rules related to confidentiality and security of research data.
  - ☐ A new IRB submission is needed
  - ☐ Trainee will be added to an existing IRB
- ☐ No

Trainee agrees to dedicate the necessary time and effort to complete the project within the timeframe specified in the ITP and to uphold the scientific integrity exemplified in the APA code of ethics: http://www.apa.org/ethics/code2002.html. Trainee agrees to communicate goals for the experience to the faculty mentor, communicate progress and barriers limiting progress, and fulfill all agreed upon responsibilities. Trainee agrees to acknowledge the LEND program in presentation of project.

Faculty mentor agrees to consider trainee goals and communicate realistic goals for the experience, communicate expectations for goals and progress based on the ITP, define the trainees role in developing and carrying out the project, support the trainee in conducting ethical research, discuss how to communicate results and define any types of results or barriers to

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progress to communicate during regular meetings, clarify how to obtain help, work collaboratively with other trainees and faculty working on the project (if applicable), and work closely with the trainee on any resulting publications and/or presentations, including the LEND capstone presentation.

Mentor’s Name____________________________ Signature_________________________________

Trainee’s Name____________________________ Signature_________________________________

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LEND Leadership Project Proposal Abstract

Please provide an abstract of no more than 2 pages that outlines your LEND leadership project. The specifics of each section may vary depending on the type of project being proposed. Each project will be presented in May.

Trainee Name: ____

Project Mentor Name: ____

Project Title: ____

Do you and your LEND mentor anticipate needing IRB approval for this project?

Yes☐ No☐

Problem: Describe a practical problem related to neurodevelopmental or related disabilities and develop an appropriate question that the project will address. Identify the LEND competencies that your project addresses.

Significance/empirical basis: Briefly, discuss the background of the problem and why it is important.

Hypothesis: What do you think you will find as a result of this project?

Objectives: What are the primary objectives you would like to complete in this project?

Method or format: Describe the activities necessary to complete your project. Describe how you will use systematic investigation as part of the project, including conducting a literature review and gathering additional information/data throughout the process to support the problem and justify the proposed solution.

Participants: Who will participate in your project?

Outcome Measure: How will you know if your project is successful?

Product: Describe the tangible product you will produce to address the identified problem. Describe the intended audience for your product.

Dissemination and/or Sustainment: Describe how you will communicate the results of your project to appropriate stakeholders outside of LEND. If applicable, how will your project continue in future LEND years?

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Leadership Project Presentation Feedback

Presenter	Rating	Notes
	1=poor 2 = below average 3 = average 4=above average 5= outstanding	
My favorite part of this presentation was:		
INTRODUCTION		
Speaker engages audience attention and interest (relevance, importance, timeliness, etc.)	1 2 3 4 5	
Speaker clearly identifies thesis, purpose or central question (focus).	1 2 3 4 5	
Speaker clearly previews presentation's structure or content (scope and sequence).	1 2 3 4 5	
DEVELOPMENT		
Points are clear and arranged in logical order.	1 2 3 4 5	
Speaker adequately clarifies terms and concepts.	1 2 3 4 5	
Speaker cites sources appropriately (orally or on visuals).	1 2 3 4 5	
Speaker clearly describes the project methods, measures and procedures	1 2 3 4 5	
The project methods are appropriate for the project question	1 2 3 4 5	
Speaker clearly presents the results/findings/outcomes of the project	1 2 3 4 5	
Speaker identifies next steps and practical application for the project	1 2 3 4 5	
Speaker creates a compelling narrative that ties the points together	1 2 3 4 5	
AUDIOVISUAL MEDIA		
Slides are effectively designed (clear, uncluttered, adequate size, good contrast, consistent).	1 2 3 4 5	
Slides are correct in terms of spelling, grammar, citations, etc.	1 2 3 4 5	
OVERALL DELIVERY		
Speaker uses clear, appropriate language.	1 2 3 4 5	
Speaker uses appropriate rate and volume.	1 2 3 4 5	
Speaker uses voice expressively.	1 2 3 4 5	
Speaker uses nonverbal behavior that supports the message.	1 2 3 4 5	
PROJECT METHODS		
What method did the trainee use for the project (please circle and briefly describe below): Quality Improvement Quantitative Research Methods Qualitative Research Methods Other Does the trainee have a plan for project sustainment: YES NO N/A		
Additional Comments:		

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LEND Presentation Feedback

Trainee name(s) & Project Title:	
Rating Scale: 1=poor 2 = below average 3 = average 4=above average 5= outstanding	
Speaker engages audience attention and interest	1 2 3 4 5
Points are clear and arranged in logical order.	1 2 3 4 5
The project methods are appropriate for the project question.	1 2 3 4 5
Speaker identifies next steps, practical application, and/or sustainment for project	1 2 3 4 5
Overall Rating of project quality in towards addressing goals of LEND	1 2 3 4 5
Overall Rating of presentation quality (e.g., slide clarity; language; engagement)	1 2 3 4 5
What method did the trainee use for the project (please circle below): Quality Improvement Quantitative Research Methods Qualitative Research Methods Other	
Additional comments:	

Trainee name(s) & Project Title:	
Rating Scale: 1=poor 2 = below average 3 = average 4=above average 5= outstanding	
Speaker engages audience attention and interest	1 2 3 4 5
Points are clear and arranged in logical order.	1 2 3 4 5
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Overall Rating of project quality in towards addressing goals of LEND	1 2 3 4 5
Overall Rating of presentation quality (e.g., slide clarity; language; engagement)	1 2 3 4 5
What method did the trainee use for the project (please circle below): Quality Improvement Quantitative Research Methods Qualitative Research Methods Other	
Additional comments:	

Trainee name(s) & Project Title:	
Rating Scale: 1=poor 2 = below average 3 = average 4=above average 5= outstanding	
Speaker engages audience attention and interest	1 2 3 4 5
Points are clear and arranged in logical order.	1 2 3 4 5
The project methods are appropriate for the project question.	1 2 3 4 5
Speaker identifies next steps, practical application, and/or sustainment for project	1 2 3 4 5
Overall Rating of project quality in towards addressing goals of LEND	1 2 3 4 5
Overall Rating of presentation quality (e.g., slide clarity; language; engagement)	1 2 3 4 5
What method did the trainee use for the project (please circle below): Quality Improvement Quantitative Research Methods Qualitative Research Methods Other	
Additional comments:	

Trainee name(s) & Project Title:	
Rating Scale: 1=poor 2 = below average 3 = average 4=above average 5= outstanding	
Speaker engages audience attention and interest	1 2 3 4 5
Points are clear and arranged in logical order.	1 2 3 4 5
The project methods are appropriate for the project question.	1 2 3 4 5
Speaker identifies next steps, practical application, and/or sustainment for project	1 2 3 4 5
Overall Rating of project quality in towards addressing goals of LEND	1 2 3 4 5
Overall Rating of presentation quality (e.g., slide clarity; language; engagement)	1 2 3 4 5
What method did the trainee use for the project (please circle below): Quality Improvement Quantitative Research Methods Qualitative Research Methods Other	
Additional comments:	

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Sample Schedule

Topics/*Assignments*	Activity	Time (approx)	Date
Introduction to LEND Leadership Projects	Part of LEND Trainee Orientation	30min	9/6
How to Read a Research Article	Part of seminar: "Intro to Evidence-Based Practices for ASD"	30min	9/17
Generating a Project Question & Project Types	Seminar: "Developing and Designing a Leadership Project"	1h30min	10/1
LEND Leadership Project Proposal Abstract & Agreement Due (with Timeline)			10/19
QI vs Research: When do we need IRB approval? & Measurement	Seminar: "Research Strategies and Ethics in Research (Part 1)"	1h30min	10/29
LEND Leadership Project Update Due (with Timeline Progress)			12/18
Introduction to Data Analysis for Quantitative and Qualitative Methods & Research Ethics	Seminar: "Introduction to Data analysis and Ethics in Research (Part 2)"	1h30min	2/25
Data analysis and Interpretation	Seminar: "Interpreting Data: Project Preliminary Review"	1h	3/18
Presenting your findings	Seminar: "Presenting Your Findings"	1h	4/8
Draft of Final Project Results Due			4/9
Practice Presentations		2h	5/6 & 5/13
Final Presentations		2h	5/17 & 5/24

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Preparatory activities for Faculty

1. Review and adapt templates for your program. Powerpoint presentations, Excel templates, and PDF readings are available for download in this box folder and via the red hyperlinks embedded throughout this module. Each presentation has notes to describe the content.
   - **a.** Choose the topic areas important for your trainees.
   - **b.** Feel free to adapt as needed for your program.

2. Decide how you will learn more about your trainees' research and project development experience and their topic area of interest:

Ideas:

- At the trainee orientation you can place large papers around the room with main competency/training areas, including research experience. Provide trainees with three stickers on which to write their names and colored pencils. They place the stickers on the areas in which they had experience. They use the colored pens to add their names to the area in which they would like to focus their projects.
- Develop a survey
- Ask informally

3. Develop a list of projects / ideas from faculty and projects that can be continued from the previous year to share with trainees and their mentor faculty early in their training.

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Generating a Project Question

1. Pre-Seminar Preparation

- *Faculty Note*: It may be helpful to provide mentors with a list of projects from prior years that trainees can continue and ideas/needs for new projects that will support the LEND. Different programs may have different ways of assigning projects.
  - *If you are going to use the project agreement form, this is a good time to review it with the trainees. They should work with their faculty mentor to complete the form while they are working on their abstracts.*
- *Trainee Assignment:*
  - **Discuss** project ideas and options with faculty mentor prior to the seminar – consider prior years' projects, interests, feasibility and project sustainment.
  - **Write** down 1-3 general ideas and bring them to the seminar.
  - **Read** this guide from the Center for Public Health Quality on implementing quality improvement, with special attention to developing an aim statement:
    - http://www.amchp.org/Transformation-Station/Documents/QI%20Step%20by%20Step%20Guide.pdf

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2. In Seminar Assignments/Activities

- **Materials**:
  - Slide deck : 01. Generating a project question
  - Literature Review Grid excel worksheet: 02. Lit review grid
  - Resource Review Grid excel worksheet: 03. Resource review grid
  - *Faculty Note*: It may be helpful to have examples of projects from prior years to use as examples throughout the seminar. If previous projects have been presented as posters these can be displayed around the seminar room as examples.

- **Section 1: Project overview** (slides 1-5)

  - If not done so already, during the first seminar, participants will discuss their research background, QI background or participation in community programs/lived experiences Trainees with little research experience will be paired with a trainee with previous research experience for each activity.

  - **Activity 1:** (Slide 4) Go around the room or get into groups and have trainees discuss the following questions:
    - What experience do you have with research or quality improvement projects? – this can include conducting research/QI, participating in research/QI, reading about research/QI
    - What experience do you have developing new projects or programs or participating in community-based projects or programs?

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- What experience do you have with assessment, measurement or testing?
- What kind of experience would be most helpful to you in a partner?

- **Section 2: Generate a project question** (slides 6-10)
  - **Activity 2:** (slides 6-7) Free Write Brainstorming Activity.
    - Set a timer for 2 minutes. Everyone writes (without stopping) possible research questions/ideas for LEND research project. Discuss in pairs for 5 minutes. Are there any themes to your ideas? (e.g., particular disorder, age, population of interest?). Then share your most promising idea with the rest of the group. Share the list of ongoing/available projects from your program if applicable.
  - **Activity 3:** (Slide 10) Draft a SMART Aim Statement for your project:
    - Give 2-3 minutes to develop an aim and then have people share aims and give feedback from different perspectives. This can be done in pairs/groups for people with similar interests.

- **Section 4: Literature review** (slides 11-14)
  - **Activity 4:** Literature Search*:*
    - Using the themes from Activity 2, generate keywords around your research interest and practice putting them into google scholar to find background literature to find out what research has already been conducted on that topic. Consider the following questions:
      - What have people already tried?
      - What questions still linger?
      - Are there limitations of what's been done previously that you want to address?
      - Are there measures that people seem to typically use?
    - Seminar facilitators will model creating a literature grid (in materials) by having a trainee volunteer to put their keywords into google scholar and begin filling out the grid on a screen that all trainees can see. Repeat with Resource grid for trainees completing a Resource review.
- **Section 5: Next Steps:** (slides 15-17)
  - Trainees with similar interests will be paired for work on leadership/research projects (with consideration for pairing trainees with varying levels of research expertise)
    - Trainees and faculty mentor will work together to review relevant literature around Trainees project
    - Trainees and family mentor will refine project hypotheses and goals

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How to read a research article

1. Pre-Seminar Preparation

- *Faculty Note*: This topic is discussion based (no slides needed). Trainees are expected to prepare the assignment ahead of time and discuss with your facilitation. It may be helpful to pair trainees with little research experience with a trainee with previous research experience prior to the assignment of this topic. In addition, the type of article Trainee's select for this assignment can be individualized to a specific topic or area based on your program.
- *Trainee Assignment:*
  - **Read** the following resources based on your level of knowledge:
    - *Tongue-and-cheek* column from *Science* Careers:
      - https://www.sciencemag.org/careers/2016/01/how-read-scientific-paper
    - *Novice:* Advice from *Science* Careers
      - https://www.sciencemag.org/careers/2016/03/how-seriously-read-scientific-paper
    - *Advanced:* Step-by-Step Guide to Reviewing a Manuscript from Wiley
      - https://authorservices.wiley.com/Reviewers/journal-reviewers/how-to-perform-a-peer-review/step-by-step-guide-to-reviewing-a-manuscript.html
    - *Infographic* from Elsevier:
      - www.elsevier.com/connect/infographic-how-to-read-a-scientific-paper
  - **Select** a treatment article about an evidence-based or promising intervention for an NDD. You may do this with a partner (recommended).
  - If you are not sure which interventions are evidence-based you look at this list for some example of evidence-base autism interventions: https://autismpdc.fpg.unc.edu/evidence-based-practices or this list for educational interventions for children and youth with disabilities: https://ies.ed.gov/ncee/wwc/FWW/Results?filters=,Children-Youth-with-Disabilities
  - You can use an article you read for another LEND seminar or activity or access research articles for free at: https://www.ncbi.nlm.nih.gov/pmc/
    - Once you have chosen and read an article, **be ready** to discuss the following questions:
      - **What was the objective of the paper?** Consider the overall purpose of the research or discussion. What is author(s) trying to learn or to demonstrate or discuss? What was their research question? What did they expect (i.e., what was their hypothesis)?
      - **What methods did the author(s) use to test the hypothesis?** What does the author(s) want to research or discuss, and how the

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researcher will the author(s) proceed in learning the answer to the question(s) in the objective?

- **What are the results of the study?** What has the author(s) discovered?
- **What are the conclusions/recommendations of the study?** Were any next steps or areas of future research suggested? What would be your next step for a study?
- **What is one question you would like to ask the author?**
- **What questions do you have for your colleagues about how to read a research article?**

2. In Seminar Assignments/Activities

- Seminar leader facilitates a discussion of the assigned readings
- Trainees **briefly** share the articles they read for the seminar and the seminar leader facilitates a discussion the following questions for each article:
  - **What was the objective of the paper?** Consider the overall purpose of the research or discussion. What is author(s) trying to learn or to demonstrate or discuss? What was their research question? What did they expect (i.e., what was their hypothesis)?
  - **What methods did the author(s) use to test the hypothesis?** What does the author(s) want to research or discuss, and how the researcher will the author(s) proceed in learning the answer to the question(s) in the objective?
  - **What are the results of the study?** What has the author(s) discovered?
  - **What are the conclusions/recommendations of the study?** Were any next steps or areas of future research suggested? What would be your next step for a study?
  - **What is one question you would like to as the author?**
- Seminar leaders may need to use a timer or other method to ensure all trainees have a chance to discuss their article. Alternatively, this could be done in a written format and volunteers could share specific articles for discussion.
- We recommend having trainees discuss any challenges they had with this activity so direct feedback and support can be provided to trainees who have not had experience reviewing research.

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Project Types: Quality Improvement and Research Frames

1. Pre-Seminar Preparation

- *Faculty Note*: It may be helpful to provide mentors with a list of projects from prior years that trainees can continue and ideas/needs for new projects that will support the LEND.
- *Trainee Assignment:*
    - **Bring** 1 article related to your project or research interest to the seminar. This can be a reading from another seminar or something independent. Choose which category of research design (descriptive, correlational, experimental) the article used. (Please note that not every design is included in the reading, so do your best)
    - **Read:**
        - Review a description of different research designs:
            - *Novice*: Chapter 2.2 in the Introduction to Psychology from the University of Minnesota
                - http://open.lib.umn.edu/intropsyc/chapter/2-2-psychologists-use-descriptive-correlational-and-experimental-research-designs-to-understand-behavior/
            - *Advanced:* Campbell & Stanley's classic book on Experimental and Quasi-Experimental Designs
                - https://www.sfu.ca/~palys/Campbell&Stanley-1959-Exptl&QuasiExptlDesignsForResearch.pdf
        - If you are *not* familiar with research design, also review:
            - *Novice*: Chapter 2.3 in the Introduction to Psychology from the University of Minnesota
                - http://open.lib.umn.edu/intropsyc/chapter/2-3-you-can-be-an-informed-consumer-of-psychological-research/
        - If you haven't already, read this guide from the Center for Public Health Quality on implementing quality improvement:
            - *Novice:* http://www.amchp.org/Transformation-Station/Documents/QI%20Step%20by%20Step%20Guide.pdf
        - *Additional Intermediate Resources:* Evaluation methods for QI projects
            - From BMJ Quality and Safety: https://qualitysafety.bmj.com/content/12/3/210
            - From AHRQ: https://www.ahrq.gov/cahps/quality-improvement/improvement-guide/4-approach-qi-process/index.html

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2. In Seminar Assignments/Activities

- **Materials**:
  - Slide deck: 04. Project Types

  - *Faculty Note*: It may be helpful to have examples of projects from prior years to use as examples throughout the seminar. If previous projects have been presented as posters these can be displayed around the seminar room as examples.

- **Section 1: Project types** (slide 1-2)

  - If not done so already, participants can discuss their research background, QI background or participation in community programs/lived experiences, as well as their interests for a project. Trainees with little research experience will be paired with a trainee with previous research experience for each activity.

- **Section 2: The Improvement Model** (slides 3-6)

- **Section 3: Using a research frame** (slides 7-13)

  - **Activity 1:** (slide 9) Research Article Share*:*
    - Have trainees share the articles they brought to seminar, explain how the article is related to their project interest, and answer the following questions:
      - What was the hypothesis the authors were testing?
      - What methods did they use to test this hypothesis?
      - What do you think the study design was? (ask for justification and feedback from other trainees as warranted)

- **Section 4: Next Steps** (slides 14-16)

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QI vs Research: When do we need IRB Approval?

1. Pre-Seminar Preparation

- *Faculty Note*: It may be helpful to pair trainees with little research experience with trainees with previous research experience. If trainees do need IRB approval for their projects OR are working on federally funded projects, they may need to complete CITI training. Please work with your faculty and trainees to determine if this is needed. You can likely obtain this through your institution. More information is available at: https://about.citiprogram.org/en/homepage/
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- *Trainee Assignment:*
  - **Bring** a copy of your project abstract/proposal
  - If you have never done CITI research training **read:**
    - *Novice:* http://theconversation.com/human-experiments-the-good-the-bad-and-the-ugly-39876
    - *Intermediate:* https://www.sagepub.com/sites/default/files/upm-binaries/34088_Chapter4.pdf
  - Review these flow charts and take a guess at whether you study needs IRB approval (don't panic, just try it):
    - https://www.hhs.gov/ohrp/regulations-and-policy/decision-charts/index.html

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2. In Seminar Assignments/Activities

- **Materials**:
  - Slide deck: 05. QI vs. Research

- **Section 1: Brief Project Update** (slide 1)

  - Trainees provide a 1 sentence update on their LEND project, highlighting what they are trying to learn with their project

- **Section 2: QI vs. Research: When is IRB approval needed?** (slides 2-12)

  - **Activity 1:** (slide 12) Small Group Project Abstract share and discussion

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Measurement

1. Pre-Seminar Preparation

- *Faculty Note*: It may be helpful to know what resources are available at your institution to support trainee projects (e.g., library subscription access, statistical software, statistical support)
- *Trainee Assignment:*
    - **Read** the follow chapters on measurement:
        - *Novice*: Modules on Reliability and Validity from the "Understanding Assessment" guide from the Center for Applied Linguistics. Note, although the modules are designed for foreign language educators, think about how they would apply to your project:
            - http://www.cal.org/flad/tutorial/index.html
            - http://www.cal.org/flad/tutorial/reliability/3intro.html
            - http://www.cal.org/flad/tutorial/validity/4intro.html
        - *Intermediate:* Research Methods in Psychology by the University of Minnesota: https://open.lib.umn.edu/psychologyresearchmethods/chapter/5-1-understanding-psychological-measurement/
        - *Intermediate:* Reliability and Validity of Measurement by Price, Jhangiani, & Chiang: https://opentextbc.ca/researchmethods/chapter/reliability-and-validity-of-measurement/
    - **Be ready to talk** about the outcomes of interest for your project and how you will measure them.

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2. In Seminar Assignments/Activities

- **Materials**:
    - Slide deck: 06. Measurement

- **Section 1: Brief Project Update** (slide 1)

- **Section 2: Measurement** (slides 2-6)

    - **Activity 1** (slide 6): Trainees practice explaining their main project question, how they are planning to answer their main project question, and how they will measure whether their project was successful

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Introduction to Data Analysis for Quantitative and Qualitative Methods

1. Pre-Seminar Preparation

- *Faculty Note*: This slide deck contains quantitative and qualitative examples from LEND trainees at the Northern California LEND, you may want to replace those slides with examples from your own LEND and can have trainees present previous research they have worked on.
- *Trainee Assignment:*
  - **Be prepared** to discuss:
    - Updates on your project - including IRB status (if relevant), data collection status, data analysis plan, & next steps
  - **Read**:
    - *Novice*: Quantitative vs Qualitative Infographic: 07. Quant vs Qual
    - *Intermediate*: Guide to quantitative and qualitative analysis from socialcops: https://blog.socialcops.com/academy/resources/qualitative-quantitative-data-analysis-methods/
    - *Advanced*: These resources provide very detailed information about specific analyses. Read as needed for your project.
      - Kaplan (2004). The SAGE Handbook of Quantitative Methodology for the Social Sciences. Sage Publications: Thousand Oaks, CA:
        - 08. SAGEHandbook
      - Mason (2002). Qualitative Researching 2nd Edition. Sage Publications: Thousand Oaks, CA: http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Mason_2002.pdf

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2. In Seminar Assignments/Activities

- **Materials:**
  - Slide deck: 09. Intro to Data Analysis for Quant and Qual
- **Section 1: Project Steps** (slide 2)
- **Section 2: Intro Quantitative and Qualitative Methods:** (slides 3-14)
  - **Quantitative Methods and example** (slides 5-8)
  - **Qualitative Methods and example** (slides 9-14)
- **Section 3: Project Review and Next Steps** (slide 15-16)

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- **Activity 1**: Trainees share the aims and measurement plan for their project. Trainees planning similar analytic approaches (e.g., quantitative, qualitative, mixed-methods) are grouped together to develop step-by-step plans for the next steps for data analysis for each project.

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Research Ethics

1. Pre-Seminar Preparation

- *Faculty Note*: Some of the readings and information in the module were adapted from the "Ethics in Neurodevelopmental Disabilities" curriculum on the LEND Moodle, developed by Kruti Acharya, MD, Laura Carpenter, PhD, and Tyer Reimschisel, MD.
- *Trainee Assignment:*
  - **Read**:
    - *Novice:* One-page general guidelines for research ethics from the Norwegian National Research Ethics Committees:
      - 10. General ethics guidelines
    - Book chapter on ethical considerations:
      - *Novice:* Acharya, K., Lewis, MH, Smith PJ. Ethical Considerations. In: Batshaw ML, Roizen NJ, Lotrecchiano, GR. *Children with Disabilities*, Seventh Edition. Paul H Brookes, 2013: 681-690. *Overview of common ethical issues related to disabilities*.
        - Particularly p.681-683 for an ethics overview and 688-689 for research ethics in children with disabilities
        - 11. Ethical considerations
    - Guidelines and ethical considerations for interviewing children and young people with learning disabilities
      - *Intermediate/Advanced:* Lewis & Porter (2004). Interviewing children and young people with learning disabilities: guidelines for researchers and multi-professional practice. British Journal of Learning Disabilities, 32, 191–197. (12)
      - 12. Lewis Porter, 2004

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2. In Seminar Assignments/Activities

- **Materials**:
  - Slide deck: 13. Research Ethics
- **Section 1: Key Terms** (slide 2)
  - **Activity 1**: Trainees share ethical concerns they have faced in their projects thus far and discuss how they have handled the concerns in an ethical manner. If trainees report that they haven't faced any ethical concerns in their projects yet, they can also discuss their response ethical situations discussed in the readings or that have come up in other situations working with neurodevelopmental disorders.

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- **<u>Section 2: Case discussions:</u>** (slides 3-6)
    - **Activity 2:** Trainees discuss hypothetical ethical situations in research with persons with NDDs

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Data Analysis and Interpretation

1. Pre-Seminar Preparation

- *Faculty Note*: This slide deck contains data examples from LEND trainees at the Northern California LEND, you may want to replace those slides with examples from your own LEND. You may need to remind trainees to keep updates brief to allow time for data discussion.
- *Trainee Assignment:*
  - **Be prepared** with a 5-10 min of project update including either your data analysis plan or a description of how you analyzed the data. This can include any output or preliminary results you have questions about or would to discuss with the group
  - **Contact** seminar leaders with specific analysis questions that you would like to discuss.

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2. In Seminar Assignments/Activities

- **Materials**:
  - Slide deck: 14. Data analysis and interpretation

- **Section 1: Timeline and Project Update** (slide 2-3)

- **Section 2: Results and data presentation examples:** (slides 4-16)

  - **Activity 1:** Trainees will think about the data that they have and how they might make a graph or table to present that data. Then trainees will share with the group or with a partner.

- **Section 3: LEND Collaboration** (slide 17)

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Presenting your findings

1. Pre-Seminar Preparation

- *Trainee Assignment:*
    - **Think about:**
        - *The best talk you have ever heard*
            - **Write down**: What characteristics stand out?
        - *The worst talks you have heard*
            - **Write down**: What characteristics stand out?
    - **Watch** Steve Jobs give a talk (or a similar TED talk)

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2. In Seminar Assignments/Activities

- **Materials**:
    - Slide deck : 15. Presenting
    - What makes a good talk checklist: 16. Good talk
- **Section 1: How do you feel about giving a talk** (slide 2)
    - **Activity 1:** Trainees discuss how they are feeling about giving a talk and presenting their results and project
- **Section 2: Characteristics of best and worst talks:** (slide 3)
    - **Activity 2:** Trainees share the characteristics of the best and worst talks they have heard
- **Section 3: Characteristics of giving a good talk:** (slides 4-21)
- **Section 4: What can you do?:** (slide 22)

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