Cross-Disciplinary Thinking

Idea In Short

Hard business problems rarely respect the boundaries of a single department or field. A pricing question involves psychology and data science, and a safety program draws on engineering, law, and human behavior. Cross-disciplinary thinking means bringing knowledge, methods, and viewpoints from distinct fields to bear on one problem. Research on teams suggests that such work can spark innovation, and it also warns that disciplinary diversity brings friction that needs management. This article explains the difference between juxtaposing expertise and integrating it, shows what evidence says about benefits and challenges, and offers practical steps for building cross-boundary teams and habits in an organization.

A mid-sized insurer struggles to cut claim fraud. Analysts build better models, and the false alarms keep annoying honest customers. A behavioral scientist joins a meeting and asks how people decide to exaggerate a claim. A designer asks how the claim form invites or discourages honesty. Within weeks, the team has changed the form and the model together, and false alarms drop.

What it means

Cross-disciplinary thinking applies ideas from more than one field to a single problem. The Elsevier guide on interdisciplinary collaboration defines interdisciplinary research as bringing together two or more disciplines in an integrated way to solve a problem or advance understanding in a way no single discipline could address alone, and it notes that synthesis of knowledge is a key feature.1

The key word is integrated. Having an economist, an engineer, and a lawyer in the same room does not by itself produce a cross-disciplinary answer. Their ideas have to meet and change one another.

For managers, the habit starts with a question: "What other field has faced a problem like this one, and what did it learn?" Aviation has lessons for hospitals, and game design has lessons for onboarding.

Side by side versus together

A review article on medical innovation draws a useful line. It explains that the major difference between multidisciplinarity and interdisciplinarity is that interdisciplinarity involves deep and robust integration of distinct disciplines, while multidisciplinarity involves juxtaposition of a variety of expertise.2

The same article notes a proposal for a new role of integration and implementation scientists, people who can identify knowledge gaps and predict evolving problems while supporting a team through the process.

Business teams can borrow the idea. A project often needs someone whose job is to translate across fields, keep the shared problem in view, and spot where assumptions clash. Without such a role, each expert tends to work within a familiar frame.

The innovation case

Evidence from several settings suggests that bridging fields pays off. A recent preprint on scientific teams proposes that structural diversity fosters disruptive innovation through disciplinary integration, with teams acting as knowledge brokers that connect previously unlinked intellectual communities. It stresses that the effect arises from actual use of diverse knowledge sources and not from superficial multidisciplinary labels.3

The finding fits business experience. Many new products combine methods from distant areas, such as sensors from manufacturing with subscription models from software. The gain comes from the combination.

The caution in the preprint is also useful: counting the number of disciplines represented tells you little. What matters is whether the work uses their knowledge in an integrated way.

Organizational adaptability

SAP's research on cross-functional work reaches a similar conclusion for firms. It reports that organizations able to support cross-boundary collaboration, even at the team level, increase their adaptability, resiliency, innovation, and effectiveness, and it describes cross-disciplinary teams as the primary organizing unit for many new ways of creating value.4

The same article cites cases such as Bosch Power Tools, which in 2015 reorganized its business units and central functions into more than fifty permanent cross-functional teams. Whatever one makes of that move, it shows how seriously some firms treat the structure.

For most organizations, the lesson is more modest. Create a few cross-boundary teams around real problems, give them authority and time, and watch what they produce before scaling the approach.

The friction

Cross-disciplinary work is hard. The Elsevier guide lists key challenges, including the need to establish shared standards of consistency and rigor, integrating practices of multiple disciplines without compromising the unique strengths of each.

A university research office article on multi-, inter-, and trans-disciplinary teams adds that such teams bring together individuals from diverse backgrounds to foster innovation, enhance problem-solving, and accelerate breakthroughs, while noting that finding the right team and shared objectives takes deliberate effort.5

Typical frictions include different vocabularies, different standards of proof, and different reward systems. An engineer may call a result done when it works, while a social scientist wants evidence about how people use it. Neither is wrong, and the gap needs bridging.

Leaders who integrate

A study of medical teams examined how leaders with multidisciplinary expertise foster commitment and innovation in interdisciplinary teams. Its framing is that great discoveries are often credited to lone geniuses, while wasted resources and lost opportunities follow when teams fail to use their capacity for knowledge integration.6

Leaders can build the capacity in themselves by learning the basics of the fields their teams

represent. A manager who understands the main methods and vocabulary of each field can facilitate better questions.

It also helps to set the problem clearly. A well-framed problem gives disciplines a common target, and it reduces turf battles about whose method comes first.

Practical steps

Begin with a shared problem statement written in plain language. Avoid jargon from any one field, and test that each member can restate the problem in their own words.

Build a common glossary. List the terms that mean different things in different fields, such as "model," "significant," or "risk," and agree on definitions for the project.

Plan the integration. Schedule sessions where each person explains their reasoning and others ask questions. Rotate who leads. Produce at least one joint artifact, such as a shared diagram or prototype, so that the integration appears in the work itself.

Individual habits

Individuals can practice without waiting for a team. Read one article a month from a field unrelated to yours. Ask colleagues in other departments how they would approach a problem you are stuck on.

Keep a notebook of analogies. When you meet a pattern in another field, such as queueing in traffic engineering or immunity in biology, note how it might apply to your work.

Seek out people who disagree with you for reasons you do not share. Their training shapes what they notice, and the contrast sharpens your own view.

Measuring whether it works

Cross-disciplinary projects need their own measures. Ask early what counts as integration. Signs include joint authorship of documents, decisions that cite more than one field's evidence, and designs that no single member would have proposed.

Track outcomes in the usual way too, such as time to launch, customer results, and cost. Compare them with similar projects run by single-function teams, and note where the cross-disciplinary approach added time at the start and where it saved time later.

Finally, ask members how the work felt. Teams that report respect across fields and clarity about shared goals tend to sustain the effort, while teams that report confusion or turf conflict need support before the project drifts.

A hypothetical example

Imagine a hypothetical regional utility that wants to cut energy waste among households. Engineers propose smart meters, and the finance team proposes price signals. A psychologist on the team asks how households decide when to run appliances, and a designer asks how the feedback should look.

The team builds a program that combines meters, simple evening price signals, and a weekly display that compares a home with similar ones. Peak use falls, and complaints stay low. The case is invented, but it shows how the answer came from combining methods and not from any single field.

Cautions

Do not mistake variety for integration. A team with many titles can still work in silos if no one translates between them.

Beware of shallow borrowing. Using a term from physics or biology as a metaphor without understanding it can mislead. Consult people who know the field.

Finally, protect depth. Cross-disciplinary work depends on strong disciplines, and generalists who lack depth contribute less. Combine breadth with at least one area of real expertise.

- 1Interdisciplinary collaboration
- 2Driving medical innovation through interdisciplinarity
- 3Structural diversity drives disruptive scientific innovation
- 4Cross-functional work is hard: what to do about it

- 5Unlocking innovation: the benefits of working in multi-, inter-, and trans-disciplinary teams
- 6Leader integrative capability: multidisciplinary expertise fosters innovation

Summary

Cross-disciplinary thinking brings ideas from distinct fields together to solve problems no single field can handle alone. Evidence points to real gains in innovation and adaptability when integration is deep and well managed, and to real costs when teams merely sit side by side. Leaders can help by naming a shared problem, building common language, rewarding integration, and appointing people who can connect fields. Start with one stubborn problem, invite two outsiders from different disciplines to a working session, and ask what each would do first and why, then record the ideas that none of you would have reached alone.