Develop and Defend a Research Proposal

GAC033-aligned proposal support; the study is proposed, not run for this task.

Project Based Learning and Research Methods

- Narrow a topic into a **driving question** and then a **research question** .
- Choose a method: an **experiment** , a **survey** , an **observation** or a **research interview** , and plan its **ethics** .
- Search **databases** and write a **literature review** .

Project Based Learning and Research Methods (2)

- State the **limitations** and a realistic **timeline** .
- Give and receive **peer review** , then give a **presentation** and a **defence** of the proposal.

Introducing PBL: the driving question

- A **driving question** opens an investigation. It cannot be answered by a search, and it has no single obvious answer.
- Good driving questions are specific, researchable and arguable.
- Start from something you have noticed yourself, not just a topic you were given.

Inquiry: the research methods

- An **experiment** changes one thing and measures the effect: it can test a cause.
- A **survey** measures what people report, for many people quickly.
- An **observation** records what people actually do.

Inquiry: the research methods (2)

- A **research interview** explains why people act or think as they do, in depth, for a few people.
- **Ethics**: informed consent, anonymity, the right to withdraw, and no risk of harm. A proposal without an ethics section is incomplete.

Inquiry: gathering information

- Use **databases** and library catalogues, not a search engine alone.
- Keep a search log: what you searched for, where, and what you found. It is evidence of your method and saves repeated searches.
- Record every citation as you go.

Inquiry: the research question

- The **research question** is the **driving question** made precise: the variables named, the population defined and the time fixed.
- Write the **null hypothesis** too: what "no effect" would look like. If you cannot state it, the question is not yet measurable.
- Define every key term. "Interruption" needs a definition before anyone can count one.

Synthesis: literature

- A **literature review** says what is already known, where sources agree and disagree, and where the gap is that your study would fill.
- Organise it by idea, not by source: one paragraph per idea, citing the sources that support it.
- The gap justifies your study. Without one, the proposal has not explained why the study is needed.

Synthesis: the proposal

- **Limitations** are written before the study: say what your design cannot show. This makes the rest more believable.
- The **timeline** must fit the weeks you actually have.

Critique: peer review

- In **peer review** you read another team's proposal as a critical friend.
- Check the method against the question: would this design actually answer it?
- Make feedback specific and about the work: "The sample is only your own class, so the claim about the whole school does not follow."
- Receiving critique well is also assessed. Changing one weak point is better than defending every point.

Finalize and share: the proposal and presentation

- Present the question first, then why it matters, then the method: an audience that does not understand the question cannot judge the method.
- Prepare for the **defence**. The hardest questions are usually about the sample, the measurement and alternative explanations.
- Answer with the limitation, not around it: "That is a real weakness; here is why the result would still be useful."

Worked example: from driving question to research question

- Population and sample: 20 volunteers from Grade 11 at our school.
- Variables: phone placement (on the desk, or in another room) is changed; time in minutes from starting homework to the first interruption is measured. An interruption is defined as stopping work to use any device for more than 10 seconds.
- Design: each student does two evenings in each condition, in a random order, and records times on a log sheet.
- **Research question**: "For Grade 11 volunteers at our school, is the mean time to first interruption different when the phone is in another room?" **Null hypothesis**: "There is no difference in mean time between the two conditions."

Worked example: a peer review and a defence

- Is it about the work? Yes: it names a measurement weakness.
- A team's **defence**: "That is a real weakness. We will use a phone-free kitchen timer started at the first page, and a partner will check five sessions. Self-recording may still be imperfect, but the error should be similar in both conditions, so a difference between them would still be informative."
- The limitation goes into the proposal's **limitations** section.

Common errors

- A question too broad to measure.
- Choosing the method before the question.
- Leaving out **ethics** or consent.

Common errors (2)

- A **literature review** that summarises one source per paragraph.
- Writing no **null hypothesis**.
- Defending every point in **peer review** instead of improving one.

Key terms

- **research proposal**: A plan stating a question, why it matters, the method and its limits.
- **research question**: A precise question with named variables, population and time.
- **null hypothesis**: The statement that there is no effect or no difference.
- **ethics**: The rules that protect participants, such as consent and anonymity.

Check yourself

- Narrow "sleep" into a researchable question.
- Which method would you use to find out why students choose a university: a **survey**, an **experiment** or an interview? Why?
- Write the **null hypothesis** for "Do students who eat breakfast score higher on a morning quiz?"