



AI FOR TEACHING IN HIGHER EDUCATION

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Poll: Can AI tools help me build a better course?

Unsure how AI applies to course design.

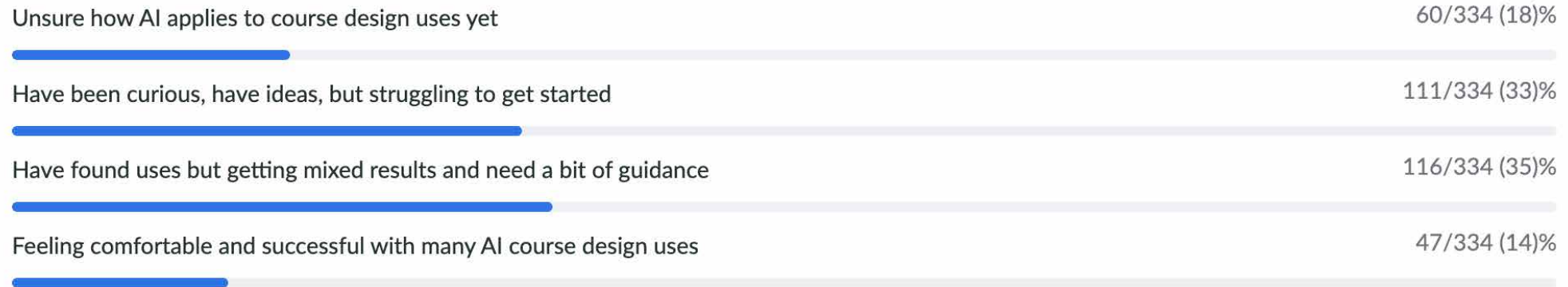
Have been curious, and have some ideas, but struggling to get started.

Have found uses but getting mixed results and need a bit of guidance.

Feeling comfortable and successful with many AI course design uses.

1. Is AI already your course design companion? (Single Choice)

334/334 (100)% answered



<https://alchemy.works/>

WHAT ABOUT STUDENTS?

- June 2023 ACT poll: 46% of 10-12 graders use AI tools
- Of the users, 83% use ChatGPT
- ACT score top quarter – 53% use AI tools
- ACT score bottom quarter – 26% use AI tools
- Informal poll in my class – 100% have tried AI tools

TODAY'S TOPICS

- Using AI (ChatGPT) for course development and design.
- Refresh course descriptions, ensuring clarity and adding motivational components.
- Develop course learning outcomes.
- Devising course activities and assessments that align with learning outcomes.
- Ethical considerations of AI tools in higher education
- Seeing AI tools such as ChatGPT and Gamma in action
- Making your own GPT

HOW WE PREP FOR CLASS

- Building the course: learning objectives
- Organizing the flow of the course material
- Creating the learning content
- Creating assignments (aligned to learning objectives)
- Content refresh/update
- Curating resources/materials
- Prep before class
- Reflection/feedback

CHATGPT: GENERALIZED PRE-TRAINED TRANSFORMER

- Type of AI model known as a Large Language Model (LLM)
- Training – huge datasets from the Internet
- Transformer architecture – “attention” to understand context and relevance
- Text – predicts the most likely next word

USING CHATGPT: A CREATIVE COMPANION

- Brainstorm
- Organize/Outline
- Draft
- Create/Build
- Polish
- Summarize
- Analyze
- Assessment
- Feedback
- Role play/Persona
- Engage
- Adapt
- Gamify
- Translate
- Level up/down
- Visualize
- Transform
- Diversify

EFFECTIVE PROMPT ENGINEERING

ROLE (Act as)	TASK (Create a)	REQUIREMENTS (Be sure to)	OUTPUT (Turn into)
<ul style="list-style-type: none">• Instructor• Learning Designer• Researcher• Project Manager• Committee Chair• Facilitator• Presenter• Author	<ul style="list-style-type: none">• Lesson• Summary• Blog draft• Book outline• Proposal• Video script• Letter of rec• Email	<ul style="list-style-type: none">• Include• Exclude• Number• Length• Steps• Level• Tone• Inclusive	<ul style="list-style-type: none">• Plain text• Bulleted list• Concept map• Table• Spreadsheet• Graph• Slides• Code

BUILDING A COURSE



How can I help you today?

Explain nostalgia
to a kindergartener

Plan an itinerary
for a fashion-focused exploration of Paris

Create a content calendar
for a TikTok account

Make a content strategy
for a newsletter featuring free local weekend events

Hello. As an expert in course development and design at the college level, I would like you to develop a 1-credit 14-week project-based course on innovation covering the following topics: Jobs to be Done, Design Thinking, prototyping, and user feedback. Please identify learning objectives via Revised Bloom's Taxonomy as proposed by Iowa State. Before we start, do you have any questions for me?



Hello! Your project for a 1-credit, 14-week course focusing on innovation, covering Jobs to be Done, Design Thinking, prototyping, and user feedback sounds fascinating and highly relevant. To ensure the course aligns with your vision and needs, I'd like to ask a few clarifying questions:

- 1.Target Audience:** Who is the primary audience for this course? Are they undergraduate or graduate students, and do they have any prior knowledge or experience in innovation, design thinking, or related fields?
- 2.Course Format:** What format do you envision for the course (e.g., online, hybrid, in-person)? And how much time per week are students expected to dedicate to this course outside of class?
- 3.Assessment Types:** What types of assessments do you prefer to include? Are you looking for traditional exams, projects, presentations, peer assessments, or something else?
- 4.Technology and Resources:** Are there specific technologies, software, or resources you want to incorporate for prototyping and user feedback?
- 5.Outcome Expectations:** What specific skills or competencies do you hope students will gain by the end of this course? Are there particular aspects of innovation or design thinking you want to emphasize?
- 6.Integration with Other Curricula:** Does this course need to align or integrate with other courses in your program? If so, could you provide some context?

Course Title: Innovation Through Design Thinking and Jobs to Be Done

Course Description

This course introduces students to the fundamental concepts and applied techniques of innovation through the lenses of Design Thinking and Jobs-be-done frameworks. Through hands-on group projects and peer assessments, students will learn to identify user needs, conceptualize solutions, prototype, and gather user feedback to refine their ideas. The course aims to equip students with the skills to approach problems creatively and develop innovative solutions in any field.

Week-by-Week Breakdown

Week 1: Introduction to Innovation

•**Objective:** Understand the concept of innovation and its importance across different fields.

- **Bloom's Taxonomy:** Remember, Understand

Week 2-3: Jobs to be Done (JTBD) Framework

•**Objective:** Explain the JTBD framework and apply it to identify real-world problems.

- **Bloom's Taxonomy:** Understand, Apply

Week 4-6: Design Thinking

•**Objective:** Demonstrate the stages of the Design Thinking process: empathize, define, ideate, prototype, and test.

- **Bloom's Taxonomy:** Apply, Analyze

Week 7-9: Prototyping

•**Objective:** Develop prototypes based on solutions identified through JTBD and Design Thinking.

- **Bloom's Taxonomy:** Create, Evaluate

Week 10-12: User Feedback

•**Objective:** Collect and integrate user feedback to refine prototypes.

- **Bloom's Taxonomy:** Evaluate, Apply

Week 13: Final Project Development

•**Objective:** Utilize JTBD, Design Thinking, prototyping, and user feedback to develop a final group project.

- **Bloom's Taxonomy:** Create, Evaluate

Week 14: Presentations and Peer Assessments

•**Objective:** Present final projects and engage in peer assessments to critique and learn from each other's work.

- **Bloom's Taxonomy:** Evaluate, Analyze

Week	Topic	Objectives	Bloom's Taxonomy Levels
1	Introduction to Innovation	Understand the concept of innovation and its importance across different fields.	Remember, Understand
2-3	Jobs to be Done (JTBD) Framework	Explain the JTBD framework and apply it to identify real-world problems.	Understand, Apply
4-6	Design Thinking	Demonstrate the stages of the Design Thinking process: empathize, define, ideate, prototype, and test.	Apply, Analyze
7-9	Prototyping	Develop prototypes based on solutions identified through JTBD and Design Thinking.	Create, Evaluate
10-12	User Feedback	Collect and integrate user feedback to refine prototypes.	Evaluate, Apply
13	Final Project Development	Utilize JTBD, Design Thinking, prototyping, and user feedback to develop a final group project.	Create, Evaluate
14	Presentations and Peer Assessments	Present final projects and engage in peer assessments to critique and learn from each other's work.	Evaluate, Analyze

Learning Objectives

1. **Analyze** and **apply** the Jobs to be Done framework to identify and articulate user needs and problems.
2. **Employ** Design Thinking methodology to **develop innovative solutions** to complex problems.
3. **Create** and **iterate** prototypes based on user-centered design principles.
4. **Evaluate** and **integrate** user feedback to refine and improve solutions.
5. **Collaborate** effectively in teams to develop a project from concept to prototype, utilizing peer feedback for refinement.

Assessment

- Group projects at the end of each major section (JTBD, Design Thinking, Prototyping, User Feedback) culminating in a final project that integrates all learned concepts.
- Peer assessments focused on contribution, collaboration, and the application of the course content.

Course Description

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Can you rewrite the course description in a way that is more dynamic and appealing to college students that I want to enroll in the course?

Course Title: Unleash Your Innovation: A Journey Through Design Thinking & Jobs to Be Done

Course Description

Are you ready to think outside the box and transform the world around you? Welcome to "Unleash Your Innovation," a dynamic, hands-on course designed to spark your creativity and turn your ideas into reality. In just 14 weeks, you'll dive deep into the realms of Design Thinking and Jobs to Be Done frameworks, empowering you to solve real-world problems with cutting-edge solutions.

This isn't your typical classroom experience. Prepare to collaborate with students from all majors, bringing diverse perspectives and skills to the table. Together, you'll navigate through the exciting process of empathizing with users, defining complex problems, ideating groundbreaking solutions, and bringing your ideas to life through prototyping. But it doesn't stop there; you'll also master the art of gathering and applying user feedback, ensuring your innovations are not just visionary but viable.

With a mix of group projects, peer assessments, and a final project that challenges you to apply everything you've learned, this course is your playground for innovation. Whether you're aspiring to be an entrepreneur, designer, engineer, or change-maker in any field, "Unleash Your Innovation" offers the tools, knowledge, and hands-on experience to make your dreams tangible.

Step into this journey of discovery and creativity, where your ideas can lead to the next big thing. Are you ready to unleash your potential?

[Opening shot: A dynamic, visually engaging scene with quick clips of innovative products, team collaboration, and hands-on projects.]

Voiceover: "Are you ready to unleash your creative potential and transform the world around you?"

[Cut to: A series of quick, engaging shots showing students brainstorming, sketching designs, and working with prototypes.]

Voiceover: "Introducing 'Unleash Your Innovation,' a groundbreaking course where your ideas take center stage. Dive deep into Design Thinking and the Jobs to Be Done frameworks, and turn your visions into reality."

Voiceover: "Space is limited. Ignite your potential and enroll today. Your future awaits!"

[Cut to: Close-ups of students engaging with instructors, laughing, and having light-bulb moments.]

Voiceover: "Collaborate with peers from all majors in a hands-on journey of discovery. From empathizing with users to prototyping groundbreaking solutions, you'll navigate the full innovation cycle."

[Cut to: A vibrant, engaging clip of students presenting their projects, receiving feedback, and showcasing prototypes.]

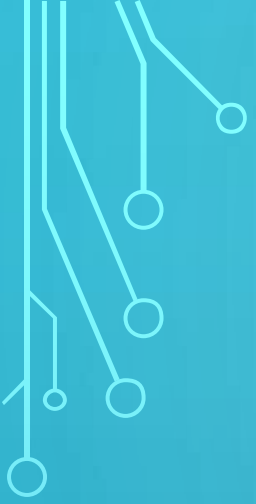
Voiceover: "Whether you're aiming to be an entrepreneur, designer, or change-maker, this course is your playground. Forge your path, make an impact, and join us on a journey to unleash your innovation."

[Closing shot: The course title, "Unleash Your Innovation," appears on screen with details on how to enroll.]

ME 211 Introduction to Solid Mechanics

This required engineering undergraduate course is designed to extend the student's knowledge of mechanics to include deformable body mechanics. The main focus of this course is on the deformation of the body when subject to external loading. The concepts of stress, strain, and material constitutive laws are carefully developed in one-, two- and three-dimensions. These concepts are applied to the stress and deformation analysis of the common engineering structures such as beams, rod, shafts, pressure vessels, and two-dimensional (plane stress and plane strain) problems. Both theoretical development and applied problems solving, including analysis and design problems, are emphasized."


While this may seem like a fair amount of information it's really just listing topics or variables related to the course. This is such an interesting course so I'd like you as an expert in higher education course development to propose a course description that takes into account the existing course description but presents it in a more effective form of prose that will elicit a great deal of interest so that when students read it they have a sense of curiosity and anticipation. See if you can do it in a way where students will feel like it connects to their lives. What you create should be 125-150 words. I know you can create something special!



"Discover the fascinating world of Solid Mechanics, a pivotal second-year engineering course designed for ambitious students in civil, mechanical, aerospace, and industrial engineering.

This course is not just about learning; it's an adventure into the unseen forces and hidden stresses that shape our engineered world. Imagine peeling back the layers of everyday structures to understand how they bend, twist, and withstand forces - from the soaring skyscrapers that pierce our city skylines to the intricate components of the machines and vehicles we use daily.

Dive into a carefully curated journey through the concepts of stress, strain, and material behavior in one, two, and three dimensions. Engage with the practical challenges of designing and analyzing beams, rods, shafts, pressure vessels, and more, through both theoretical exploration and hands-on problem-solving. This course is your gateway to understanding and influencing the physical world around us. It promises to ignite your curiosity and equip you with the knowledge and skills to not only interpret but also innovate in the dynamic field of engineering. Join us in unraveling the mysteries of how materials behave under various conditions, and be prepared to shape the future of our built environment."



Hello, as an expert in mechanical engineering, I would like you to solve the following problem. A turbine engine produces 7,000 kW at 5,500 RPM. A solid circular shaft of diameter D_1 connects the output to a 100:1 reduction gear set. From there, a second solid shaft of diameter D_2 connects the electrical generator. Note 100:1 signifies that shaft D_2 is rotating at 100 times less than shaft D_1 (i.e., its angular velocity (ω) is less). If the allowable shear stress in the shaft material is 100MPa, what are the diameters of the two solid circular shafts?

The diameter D_1 for the first shaft, connecting the turbine engine to the reduction gear set, is approximately 0.0852 meters or 85.2 mm.

Now, let's consider the second shaft (D_2). The torque T_{D_2} is the same as T_{D_1} because the power transmitted through the gear set remains constant (assuming no losses). However, the angular velocity ω_{D_2} is 1/100th of ω_{D_1} , which doesn't directly affect the diameter calculation since the torque remains unchanged. Therefore, we can use the same torque value to calculate D_2 , knowing that the shear stress and the formula for relating torque and diameter remain the same.

Since the torque $T_{D_2} = T_{D_1}$ and the allowable shear stress τ is the same for both shafts, the diameter D_2 will also be the same as D_1 under these assumptions, which is approximately 85.2 mm.

You

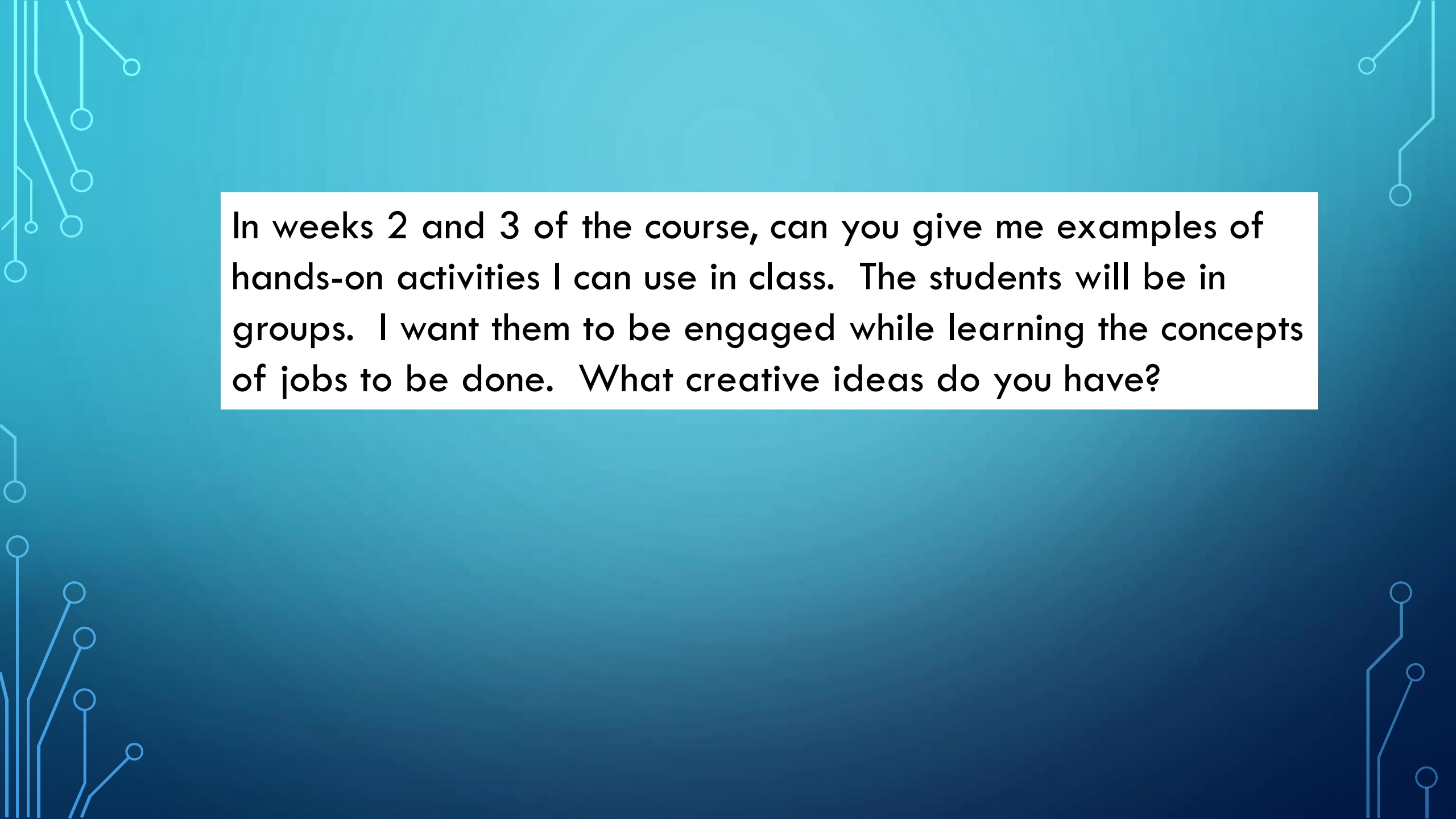
In the above, you stated that the torque remains unchanged. However, please review your results as the torque in D1 and D2 will be different as they have the same power but rotate at different speeds.

ChatGPT

You're correct, and I appreciate your patience. Let's correct that oversight. The torque for D2 will indeed be different from D1 due to the difference in angular velocity caused by the gear reduction. Given the 100:1 reduction, the angular velocity of D2 is 1/100th that of D1, but because power (P) is conserved across the gear set (ignoring losses), the torque (T) will increase by a factor of 100 in D2 to maintain the same power output.

Given that the power transmitted by a shaft is given by $P = T \cdot \omega$, and knowing that P remains constant while ω_{D2} is 1/100th of ω_{D1} , the torque T_{D2} must be 100 times T_{D1} to compensate for the lower angular velocity.

Let's calculate the torque T_{D2} and then use it to find the diameter $D2$, keeping in mind the allowable shear stress is still 100 MPa.

The background is a gradient of blue, with decorative white circuit-like lines in the corners. These lines consist of straight segments connected by small circles, resembling a network or data flow diagram.

In weeks 2 and 3 of the course, can you give me examples of hands-on activities I can use in class. The students will be in groups. I want them to be engaged while learning the concepts of jobs to be done. What creative ideas do you have?

ChatGPT

Absolutely, incorporating hands-on activities can significantly enhance understanding and engagement with the Jobs to Be Done (JTBD) framework. Here are some creative, group-oriented activities for weeks 2 and 3, focused on making the JTBD concepts come alive for your students:

Activity 1: JTBD Interview Role-Play

Objective: To practice identifying underlying customer needs through the JTBD framework by role-playing interviews.

- **Setup:** Divide the class into small groups. Each group is given a product or service category (e.g., coffee shops, smartphones, online learning platforms).
- **Task:** Within each group, students take turns role-playing as the interviewer, the customer, and observers. The interviewer asks probing questions to uncover the deeper needs and motivations behind the customer's use of the product or service, based on the JTBD framework.
- **Reflection:** After each role-play, the group discusses the uncovered jobs to be done. Observers provide feedback on the questioning technique and the depth of insights gained.
- **Share:** Groups share their most surprising insights with the class to discuss the variety of jobs across different products and services.

You

Can you identify any youtube videos that could accompany these activities?

ChatGPT

For your course activities focused on the Jobs to Be Done (JTBD) framework, I found some excellent YouTube videos that could serve as complementary materials:

- 1. **"The Ultimate Guide to JTBD | Bob Moesta (co-creator of the framework)"** - This video offers an in-depth look at the JTBD framework from one of its co-creators, Bob Moesta. It's a great resource to provide students with a foundational understanding of JTBD principles directly from an expert in the field. [Watch here.](#)
- 2. **"Jobs to be done Framework for Product Management"** - Aimed more specifically at product management, this video could help students see the application of JTBD in a business context, making it a useful resource for discussing how to apply JTBD to real-world scenarios. [Watch here.](#)
- 3. **"Learn about the Jobs to be Done Framework | Jobs to Be Done Framework for Designers"** - This video tailors the JTBD concept for designers, which could be particularly engaging for students interested in the design aspect of product development. It illustrates how designers can use JTBD to better understand user needs and create more effective designs. [Watch here.](#)

Incorporating these videos into your class activities can provide students with a richer understanding of JTBD, complementing the hands-on exercises with insights from experts and practical examples from various industries.

USING VIDEO AND PODCAST TRANSCRIPTS

- Load transcript into ChatGPT
- Summary
- Highlights, key points
- Ask for quiz questions

 JM**You**

Wonderful! Thank you. I plan to assign this video to my college students taking my course on innovation. Can you develop 10 questions based on this video that I can use in a quiz for my students?

**ChatGPT**

Certainly! Here are 10 quiz questions based on the content of the transcript from the "Product Quest Podcast" discussing Jobs to Be Done (JTBD) with Eric Eske:

1. Understanding JTBD Framework:

- What is the core principle behind the Jobs to Be Done (JTBD) framework as discussed in the podcast?

2. Role of Cross-Skilling:

- How does Warren Buffett's quote about being a better businessman because he is an investor, and vice versa, relate to the concept of innovation and product management?

3. Eric Eske's Background:

- Who trained Eric Eske in the JTBD methodology, and what is his contribution to the field?

4. Transition from Traditional to JTBD Approach:

- Describe a turning point that led Eric Eske to shift from a traditional product development approach to embracing JTBD.

5. The Importance of Needs Over Solutions:

- Why is understanding customer needs before developing solutions crucial in the JTBD framework?

ChatGPT

Certainly! Here's a simple three-point rubric to grade the students' responses to the quiz questions on the Jobs to Be Done (JTBD) podcast with Eric Eske. This rubric is designed to assess comprehension, application, and critical thinking related to the content of the podcast.

Rubric for Grading JTBD Podcast Quiz Questions

3 Points - Exemplary

- **Comprehension:** The response demonstrates a thorough understanding of the JTBD framework and its principles as discussed in the podcast. The student accurately identifies key concepts, terms, and examples mentioned by Eric Eske.
- **Application:** The answer clearly applies concepts from the podcast to hypothetical or real-world scenarios, showing an ability to extend beyond the given information to how JTBD can be implemented effectively in various contexts.
- **Insight and Critical Thinking:** The response shows depth of analysis, including insights into the implications of the JTBD framework for innovation and product management. The student may also critique or offer thoughtful reflections on the information presented in the podcast, demonstrating an ability to engage critically with the material.



ChatGPT

Here's the rubric in a table format for easier reference:

Criteria	3 Points - Exemplary	2 Points - Satisfactory	1 Point - Needs Improvement
Comprehension	Demonstrates thorough understanding of JTBD framework, accurately identifying key concepts and examples.	Shows general understanding but may lack detail or precision in identifying key concepts.	Limited understanding; key concepts not identified or misunderstood.
Application	Clearly applies concepts to hypothetical or real-world scenarios with depth and specific examples.	Attempts to apply concepts but may be generic or lack depth; lacks specific examples.	Struggles to apply concepts accurately; attempts are largely unsuccessful or irrelevant.
Insight and Critical Thinking	Shows depth of analysis and insight, including thoughtful reflections or critiques, engaging critically with the material.	Some analysis or reflection but limited in scope; engages with the material but does not fully explore implications.	Minimal or no analysis; repeats information without engaging with its implications.

Notes for Grading:

- Encourage specific examples from the podcast to support responses.
- Look for evidence of independent thought and connections to broader contexts or personal insights.
- Provide constructive feedback highlighting strengths and areas for improvement.

ETHICAL CONSIDERATIONS

- Intellectual Property Concerns

- Large language models like ChatGPT are trained on datasets collected from a range of Internet sources, and can include publicly available texts, websites, books, articles, and more.
- Training AI models on copyrighted content without authorization could be seen as failing to honor the legal protections afforded to creators and owners of such works.
- This raises questions about the ethical obligations of AI developers to ensure their training methods do not infringe on copyright laws or the rights of creators.
- OpenAI (ChatGPT) has not disclosed the specifics of individual dataset used to train ChatGPT.
- Transparency about the methodologies for training AI and the steps taken to mitigate copyright infringement is essential for maintaining trust and ethical integrity.

ETHICAL CONSIDERATIONS

- Equity and Access: the Digital Divide
 - Access to AI tools should not exacerbate educational disparities
- Challenges and Advocacy
 - Financial Aid for Educational Tools
 - Open-source alternatives
 - Advocacy for Equitable Access
 - Research on Impact and Needs