Course Companion

GAC Study and Communication Skills

Every topic handout in one volume

全部专题讲义合集

exercises.lol

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GAC003 Study Skills for Independent Learning

GAC Study and Communication Skills

Study Skills for Independent Learning

In 1885 the German psychologist Hermann Ebbinghaus published *Memory*, the result of years of testing himself. He learnt lists of nonsense syllables such as "DAX" and "BOK", then measured how long he needed to relearn them later. Much was lost within the first hour and the first day, but lists he had reviewed across several days were relearnt far faster. Planned review, not more time on one evening, made the difference. University study depends on the same discovery: you plan your own time, check your own learning and return to material before it fades. This module (GAC003) teaches those habits.

In this module you will:

- Keep a **reflective learning journal** 反思学习日志 and use **reflection** 反思 to improve.
- Use a **semester planner** 学期计划表 and a weekly **schedule** 时间表.
- Understand how university teaching, **academic integrity** 学术诚信 and **referencing** 引用规范 work.
- Practise **independent learning** 自主学习 with proven study strategies.
- Write a truthful **curriculum vitae (CV)** 个人简历 and **personal statement** 个人陈述.

Your centre's assessment brief sets the required documents, dates and weights. Follow it whenever it differs from the examples here.

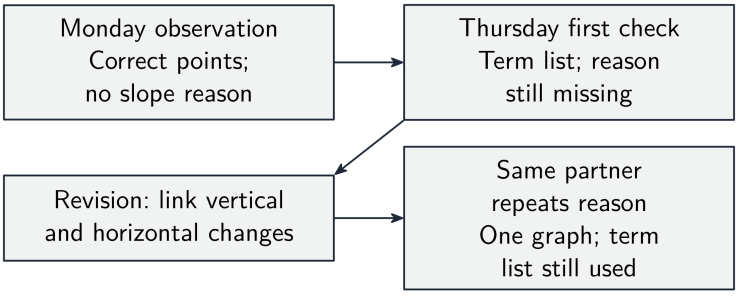
Reflective learning

Reflection links what happened to a better next step. A useful journal entry has three parts:

- **Describe** 描述: the task, what you did and the conditions. "I plotted four points but could not explain in English why one segment was steeper."
- **Evaluate** 评价: what the result shows, and what you still do not know. Was the problem the maths, the vocabulary, or both?
- **Plan** 计划: one change, a way to check it, and when you will check.

Write about actions and evidence, not labels. "I am bad at graphs" cannot be improved; "I cannot yet explain gradient in words" can. A **learning style** 学习风格, such as preferring diagrams, is a preference, not a limit: research has not shown that teaching to a preferred style improves results. Likewise, a class discussion of **multiple intelligences** 多元智能 can suggest different ways to practise, but it is not a reason

to avoid a required task.



A practice check leads to a revised explanation and a bounded result.

In the example, Chen's partner could find the steeper segment but not repeat the reason. Chen added the link between vertical and horizontal change to his explanation, and the partner then repeated it correctly. His journal can now record real progress on one skill, with support.

Time management I: planning the semester

- Enter every fixed **assessment deadline** 考核截止日期 and commitment first.
- Break each assignment into tasks, and note which must come first: data before a draft, feedback before revision.
- Work backwards to choose a **start date** 开始日期. A report due at the start of week 10 that needs three weeks of work must begin by the start of week 7.
- Look for **collisions** 冲突: tasks that need the same hours, not just deadlines in the same week.



A wall calendar: mark every deadline for the semester first, then plan backwards from each one

A task is **urgent** 紧急 when it must be done soon; it is **important** 重要 because of its consequences for learning, marks or other people. Do important work before it becomes urgent. Leave a **buffer** 缓冲时间 before each deadline, not after it, and if the work does not fit, tell your teacher early.

Time management II: the working week

- A **to-do list** 待办清单 names tasks; a schedule puts each one in a time and place.
- For each study block, write the first action, the materials needed and how you will check the result.
- End each block by writing the next step, so the next session starts quickly.

Procrastination 拖延 means delaying something you intended to do. It often starts with an unclear first step or missing materials, so make the first step small and concrete: "open the brief and underline the three questions", not "work on the essay". A timed block, such as 25 or 40 minutes, can help, but the measure of success is the output, not the timer.

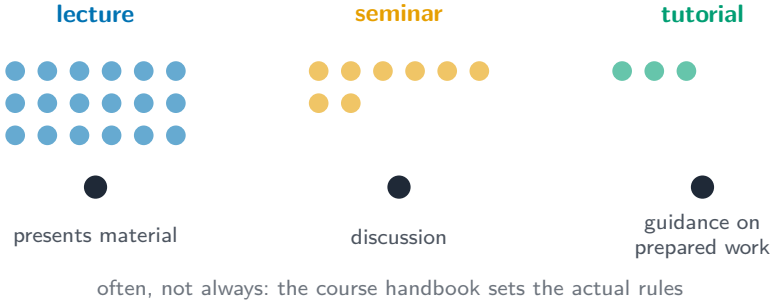
The higher education study environment

University teaching gives you less direction and more responsibility.



A university lecture hall: lectures give the outline, and most learning happens in your own study afterwards

- A **lecture** 讲座 presents material to a large group; a **seminar** 研讨课 is a smaller discussion, usually of prepared reading; a **tutorial** 辅导课 gives close guidance on your own work. Your handbook sets the actual rules for each.
- Academic integrity means doing honest work, using only permitted help and acknowledging sources. **Plagiarism** 抄袭 is presenting another person's words or ideas as your own. Copying with a citation can still break the rules if the task requires your own words.
- Referencing links each **citation** 引用 in your text to a full entry in a **bibliography** 参考文献, in the required style.
- A **transcript** 成绩单 records your results; a **grade point average (GPA)** 平均绩点 summarises them on a stated scale.
- **Academic advisers** 学业导师 help with course choices and problems. Ask specific questions, early.



Typical sizes and purposes; the handbook sets the real rules.

No comment on a draft does not mean it is correct. Compare the draft with the marking criteria and ask about one precise point.

Independent learning

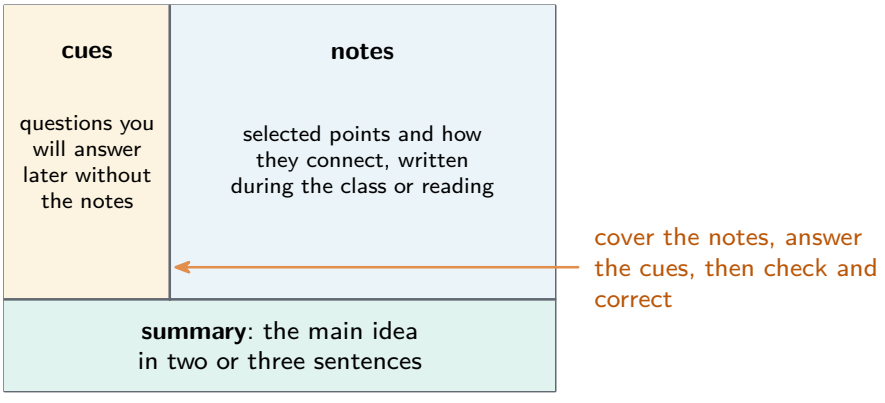
Independent learning means you take charge of preparing, practising and checking, using the support that is allowed.

- Set a **learning goal** 学习目标 you can check. "Study science" cannot be checked. "Explain the water cycle without notes, then compare my account with the diagram" can.
- Preview the reading before class and write down what is unclear.
- Use the **library and databases** 图书馆与数据库. Check each source's author, date and evidence; easy to find does not mean reliable.
- In **group study** 小组学习, explain ideas to each other, then check the explanations against course material. A confident explanation can still be wrong.

Effective study strategies, and the CV

Research since Ebbinghaus points to a few strategies that work for most learners:

- **Active recall** 主动回忆: try to answer from memory before looking. Check, and correct mistakes at once.
- **Spaced practice** 间隔复习: return to material over several sessions, for example after one day, one week and one month.
- **Note-taking** 笔记: record main points and how they connect, not every word. The **Cornell method** 康奈尔笔记法, developed by Walter Pauk at Cornell University, divides the page into notes, cue questions and a summary.



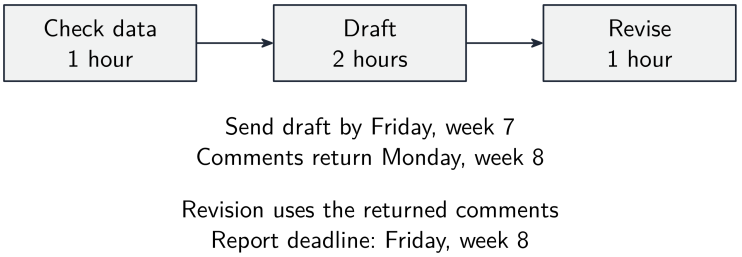
The Cornell page turns notes into a self-test.

A CV lists your education, experience and skills in the requested format. Include only qualifications you hold, and make clear what you did yourself in team projects.

A personal statement links your interest to specific experience and explains the next step you want to take.

Worked example: planning backwards from feedback

Mei's report needs one hour to check data, two hours to draft and one hour to revise. A draft sent by Friday of week 7 gets comments on Monday of week 8. The report is due on Friday of week 8.

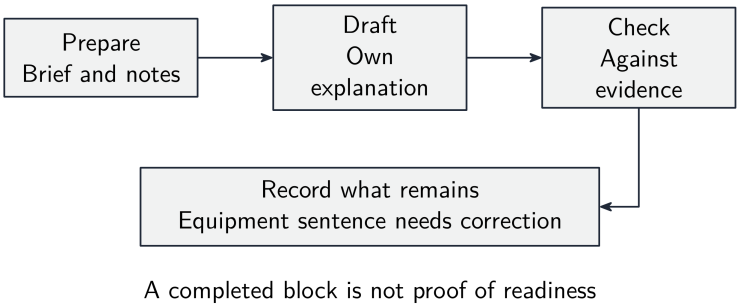


The report's order and feedback dates constrain when revision can occur.

- The order is fixed: check data, draft, send, receive feedback, revise.
- So the data check and draft (3 hours) must be done by Friday of week 7; the revision (1 hour) fits between Monday and Friday of week 8.
- Starting the draft in week 8 would still meet the deadline but miss the feedback, which is the main chance to improve the mark.

Worked example: a 45-minute block

Arun has a 45-minute slot in the library to write one paragraph of a lab report.



The block connects preparation and writing to a check and a recorded next action.

- Plan: 5 minutes to reread the brief and notes, 15 to draft, 10 to check against the notes, 5 to revise, 5 to write the next action, 5 for a break: $5+15+10+5+5+5 = 45$.
- At the check, one sentence about the equipment differs from his notes. He corrects it and checks again.

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- The paragraph is ready because it was checked, not because the time ran out. His next action: "Write the method paragraph; check the list of equipment first."

Common errors

- Writing journal entries that describe but never plan a change.
- Planning only deadlines, not the tasks and their order.
- Leaving the buffer after the deadline instead of before it.
- Rereading notes instead of testing yourself.
- Copying text with a citation when the task requires your own words.
- Claiming a whole team's result as your own on a CV.

Key terms

reflective learning journal: A regular record of what you did, what you learnt and what you will change.

reflection: Thinking about an experience to decide how to improve.

semester planner: A calendar of tasks and deadlines for the whole term.

schedule: A plan that puts tasks into particular times and places.

procrastination: Delaying a task you intended to do.

academic integrity: Honesty in study, including acknowledging all sources.

plagiarism: Presenting another person's words or ideas as your own.

referencing: The required way of showing where ideas and quotations came from.

independent learning: Taking responsibility for your own preparation, practice and checking.

active recall: Trying to remember an answer before checking it.

spaced practice: Reviewing material in several sessions with gaps between them.

Check yourself

- Rewrite "I am bad at essays" as a useful journal entry.
- A project due on Friday of week 12 needs two weeks of work and a draft for feedback, which takes three days. When should you start?
- Which works better for a test next month: rereading notes three times tonight, or answering cue questions on three different days?

Answers: for example, "My paragraphs make claims without evidence; next week I will add one quotation to each and ask my teacher to check one paragraph." By the start of week 10, earlier if the draft needs to go in before the feedback cut-off. Answering cue questions on different days (active recall and spaced practice).

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GAC006 Business, Science, Social Science and Psychology I: Communication Skills

GAC Study and Communication Skills

Communication: Understanding Yourself, Others and Teams

In 1965 Bruce Tuckman, a psychologist working for the US Navy, read about fifty studies of small groups: therapy groups, training groups, laboratory teams. He noticed a common pattern and summed it up in four rhyming words: forming, storming, norming and performing. In 1977 he and Mary Ann Jensen added a fifth, adjourning, for when a group ends. Tuckman's stages are now taught to students and managers worldwide, though real teams do not always follow them in order. This module (GAC006) is about the communication that makes teams work: listening, asking, giving feedback, and working well with people who differ from you.

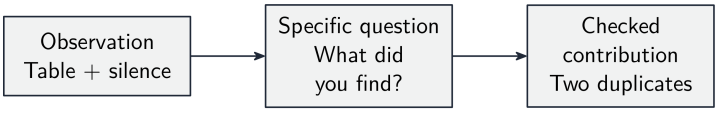
In this module you will:

- Practise in a **role play** 个人角色扮演 and a **group role play** 小组角色扮演.
- Keep a **logbook** 记录本 of dated events, evidence and next steps.
- Understand a **personality trait** 人格特质, **self-awareness** 自我认知 and **empathy** 同理心.
- Use **active listening** 积极倾听, good questions and useful **feedback** 反馈.
- Describe how teams develop, and work across differences of **culture** 文化.

Your course may also include an **in-class test** 课堂测验 and **coursework** 平时作业. Check your centre's brief for the activities, dates and criteria that actually apply.

Understanding self and relationships with others

- A personality trait is a fairly lasting tendency in how a person thinks, feels or behaves. One quiet meeting does not show a trait.
- **Introversion and extraversion** 内向与外向 describe a range: some people turn more inwards, others more towards social contact. Neither decides what role a person must take in a team.
- Self-awareness means noticing your own reactions and habits. Write observations, not verdicts: "I interrupted twice when the discussion was fast; next time I will note my point and wait."
- **Values** 价值观 are what a person considers important. In a task, ask which priorities matter: speed, accuracy, fairness.
- Empathy means trying to understand another person's view. It does not mean you must agree.



Reason for silence remains unknown
One checked finding does not prove every future answer

A specific question invites a contribution that can be checked, without inventing a reason for silence.

In the example, Wei assumed that Chen, silent for twenty minutes, had nothing to add. A specific question ("Chen, you checked the totals. What did you find?") brought out two duplicate entries. The group learnt something useful without guessing why Chen had been silent.

The skills of effective communication

- Active listening means following the message and checking you understood it: summarise the point and invite correction, or ask a related question.
- **Non-verbal communication** 非语言沟通 includes gesture, posture, expression and distance. Its meaning depends on the person and the culture, so do not read intentions from one gesture.
- **Open questions** 开放式问题 invite a longer answer: "What is blocking the draft?" **Closed questions** 封闭式问题 ask for a short, fixed answer: "Can you send the file by 16:00?" Choose the kind that gets the information you need.
- **Assertiveness** 自信表达 means stating your need clearly while respecting others. A **passive** 被动 response leaves the need unsaid; an **aggressive** 攻击性 one attacks the person.
- Useful feedback names specific work and a change that can be checked: "The graph's vertical axis needs a unit."

Understanding groups and teams

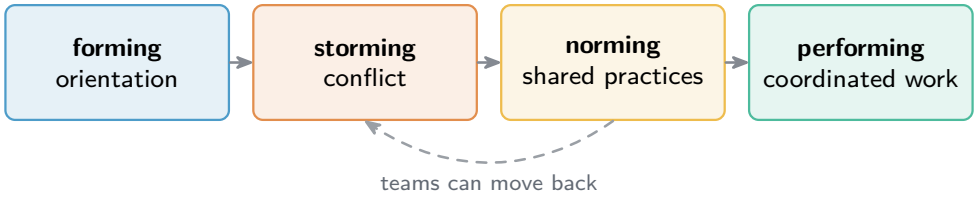
A team combines everyone's work into one result. For each task, agree who does it, what they need, when they hand it over and how it will be checked.

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Students in a group discussion: a team works when everyone has a role and everyone is heard

- In Tuckman's model, a team moves through **forming** 组建期 (getting to know the task), **storming** 磨合期 (disagreement), **norming** 规范期 (agreeing how to work) and **performing** 执行期 (working smoothly). Teams can move back a stage when something changes.
- **Team roles** 团队角色 are contributions such as generating ideas, recording decisions, checking evidence and coordinating. People can share or change roles.
- **Leadership styles** 领导风格: **autocratic** 专断型 (the leader decides), **democratic** 民主型 (members share decisions), **laissez-faire** 放任型 (members have wide freedom). The best style depends on the task, time and expertise.
- **Ground rules** 基本规则 set practical arrangements early: meeting times, how decisions are recorded, and how to report a delay.
- **Conflict** 冲突 about the task can be useful if it stays specific, respectful and based on evidence.



name a stage from what you observed; never invent conflict to reach one

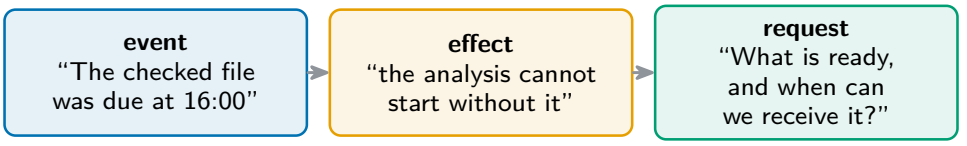
Labels for what you observe, not a timetable every team follows.

Life skills: culture, and working with difference

- Culture includes shared practices and expectations, but individuals within any culture differ.
- **Cultural diversity** 文化多样性 can bring new experience and questions to a team.
- A **stereotype** 刻板印象 applies a belief about a group to one person. It tells you nothing reliable about that person.
- **Directness** 直接程度 varies. "That could be difficult" may mean a real obstacle or polite refusal, so ask what makes it difficult.
- **Adapting** 调整 means agreeing a shared way of working: turns to speak, time to prepare, how decisions are recorded.

Worked example: raising a missing handover

A checked survey file was due on Monday at 16:00. It has not arrived, and the analysis cannot start without it.



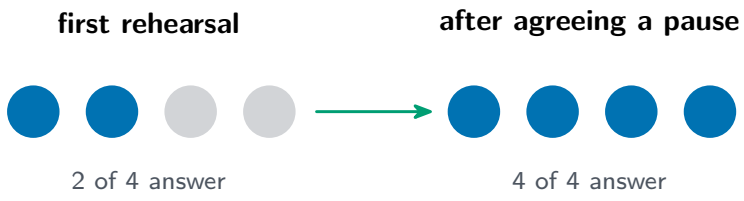
left out: "lazy", "the whole project is ruined"

Event, effect, request: nothing about the person.

- Event: "The checked file was due at 16:00."
- Effect: "The analysis cannot start without it."
- Request: "What is ready, and when can we receive it?"
- The message is assertive but not aggressive: it says nothing about the person's character, and it asks for a plan instead of blaming.

Worked example: changing how a group speaks

In a rehearsal, two students answer every question at once and interrupt the others. The two quieter students say they need time to read each question.



still open: one figure in the answers is wrong; check it and review again

Participation improved; accuracy still needs checking.

- The group agrees to share out question areas and to pause before each answer.
- In the next rehearsal, all four students answer at least one question: participation has improved.
- One answer still contains a wrong figure, so accuracy needs checking. The group corrects it and reviews again. Speaking loudly did not prove expertise, and quietness did not prove a lack of it.

Common errors

- Turning one observation into a personality label.
- Reading intentions from a single gesture.
- Using a closed question when you need an explanation.
- Giving feedback about the person rather than the work.
- Treating Tuckman's stages as a timetable.
- Explaining a teammate's behaviour by a stereotype.

Key terms

personality trait: A fairly lasting tendency in thought, feeling or behaviour.

self-awareness: Noticing your own reactions, habits and limits.

empathy: Trying to understand another person's view and feelings.

active listening: Following a message closely and checking you understood it.

assertiveness: Stating your needs clearly while respecting others.

feedback: Specific information about work that shows how to improve it.

ground rules: Agreements a team makes about how it will work.

stereotype: A fixed, general belief about a group, applied to an individual.

Check yourself

- Rewrite “You never send anything on time!” as an assertive message.
- Is “Did you finish?” an open or a closed question? Give an open version.
- A team argues about its method in week 2 and agrees a plan in week 3. Which Tuckman stages does this show?

Answers: for example, “The data was due yesterday and I can’t start the analysis. When can you send it?” Closed; “What is left to finish?” Storming, then norming.

GAC031 Social Emotional Learning through Project Based Learning

GAC Study and Communication Skills

Social and Emotional Learning through Project Based Learning

In 1918 William Heard Kilpatrick, a professor at Teachers College, Columbia University in New York, published a short essay called "The Project Method". He argued that pupils learn most when they carry out a "wholehearted purposeful activity": planning, doing and judging something that matters to them, instead of only listening. His teacher, the philosopher John Dewey, had argued the same: we learn by doing and then reflecting on what happened. In this module (GAC031) you will carry out a **project** 项目 that improves something real in your school, and use it to practise the social and emotional skills that every other module depends on.

In this module you will:

- Learn the five competencies of **social and emotional learning (SEL)** 社会情感学习.
- Plan a project from a **driving question** 驱动性问题 for a real **user** 用户.
- Build a **prototype** 原型, test it and improve it by **iteration** 迭代.
- Show **collaboration** 协作 and **perseverance** 坚持, and record the evidence.
- Present the result and write an honest **reflection** 反思.

You are assessed on the project, on your reflection and on coursework. Your centre's brief gives the exact tasks and criteria.

Introduction to social emotional learning

SEL is the set of skills for managing yourself and working with others. A widely used framework, from the US organisation CASEL, names five competencies:

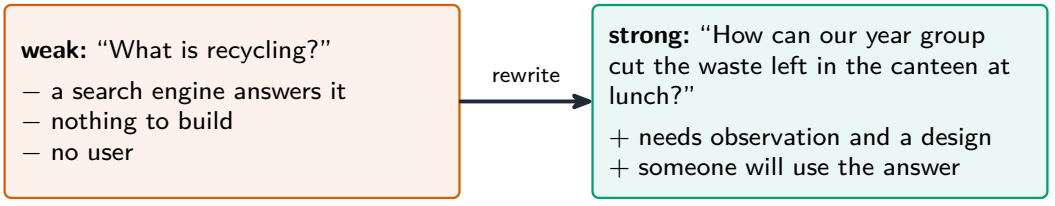
- **Self-awareness** 自我认知: recognising your feelings, strengths and limits.
- **Self-management** 自我管理: controlling impulses, managing stress and keeping to plans.
- **Social awareness** 社会意识: understanding other people's views, including people from different backgrounds.
- **Relationship skills** 人际技能: communicating, cooperating and resolving conflict.
- **Responsible decision-making** 负责任的决策: making choices that consider consequences for yourself and others.

These are skills that can be practised, not fixed parts of personality. You have met them already: the semester planner of GAC003 is self-management; the team work of

GAC006 is relationship skills.

Project planning

- **Project based learning (PBL)** 项目式学习 starts from a driving question that cannot be answered by looking it up.
- The answer must be something you make: a guide, an event, a system, a redesign.
- Identify your user, and ask them what they need before you design anything.
- Plan backwards from the date you will share the result, as in GAC003.



Rewrite a look-it-up question into one you answer by making something

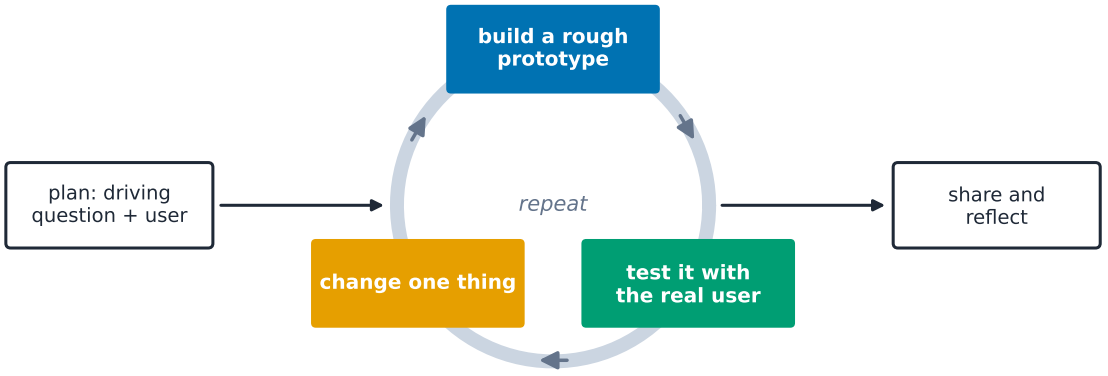
"What is recycling?" fails: a search engine answers it, there is nothing to build and no one to use it. "How can our year group cut the waste left in the canteen at lunch?" works: it needs observation, a design and people who will use the result.

Design and develop

- Build a rough prototype early. A simple version that people can try teaches you more than a perfect plan.
- Measure something before you change anything, so you can tell later whether your change worked.
- Record who did what as you go: collaboration is assessed by each person's contribution.
- Expect the first version to fail in a way you did not predict. Finding that out is the reason for building it.

Revise and update

- Feedback from the real user drives the project. Ask what did not work and why, not just whether they liked it.
- Iteration means changing one thing at a time and testing again, so you know which change helped.
- Perseverance shows in how you respond to a failed trial: keep the evidence of the problem, the change and the next test.



Keep evidence of each problem, revision and later test: it is what the reflection is built on.

The project loop: build, test with the user, change one thing, repeat

Share, present and reflect

- Present to the people the project was for, not only to the teacher.
- Reflect on the competencies you used: which one you relied on, which you avoided, and what you would do differently.
- A reflection that reports only success tells the reader nothing. Name a real difficulty, the evidence for it, and what you changed.

Worked example: measuring a change

A group's driving question is the canteen one above. (The numbers are a fictional example.)

- Baseline: they weigh the food left on plates for five lunches: 60 kg, or 12 kg per day.
- Version 1: posters asking students not to waste food. The next five days average 11.5 kg: almost no change. Students said they had not noticed the posters.
- Version 2: one change only, a "small portion" option at the counter. The next five days average 9 kg.
- Result: $\frac{12-9}{12} = 25\%$ less waste per day than the baseline. Since only one thing changed between versions, the portion option is the likely reason, though other changes in the same weeks (weather, menu) should be checked.

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Worked example: an honest reflection

Weak: "Our project was a great success and I learnt a lot about teamwork."
Strong: "I am good at planning (self-management): our timeline held. I avoided disagreement (relationship skills): when I thought the posters would not work, I said nothing, and we lost a week. In the next project I will raise a doubt at the meeting where the decision is made, with a reason."

- The strong version names two competencies, gives evidence for each and states a specific change.
- It admits a weakness, which is exactly what the reflection is marked on.

Common errors

- A driving question that can be answered by a search.
- A project with no real user.
- Changing several things at once, so you cannot tell what worked.
- Asking users "Did you like it?" instead of "What did not work?"
- A reflection that lists only successes.

Key terms

social and emotional learning (SEL): Learning the skills to manage yourself and work with others.

driving question: An open question that a project answers by making something.

prototype: An early, simple version of a product, made to be tested.

iteration: Repeating a cycle of testing and changing one thing at a time.

collaboration: Working with others towards a shared result.

perseverance: Continuing to work on something despite difficulty.

reflection: Thinking about an experience to decide how to improve.

Check yourself

- Is "What causes stress?" a good driving question? Rewrite it.
- Why should you change only one thing between versions?
- Which SEL competency do you use when you keep to a plan despite distractions?

Answers: no: it can be looked up; for example, "How can we help Grade 11 students prepare for exam week with less stress?" So that you know which change caused the result. Self-management.

GAC032 Education and Career Navigation: Finding Your Pathways

GAC Study and Communication Skills

Education and Career Navigation: Finding Your Pathways

In 1908 Frank Parsons, a teacher and social reformer, opened the Vocation Bureau in Boston to help young people choose work. His book *Choosing a Vocation*, published in 1909, a year after his death, gave a three-step method: understand yourself (your abilities, interests and limits); understand the work (its requirements, pay and prospects); and reason carefully about the match between the two. More than a century later, career advisers still use versions of his method. This module (GAC032) applies it to your own next step: choosing courses and universities, and applying to them.

In this module you will:

- Build a **personal profile** 个人档案 of your interests, strengths and experience.
- Find each **support** 支持 and **barrier** 障碍 on your path.
- Write an **education and career plan** 教育与职业规划 that works back from a **goal** 目标.
- Choose courses by **fit** 匹配度 and check their **entry requirements** 入学要求.
- Practise the **interview** 面试 and draft a **college application essay** 大学申请文书.

These documents will be used for real: the profile becomes your personal statement, and the plan becomes what you say at interview. A plan based on interests you really have is easier to defend than one based on an impressive job title.

Create my profile

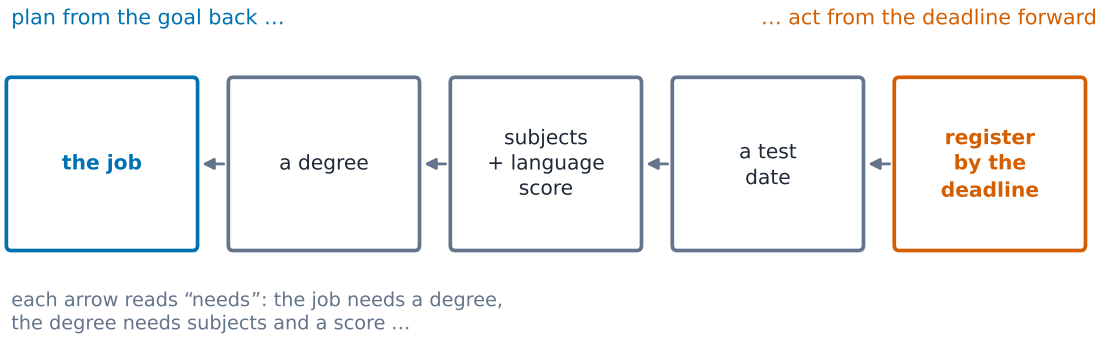
- Collect your **interests** 兴趣, **strengths** 优势, **values** 价值观 and **experience** 经历 in one place.
- Give evidence, not adjectives: "I fixed the school's printer queue" says more than "I am good with technology".
- **Skills** 技能 transfer between subjects. A student who ran a fundraiser has shown planning and teamwork, whatever they study next.
- Ask two people who know you well to add to the profile; they will notice strengths you take for granted.

Build up your supports and knock down your barriers

- A support makes the path easier: a teacher who will write a reference, a relative who studied abroad, a scholarship.
- A barrier is in the way: cost, a language score, a missing subject, a deadline you did not know about.
- Most barriers have a workaround if found early: a foundation year, a test retake, a later intake. Found late, they can close the path.
- Write both lists down. A plan that names its barriers and how to deal with them is what an interviewer means by "realistic".

Connect your profile to your goals

- A goal must be specific enough to plan towards. It can be a direction ("environmental science in the UK") rather than one job title.
- Work backwards: the job needs a degree; the degree needs certain subjects and a language score; the score needs a test date; the test needs registration by a deadline.
- Check the entry requirements of real courses now. They are published, and one of them may change what you do this year.



Plan from the goal back; act from the first deadline forward

Find good fit colleges

- Fit has several parts: course content, entry requirements, total cost, location, and support for international students.
- Build a list with a range: some ambitious, some likely, at least one safe choice.
- Read the module list of the actual degree, not just the university's home page. Two degrees with the same name can teach quite different things.
- Cost includes living costs and visa requirements, not just tuition.

Develop your college and career pathway

- An **action plan** 行动计划 has dates. Applications, tests, references and documents all have fixed deadlines.
- Prepare for the interview questions: why this course, why this university, why you, and what you have done about your interest.
- The application essay is a personal statement at higher stakes: evidence first, and specific to the course.

Build up your career skills

- Admissions readers and employers both look for evidence of skills, not claims.
- Build a **portfolio** 作品集 as you go: the project, the report, the website, the video. Every GAC module produces at least one piece worth keeping.
- **Networking** 人脉 means asking people who do the work you want what it is really like. Most people are happy to answer a polite, specific question.
- Keep the profile up to date; it is easier to add to it each term than to rebuild it before applying.



keep each module's artefact in the portfolio as you go

Readers look for evidence of skills, not claims of them.

Worked example: working back from a goal

Lin wants to start an environmental science degree in the UK in September of next year. (The course and dates are a fictional example; check real ones.)

- The course requires IELTS 6.5 overall, with at least 6.0 in each part, and the application deadline is in late January.
- Lin wants a score in hand before applying, with time for one retake. Results take about two weeks, so the first test should be by October and a retake possible in December.
- Registration for an October test closes several weeks before: Lin must register in August or September.
- The course also requires A-level Biology or Chemistry. Lin takes Chemistry, so that requirement is met; it goes on the supports list.

Worked example: building a range

Lin's predicted grades are AAB. Five possible courses require:

- A*AA and AAA: ambitious (above the prediction).
- AAB and ABB: likely (at or below the prediction).
- BBC: safe (well below the prediction).
- A balanced list of five might contain two ambitious, two likely and one safe choice, each checked for fit in content, cost and location, not grade alone.

Common errors

- Listing adjectives in a profile instead of evidence.
- Discovering a language or subject requirement after the deadline.
- Choosing a course by its title without reading its modules.
- Applying only to ambitious choices.
- Forgetting living and visa costs.
- Answering "Why this course?" with praise for the university's ranking.

Key terms

personal profile: A record of your interests, strengths, values and experience, with evidence.

support: Something that makes your path easier.

barrier: Something that blocks your path.

goal: The aim you are planning towards.

fit: How well a course or university matches your needs and abilities.

entry requirements: The grades, subjects and scores a course needs for admission.

action plan: A list of steps with dates.

portfolio: A collection of your work that shows your skills.

networking: Building contacts with people in a field you are interested in.

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Check yourself

- Rewrite “I am a hard worker” as evidence for a profile.
- A course needs a test score by 15 January, results take two weeks, and you want time for one retake. When should your first test be, at the latest?
- Your prediction is ABB. Is a course requiring AAA ambitious, likely or safe?

Answers: for example, “I revised for my mock exams on a six-week timetable and kept to it.” Two tests and two waits of two weeks need at least four weeks plus booking time, so by mid-November: results by early December, a retake in mid-December, results by early January. Ambitious.

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GAC033 Project Based Learning and Research Methods

GAC Study and Communication Skills

Project Based Learning and Research Methods

In 1934 the Austrian philosopher Karl Popper, then a schoolteacher in Vienna, published *Logik der Forschung*, later translated as *The Logic of Scientific Discovery*. He argued that what makes a claim scientific is that it could be shown false by an observation. "All swans are white" can be tested, because one black swan would refute it. A research question is useful only if you can say in advance what result would count against your idea. In this module (GAC033) your team writes, presents and defends a **research proposal** 研究提案: a plan for a study precise enough to be tested.

In this module you will:

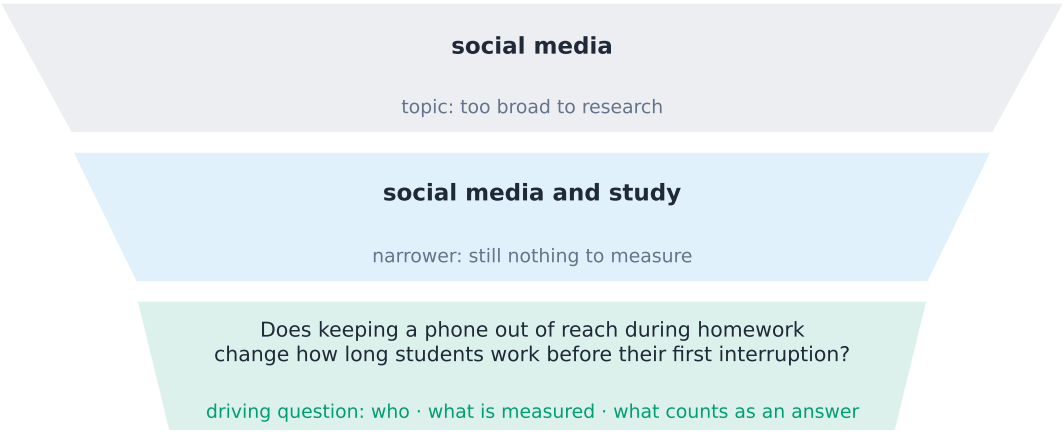
- Narrow a topic into a **driving question** 驱动性问题 and then a **research question** 研究问题.
- Choose a method: an **experiment** 实验, a **survey** 问卷, an **observation** 观察 or a **research interview** 访谈, and plan its **ethics** 伦理.
- Search **databases** 数据库 and write a **literature review** 文献综述.
- State the **limitations** 局限 and a realistic **timeline** 时间表.
- Give and receive **peer review** 同行评审, then give a **presentation** 展示 and a **defence** 答辩 of the proposal.

What is assessed is the proposal, not results: the study is planned, not carried out. The most common failure is a question too big to research, so narrowing is the key skill.

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.

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Three narrowings: only the last names who, what is measured and what counts as an answer

"Social media" is a topic. "Social media and study" is still too broad. "Does keeping a phone out of reach during homework change how long students work before their first interruption?" names who is studied, what is measured and what would count as an answer.

Inquiry: the research methods

Choose the method after the question, because the question decides what evidence you need.

- 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.
- 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.

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A library reading room: gather information from reliable sources and record where each idea came from

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** 零假设 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

A proposal states, in order: the question; why it matters; what is known; the method; the ethics; the timeline; and the limitations.

- Limitations are written before the study: say what your design cannot show. This makes the rest more believable.

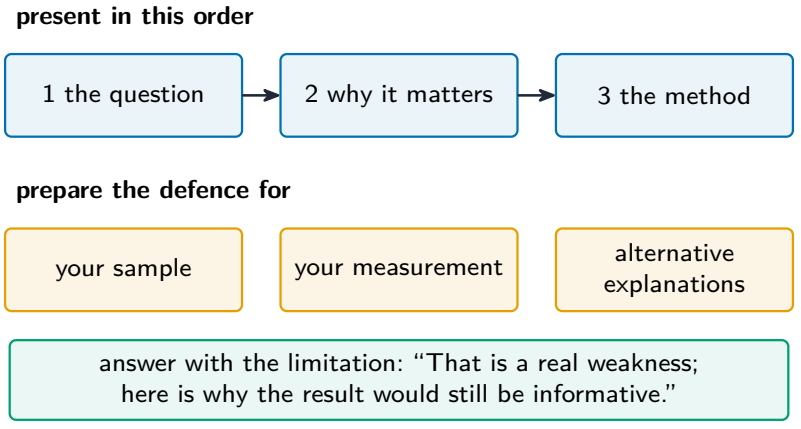
- The timeline must fit the weeks you actually have.

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."



Question before method; limitation before excuse

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Worked example: from driving question to research question

Driving question: does keeping a phone out of reach change how long students work before their first interruption?

- 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

A reviewer writes: "Students record their own times, so they might stop the clock late or forget."

- 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.
- 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.

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literature review: A summary of what is known about a question and where the gap is.

limitations: What a study's design cannot show.

peer review: Evaluation of work by others at the same level.

defence: Answering questions about your proposal and its weaknesses.

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?"

Answers: for example, "Do Grade 11 students at our school who sleep at least eight hours score higher on Friday quizzes than those who sleep less?" Interviews, because the question asks why, and they give depth (a survey could then measure how common the reasons are). "There is no difference in mean quiz score between students who eat breakfast and those who do not."

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