



Sascha Safenreider

KI-Methoden im akademischen Alltag: Programmieren mit KI

Part 2

Outline

1 Recap Day 1

2 Principles of Vibe Coding

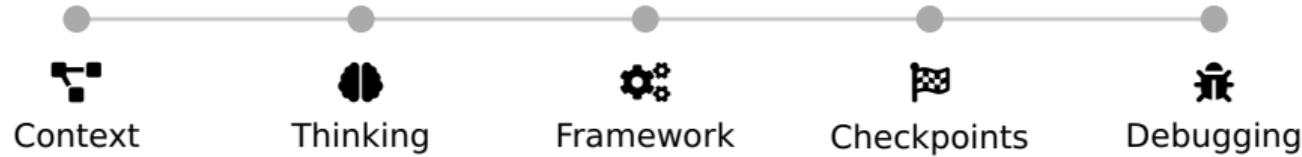
3 Vibe Coding in Practice

4 Conclusion

5 Fundamental Skills of Vibe Coding

-  **Context:** Understanding the context and constraints of the project.
-  **Thinking:** Understanding the problem and identifying the key elements.
-  **Framework:** Choosing the right framework and tools for the project.
-  **Checkpoints:** Setting milestones and tracking progress.
-  **Debugging:** Identifying and fixing errors.

5 Fundamental Skills of Vibe Coding



5 Fundamental Skills of Vibe Coding: Context

Use Case: PRD Step 1 - Logical Thinking

Project Overview (Logical Thinking)

- The goal of this project is to develop an AI-powered system that creates personalized weekly meal plans for casual households
- The system will take into account factors such as work schedule, cooking skills, dietary restrictions, food preferences, and grocery budget
- It will also consider available kitchen equipment and pantry inventory to ensure the meal plan is practical and efficient
- For users with limited cooking experience or literacy, the plan will include visual recipe cards to make preparation easier

5 Fundamental Skills of Vibe Coding: Context

Use Case: PRD Step 2 - Analytical Thinking

Skills Required (Analytical Thinking)

■ Examples:

- ▶ My programming language (e.g. Python)
- ▶ Recipe and Nutrition Data Processing
- ▶ API Key to a certain AI model
- ▶ Image Processing (for visual recipe cards)
- ▶ UI development
 - Maybe in addition: More specific Frontend/Backend stack

5 Fundamental Skills of Vibe Coding: Context

Use Case: PRD Step 3 - Computational Thinking

Key Features (Computational Thinking)

■ Milestone 1: Personalized Meal Plan Engine

- ▶ AI-Based Meal Plan Generation:
 - Generate weekly meal plans based on user preferences, dietary needs, available cooking time, and budget
 - Suggest ingredient substitutions based on pantry inventory and local grocery availability

■ Milestone 2: Contextual Customization:

- ▶ Adapt instructions based on user cooking skill level and literacy—provide visual recipe cards for beginners or busy users who prefer quick visual scanning
- ▶ Recommend batch cooking or quick-prep options for users with especially busy weeks

5 Fundamental Skills of Vibe Coding: Context

Use Case: PRD Step 4 - Procedural Thinking

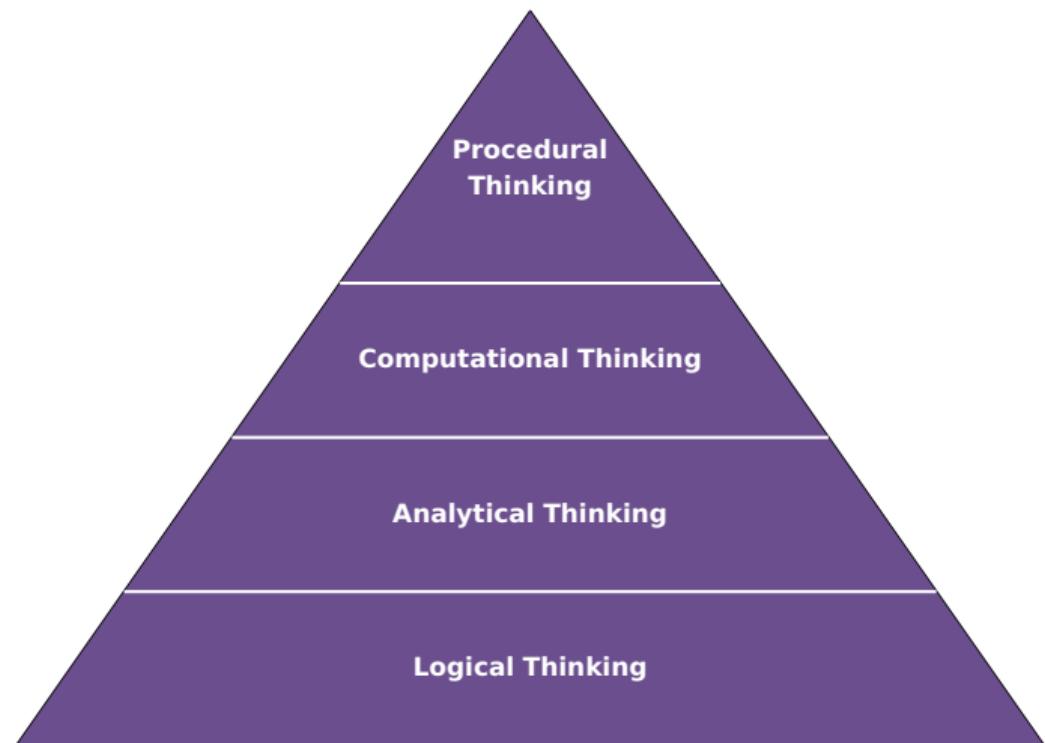
Detailed Context (Procedural Thinking)

- User lifestyle data: work schedule, cooking skills, dietary restrictions, preferences, grocery budget, available equipment
- **Client Information:**
 - ▶ The client is a lifestyle-focused health coach based in Germany
 - ▶ They work primarily with urban professionals in high-paced careers who want to maintain a healthy diet without excessive time spent on meal planning or cooking
 - ▶ The client's focus is on improving daily nutrition habits through simple, personalized, and practical solutions that fit real-world schedules

5 Fundamental Skills of Vibe Coding



5 Fundamental Skills of Vibe Coding: Thinking



5 Fundamental Skills of Vibe Coding: Framework

Guide the AI to the right tools

Why?

If you clearly tell the AI *what* tools to use, it can give you better fitting examples and instructions.

- **What am I building?** (e.g., a simple web app)
- **Which tools?** (e.g., React, HTML/CSS/JavaScript)
- Optional: **Any extras?** (e.g., animations, special styling)

Example prompt

I want to create a small web app with React.

Use HTML, CSS, and JavaScript as the base, plus Tailwind CSS for styling.

Start with a homepage that shows a title and a "Start" button.

5 Fundamental Skills of Vibe Coding: Checkpoints

Why checkpoints and version control matter

Key idea

Things will break — and that's normal. Checkpoints let you save working versions of your project so you can always go back.

- You can save your project's current state
- If today's changes break things, you can restore yesterday's version
- Helps you try new ideas without fear

5 Fundamental Skills of Vibe Coding: Debugging

Finding and fixing problems

Key idea

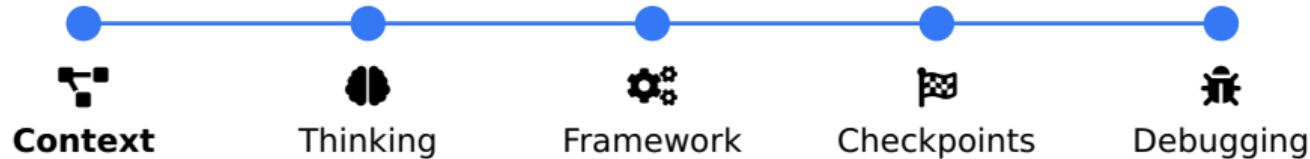
Q Debugging is about finding out what's wrong and fixing it step by step.

- Identify:
 - ▶ Q Where the problem is
 - ▶ ⚠ What the problem is
- Try different solutions until it works 🔧

Example prompt

My app crashes when I click the login button.
Help me find where the error is and fix it.

5 Fundamental Skills of Vibe Coding



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5 Fundamental Skills of Vibe Coding: Context

Now we are ready to merge our PRD Steps into one document:

■ Project Overview (Logical Thinking)

- ▶ The goal of this project is to develop an AI-powered system that creates personalized weekly meal plans for casual households
- ▶ The system will take into account factors such as work schedule, cooking skills, dietary restrictions, food preferences, and grocery budget
- ▶ It will also consider available kitchen equipment and pantry inventory to ensure the meal plan is practical and efficient
- ▶ For users with limited cooking experience or literacy, the plan will include visual recipe cards to make preparation easier

■ Skills Required (Analytical Thinking)

- ▶ Python
- ▶ Recipe and Nutrition Data Processing
- ▶ API Key
- ▶ Image Processing (for visual recipe cards)
- ▶ UI development (optionally: more specific Frontend/Backend stack)

■ Key Features (Computational Thinking)

▶ Milestone 1: Personalized Meal Plan Engine

- Generate weekly meal plans based on user preferences, dietary needs, available cooking time, and budget
- Suggest ingredient substitutions based on pantry inventory and local grocery availability

▶ Milestone 2: Contextual Customization

- Adapt instructions based on user cooking skill level and literacy
- Provide visual recipe cards for beginners or busy users who prefer quick visual scanning
- Recommend batch cooking or quick-prep options for users with especially busy weeks

■ Detailed Context (Procedural Thinking)

▶ User lifestyle data: work schedule, cooking skills, dietary restrictions, preferences, grocery budget, available equipment

▶ Client Information:

- The client is a lifestyle-focused health coach based in Germany
- They work primarily with urban professionals in high-paced careers who want to maintain a healthy diet without excessive time spent on meal planning or cooking
- The client's focus is on improving daily nutrition habits through simple, personalized, and practical solutions that fit real-world schedules.

Quiz Question 3

What is the main purpose of a PRD in Vibe Coding?

- To outline the technical specifications of a project
- To define the creative vision and goals of a project
- To identify the target audience and user needs
- To track progress and milestones

Quiz Question 3

What is the main purpose of a PRD in Vibe Coding?

- To outline the technical specifications of a project
- **To define the creative vision and goals of a project**
- To identify the target audience and user needs
- To track progress and milestones

5 Fundamental Skills of Vibe Coding: Context

How to prompt for PRD

Help me make a PRD for an MVP app I'm looking to vibe code.

I'm looking for an AI-powered app that creates personalized weekly meal plans for casual households. The system should consider work schedules, cooking skills, dietary restrictions, food preferences, and grocery budget. It should also account for available kitchen equipment and pantry inventory to ensure the meal plan is practical and efficient.

The app should provide visual recipe cards and step-by-step guides for users with limited cooking experience or literacy. It should suggest ingredient substitutions based on pantry items and local grocery availability.

Help me think through the rest of the app. For example: What are the core features? How will users interact with the app daily? How will the app adapt to changing user preferences or schedules? How will we handle accessibility for low-literacy users? How will socioeconomic factors influence recommendations?

We should think through the following questions: What is the product? How do users interact with it? What is the underlying logic behind it? How can we make it engaging and easy to follow?

I've also attached an example PRD that is well fleshed out as guidance. [Attach an example PRD]

5 Fundamental Skills of Vibe Coding: Context

Interactive: Create Your Own PRD

✓ Create your own PRD for your own Project **without** Using AI

Create your own PRD for your own Project **with** Using AI

⌚ 15 Min

Compare them and discuss them

👥 Breakout Session ⌚ 15 Min

What is different? Which PRD would you choose and why?

5 Fundamental Skills of Vibe Coding: Context

Interactive: PRD Plenary Discussion

👥 Plenary Task ⏰ 10 Min

Please discuss the following questions in groups:

- 💬 What are the benefits of creating a PRD?
- 💬 How can a PRD help to ensure the success of a project?
- 💬 What are some common mistakes to avoid when creating a PRD?

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2 Principles of Vibe Coding

Hands-on: Create a Vibe Coding Project

Please take some time to create a Vibe Coding project. Consider the following:

- PRD
- Debugging
- Add features Step by Step

Vibe Coding Tools Overview

❖ Preview: Which tool will your group test?

- » 1. Windsurf
- » 2. Replit
- » 3. emergent.sh
- » 4. Lovable
- » 5. Base44
- » 6. Cursor
- » 7. manus.im

Breakout Session: Tool Evaluation Questions

● Each group tests and rates their assigned tool

⌚ 45 Min

Please answer on a scale of 1 (poor) to 4 (excellent):

- 💻 Ease of Use – How simple was it to get started?
- 🤖 AI Support – How good were the AI's responses?
- 🎵 Fun Factor – Did it "vibe" with you?
- 🔒 Reliability – How stable and bug-free was your App?

● Also: Prepare a short presentation about your assigned tool

Plenary: Vibe Coding Tool Tier List

Tool	 Ease of Use	 AI Support	 Fun Factor	 Reliability	Total
Replit					
Windsurf					
emergent.sh					
Lovable					
Base44					
Cursor					
manus.im					

★ Tier S = 14–16

👍 Tier A = 11–13

👉 Tier B = 8–10

👎 Tier C = 4–7

Interactive: Vibe Coding Discussion

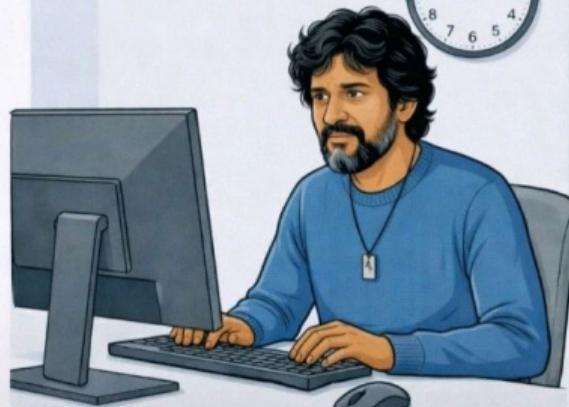
Plenary Task 10 Min

Please discuss the following questions in groups:

-  What are the benefits and challenges of using Vibe Coding?
-  How can Vibe Coding be applied in different industries and domains?
-  What are the key skills and qualities required for successful Vibe Coding?

Before AI

Coding: 2 hours



Coding: 2 hours

Debugging: 6 hours

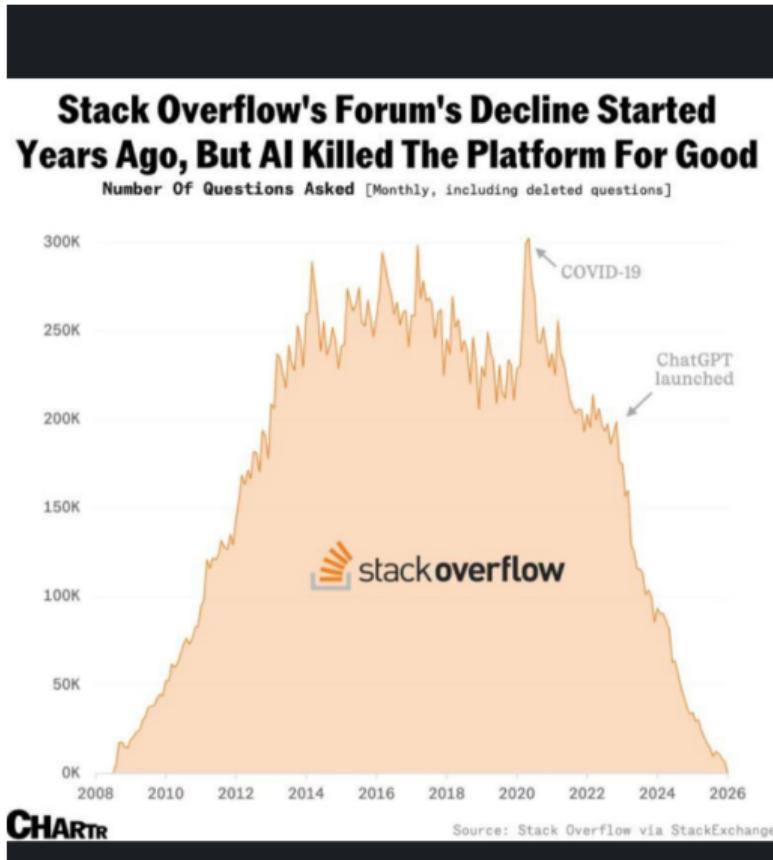
After AI

AI generates code:
5 minutes



Debugging: 24 hours 😬

*AI didn't remove work – it changed it.



Sofien Kaabar, ... 3rd+ + Follow
Quantitative Researcher | Autho...
2w

Stack Overflow has seen the number of monthly questions on its platform collapse from 300k to ~0 since launch of ChatGPT.

But annual revenue is actually up 2x over that span to \$115m.

How? Per Sherwood News, it has licensed its back-catalog of human answers to AI labs and created an enterprise product called "Stack Internal", a GenAI tool powered by millions of its Q&A (currently used by 25,000 companies).

Source: Bearly AI

156 11 comments · 4 reposts



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Most relevant ▾



Avinash Sudhindra, CFA 3rd+ 2w ***
Delivery Manager @ Acuity Analytics | Qua...

Wondering how the community gets solutions for new technologies which AI isn't trained on yet? Do we expect to see another trend in Stack overflow Q&A after a few years?

Like 2 | Reply · 1 reply



Kelan Li 3rd+ 1w ***
Data Scientist | Analytics Engineerin...

Avinash Sudhindra, CFA Better don't create/update/use any new tech tools then, lol.

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Conclusion

- We explored the idea of **Vibe Coding** as a new creative coding paradigm
- Learned the **5 Fundamental Skills**: Context, Thinking, Framework, Checkpoints, Debugging
- Practiced creating **PRDs** and discussed their importance
- Tested and evaluated different **AI coding tools** in practice
- Shared insights, benefits, and risks of relying on AI for coding

Take Home Message

- 💡 Clear Vision → Clear PRD → Better AI Results
- ⚡ Vibe Coding empowers creativity and lowers technical barriers
- 🔒 But: Human review and security remain essential