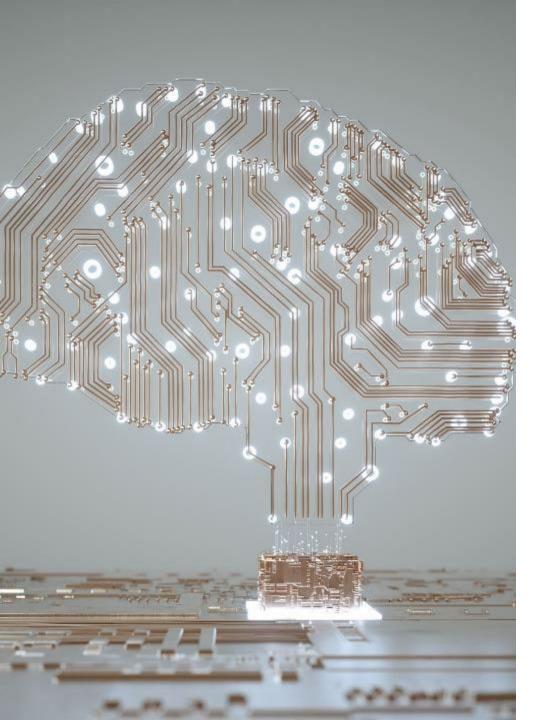


Developing Teaching Materials with Al

Nanda Dimitrov LTC





Agenda for Today

1. Creating Learning Materials

- Multiple Choice
- Rubrics
- Case Studies

2. Saving Time on Feedback

3. Simplifying Administrative Tasks

 Emails, project instructions, reference letters



Handout – Sample Prompts

https://bit.ly/BCITexamplesAl





LEARNING & TEACHING CENTRE (LTC)

Polytechnic Academy LTC Services LTC Resources Generative Al Generative Al to Help Instructors Teach Generative Al to Help Students GenAl and Academic Integrity Upcoming Workshops BCIT Courses on Using GenAl Non-BCIT Courses on Using GenAl Learning and Teaching Framework > e-Learning Strategy Workshops LTC News PRISM Simulation Centre Remotely Piloted Aircraft Systems > LTC Student Resources Contact the Learning & Teaching > Staff Directory - LTC

Generative Al Resources for BCIT Educators

If you are looking for resources and guidance on using generative artificial intelligence (GenAl) in your teaching, you've come to the right place. Here, you will find a curated collection of tools and links, teaching practice tips and advice from educators who are using GenAl in their classrooms, and links to relevant courses and upcoming workshops.

BCIT Policy Statements

BCIT's Official Position on Generative Artificial Intelligence

An Introduction to Generative
Al Tools

Acceptable Use of Technology

— ChatGPT

GenAl: Syllabus Statements for Course Outlines

GenAl in Teaching and Learning



GenAl to Help Instructors Teach



GenAl to Help Students Learn



Guide to
Teaching with
GenAl

GenAl at BCIT



GenAl and Academic Integrity



Acceptable
Use of
Technology —
ChatGPT

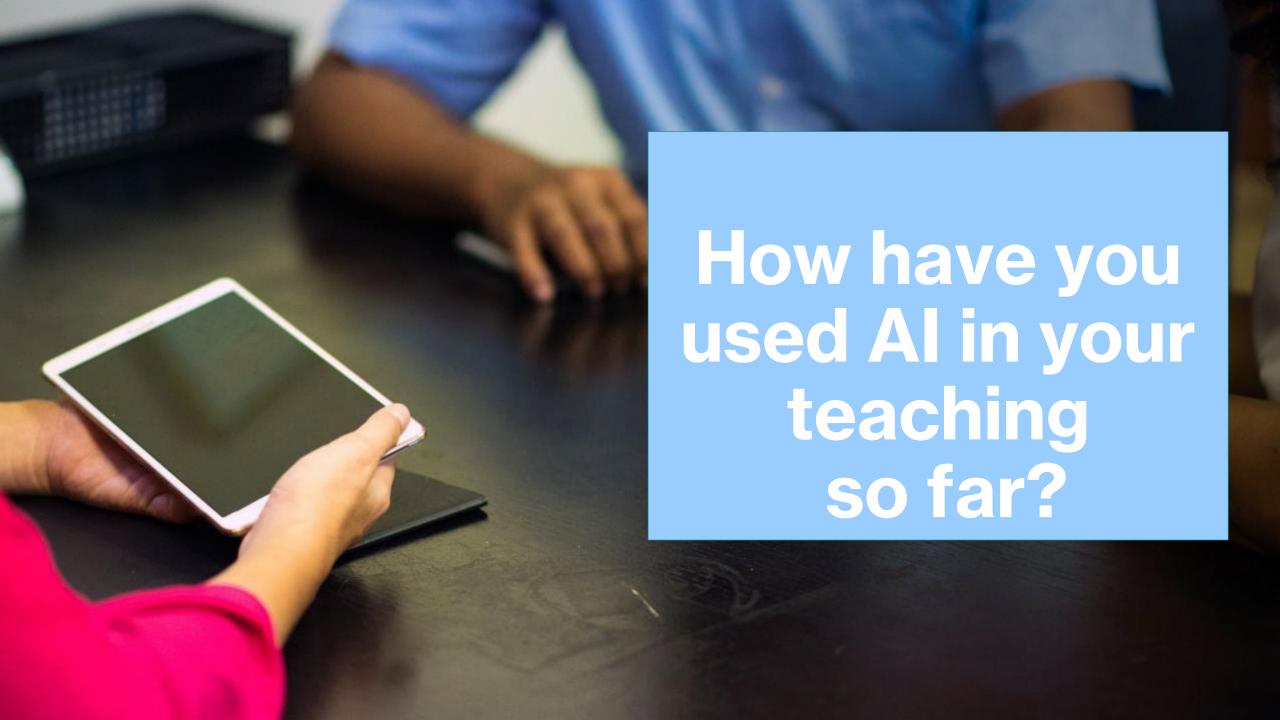


Upcoming Workshops

MORE EXAMPLES ON LTC WEBSITE

BCIT.CA/LTC



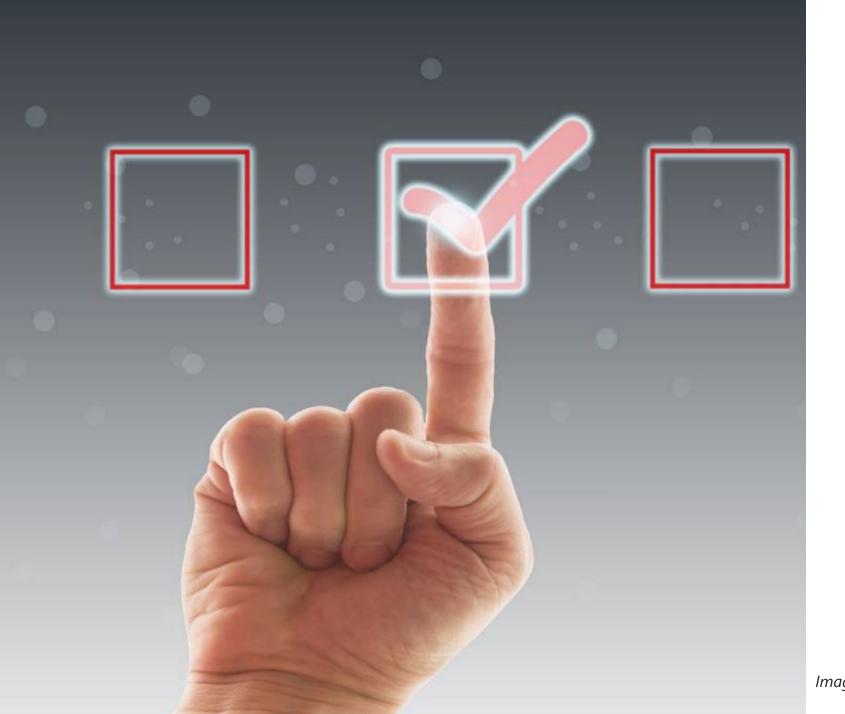




The best way to learn about AI is to play and experiment

Try out the prompts in the handout or write your own





Writing Multiple Choice Questions



Writing Multiple Choice Questions

 Students in my statistics course are learning about the difference between the mean and the median.
 Could you create 5 multiple choice questions that will help my students practice their understanding of these two concepts?



Writing Multiple Choice Questions

Students in my statistics course are learning about the difference between the mean and the median. Could you create 5 multiple choice questions that will help my students apply their understanding of these two concepts? I would like the questions to be at higher levels of Blooms' taxonomy of educational objectives.

Please include the correct answers.

Please create a separate answer key.



Bloom's Taxonomy



Produce new or original work

Design, assemble, construct, conjecture, develop, formulate, author, investigate

evaluate

Justify a stand or decision

appraise, argue, defend, judge, select, support, value, critique, weigh

analyze

Draw connections among ideas

differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test

apply

Use information in new situations

execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch

understand

Explain ideas or concepts

classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

remember

Recall facts and basic concepts

define, duplicate, list, memorize, repeat, state



Vanderbilt University Center for Teaching



Writing Multiple Choice Questions

Caution:

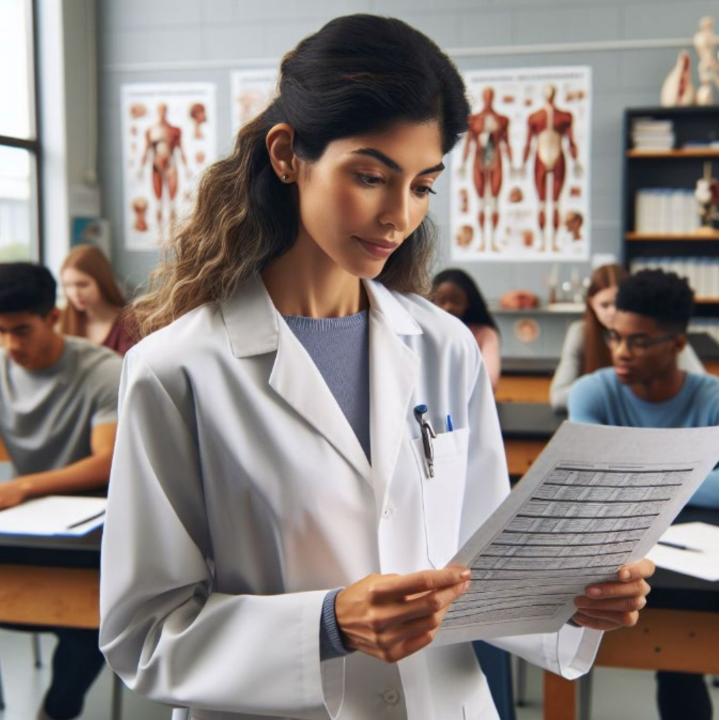
- Al tools can make mistakes
- Questions may not be correct double check answers.
- E.g generate questions in ChatGPT and ask Copilot to solve it; or open a different session of ChatGPT and ask it to respond to the question.



Let's experiment

- Ask the AI tool of your choice to draft a multiple-choice question on a topic you are teaching about.
- Evaluate the result
- Ask to revise and re-generate
- Ask AI to generate distractor items.
- How did it go?





Creating Rubrics

Image created using DALL-E 3 via Microsoft Copilot."

Rubric Prompt

You are an experienced instructional designer. Create a rubric for participation in online discussions for a fully online environmental engineering course.

Include criteria related to referencing readings, interaction with peers, and depth of reflection.

Use 3 levels of performance and present in a table.



Online Discussion Participation Rubric

Criteria	Exemplary (3 points)	Satisfactory (2 points)	Needs Improvement (1 point)
Referencing Readings and Concepts	Consistently integrates course readings and concepts into posts with proper citations. Demonstrates a deep understanding of the material and its application.	Occasionally integrates course readings and concepts into posts with proper citations. Shows an understanding of the material but may lack depth.	Rarely or never references course readings and concepts or does so without proper citations. Shows limited understanding of the material.
Interaction with Peers	Actively engages with peers in discussions, providing thoughtful feedback and posing questions that promote further exploration of the topic.	Interacts with peers by acknowledging their posts and providing basic feedback or follow-up questions.	Minimal interaction with peers or interactions that do not contribute to the advancement of the discussion.
Depth of Reflection	Posts demonstrate a high level of critical thinking and reflection, offering new insights and connecting personal experiences to the course content.	Posts show some reflection and critical thinking but may not offer new insights or make connections to personal experiences.	Posts lack depth, with little evidence of reflection or critical thinking. Responses are superficial or off-topic.

Multiple Prompts that Build on Each Other

 Prompt 1: What are the characteristics of an effective rubric to assess student learning at the university level?

• Prompt 2: Can you use the principles above to create a rubric for a team project in a first year engineering course. The students are designing a solar vehicle concept. Please use 3 performance levels, and include criteria focusing on creativity, effective collaboration, feasibility of technical solution, application of concepts learned in class and effective documentation.





Writing Case Studies and Scenarios



Case Study Prompt

"I'm teaching a fourth-year undergraduate marketing course. I would like my students to learn better team communication skills before they start a group project. Help me write a 1-2 paragraph case study that I could use in class as the starting point for discussion.

In the case study, I would like to have a team member who doesn't do their share of the work, and a team member who provides harsh feedback to others. Please provide some guiding questions that engage the students in problem solving and analysis."



Case Study Output

"Case Study: The Rocky Road to Marketing Success

In a team of four students working on a major marketing project for a local business, two members stand out. Alex, a talented strategist, has a tendency to procrastinate and often fails to meet deadlines, leaving the rest of the team scrambling to pick up the slack. On the other hand, Jordan, the team's graphic designer, is known for their high standards and attention to detail. However, Jordan's feedback often comes across as harsh and demoralizing, leading to tension within the team. Despite their individual talents, the team's progress is hindered by these issues, causing concern about the successful completion of the project. (Generated by Copilot)

Case Study Questions

- 1. How could the team address Alex's procrastination without causing further conflict?
- 2. What strategies could Jordan use to provide constructive feedback that encourages rather than discourages team members?
- 3. How might the team establish a more effective communication strategy to ensure everyone is on the same page and feels valued?
- 4. What steps can the team take to ensure equitable distribution of work and accountability among all members?
- 5. How can the team leverage the individual strengths of Alex and Jordan to their advantage?

Case Study Prompt 2 – Re-generate

Can you expand the case study with a description of two more team members. Kyla, who is quiet, and rarely contributes, but when she does, she is really insightful. She is particularly uncomfortable with Jordan's harsh feedback on to others as well as herself. And Prakash, who is very social, and is comfortable with public speaking, but he says he is not a great writer, so we would prefer to focus on giving the presentation at the end of the term.



Think - Pair - Share

- What types of cases do you or could you use in your teaching?
- How can you push AI to create more complex, realistic case studies?

- Ask Al to include dialogue
- Ask Al to address specific team challenges
- Upload characteristics of effective case studies first





Draft Clear Instructions for Assignments

Assignment Instructions:

You are an experienced instructor in Health Promotion. Please draft a set of instructions for students that will help them succeed in a semester-long group project. Students will work together in teams of 5 to create a health promotion campaign to encourage teens to spend less time on social media and electronic devices.

The project needs to include (1) literature review on the health effects of screen time and social media on teens (2) an audience focus group at least 5 with teens to get feedback on the campaign (3) a 15-minute presentation of the proposed campaign during the last week of the class. Students can choose the format of the campaign, including a website, posters, Instagram stories, or a podcast or storyboards for TV ads.

Students will meet weekly for 30 minutes in class, and can organize additional group meetings on their own. Please include suggestions for how students can identify and divide roles and responsibilities in their group, and how they can manage their time during the term.





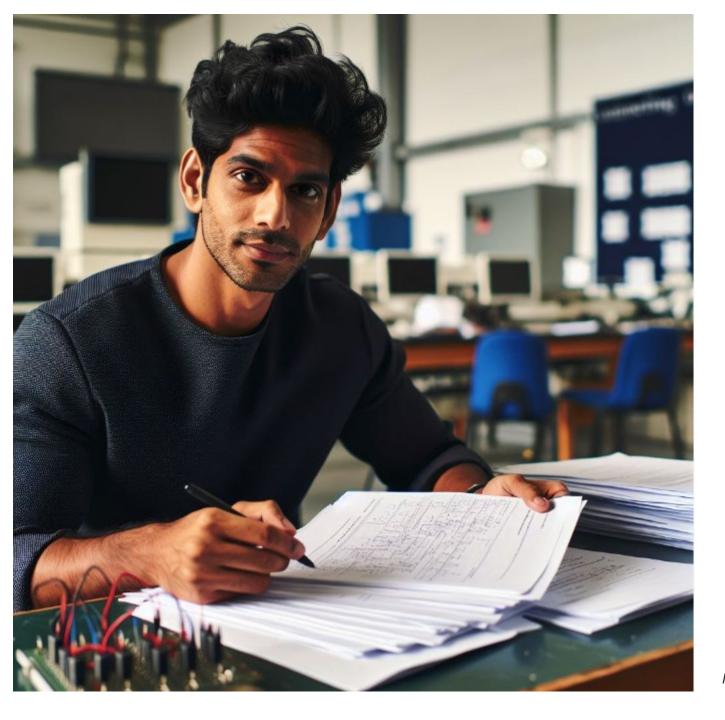
Image inserted by Microsoft Copilot

Response from Copilot is on the LTC website

bcit.ca/ltc

Generative Al





Reducing time on Feedback

- Type of feedback in bullet points
 and use Chat GPT to expand into full sentences
- Collect feedback for all students and ask Ai to summarize patterns and create a handout.
- Do NOT enter identifying information or IP into Al



Saving Time on Admin Tasks

Reference Letters

- Ask students to send you an email with the position they are applying for, name of the organization, and 5-10 bullet points with the skills and experiences they would like you to emphasize in your letter.
- Add information from your perspective, specify how long you have known the student and ask ChatGPT to create and format the letter.



Reference letters

- You are a faculty member in computer science at the British Columbia Institute of Technology (BCIT). You are writing a letter of recommendation for one of your students to support their application for an internship.
- The name of the student is Rashi Durga, and you have known them for two years. The internship is with a game design company named GameVision. Rashi are pursuing an associate certificate in applied software development at BCIT, have taken several courses with you, including game design, and is proficient in the programming languages Java and C++.
- Their strengths include professionalism, excellent communication skills, ability to work well in diverse teams, and a creative approach to game design.
- * Copilot applied they/them pronouns effectively in the letter.



Assignment Instructions

- You are an experienced instructor in Health Promotion. Please draft a set of
 instructions for students that will help them succeed in a semester-long group
 project. Students will work together in teams of 5 to create a health promotion
 campaign to encourage teens to spend less time on social media and electronic
 devices.
- **The project needs to include** (1) literature review on the health effects of screen time and social media on teens (2) an audience focus group at least 5 with teens to get feedback on the campaign (3) a 15-minute presentation of the proposed campaign during the last week of the class. Students can choose the format of the campaign, including a website, posters, Instagram stories, or a podcast or storyboards for TV ads.
- Students will meet weekly for 30 minutes in class and can organize additional group meetings on their own. Please include suggestions for how students can identify and divide roles and responsibilities in their group, and how they can manage their time during the term.



Questions, Comments, Ideas?





Developing Teaching Materials with the Help of Al

Nanda Dimitrov BCIT Learning and Teaching Centre

Sample Prompts

https://bit.ly/BCITexamplesAl





Multiple Choice Questions

Prompt 1: Students in my statistics course are learning about the difference between the mean and the median. Could you create 5 multiple choice questions that will help my students practice their understanding of these two concepts?

Output by Copilot:

Absolutely, here are five multiple choice questions that can help your students practice their understanding of mean and median:

Question 1: Which of the following statements is true about the mean and median of a data set?

- o A. The mean is always larger than the median.
- o B. The median is always larger than the mean.
- o C. The mean and median are always equal.
- o D. The mean and median can be equal, larger, or smaller depending on the data set.

Question 2: In a data set with a positive (right) skew, which of the following is true?

- o A. The mean is greater than the median.
- o B. The median is greater than the mean.
- o C. The mean and median are equal.
- o D. The relationship between the mean and median cannot be determined.

Question 3: If an outlier is added to a data set, which measure of central tendency is more likely to be affected?

- o A. Mean
- o B. Median
- o C. Both mean and median
- o D. Neither mean nor median

Question 4: The median of a data set is:

- o A. The average value of the data set.
- o B. The most frequently occurring value in the data set.
- o C. The middle value when the data set is arranged in ascending order.
- o D. The sum of all the values in the data set divided by the number of values.

Question 5: The mean of a data set is:

- o A. The average value of the data set.
- o B. The most frequently occurring value in the data set.
- o C. The middle value when the data set is arranged in ascending order.
- o D. The sum of all the values in the data set divided by the number of values.



Prompt 2: Students in my statistics course are learning about the difference between the mean and the median. Could you create 5 multiple choice questions that will help my students apply their understanding of these two concepts? I would like the questions to be at higher levels of Blooms' taxonomy of cognitive learning. Please include the correct answers

Sure! Here are five multiple-choice questions designed to help your students apply their understanding of the mean and median at higher levels of Bloom's taxonomy:

Question 1: Analysis

A dataset contains the following values: 2, 3, 3, 6, 7, 8, 100. Which measure of central tendency (mean or median) would you use to best represent the central value of this dataset, and why?

- A. Mean, because it takes into account all values in the dataset.
 - B. Median, because it is not affected by extreme values.
 - C. Mean, because it is always a better measure of central tendency.
 - D. Median, because it is always a better measure of central tendency.

Correct Answer: B. Median, because it is not affected by extreme values.

Question 2: Evaluation

A researcher claims that the mean is always a better measure of central tendency than the median. Evaluate this claim and select the most appropriate response.

- A. The claim is correct because the mean uses all data points.
- B. The claim is incorrect because the median is always more accurate.
- C. The claim is correct only for symmetric distributions without outliers.
- D. The claim is incorrect because the mean is never a better measure.

Correct Answer: C. The claim is correct only for symmetric distributions without outliers.

Question 3: Application

Given the following dataset: 10, 12, 14, 16, 18, 20, 22, 24, 26, 100. Calculate the mean and median, and determine which measure better represents the central tendency of the data.

- A. Mean = 26.2, Median = 18; Median better represents the central tendency.
- B. Mean = 26.2, Median = 18; Mean better represents the central tendency.
- C. Mean = 20, Median = 18; Median better represents the central tendency.
- D. Mean = 20, Median = 18; Mean better represents the central tendency.

Correct Answer: A. Mean = 26.2, Median = 18; Median better represents the central tendency.



Question 4: Synthesis

Create a scenario where the median is a more appropriate measure of central tendency than the mean. Which of the following scenarios best fits this criterion?

- A. Salaries of employees in a small company where most employees earn similar amounts, but the CEO earns significantly more.
- B. Test scores of students in a class where all students scored similarly.
- C. Heights of a group of people where all heights are very close to each other.
- D. Daily temperatures in a city over a month where temperatures are consistent.

Correct Answer: A. Salaries of employees in a small company where most employees earn similar amounts, but the CEO earns significantly more.

Question 5: Evaluation

A dataset has a mean of 50 and a median of 45. What can you infer about the distribution of the data?

- A. The distribution is symmetric.
- B. The distribution is skewed to the right (positively skewed).
- C. The distribution is skewed to the left (negatively skewed).
- D. The distribution is uniform.

These questions should help your students apply their understanding of the mean and median in various contexts and encourage higher-order thinking.

Correct Answer: B. The distribution is skewed to the right (positively skewed).

Alternative requests/prompts

- Please include a separate answer key
- Give the AI tool your question and correct answer, and ask it to create distractor items.
- Use a Multiple-choice creator custom GPT



Rubrics

Prompt 1: What are the characteristics of an effective rubric used to assess student learning at the university level?

Copilot Response:

An effective rubric for assessing student learning at the university level should incorporate several key characteristics to ensure it is a valuable tool for both instructors and students. Here are the main elements:

- 1. **Validity**: The rubric should accurately measure the learning objectives it is intended to assess. This means the criteria and performance levels should align closely with the skills and knowledge being evaluated.
- 2. **Reliability**: The rubric should produce consistent results when used by different instructors or when applied to different groups of students. <u>This helps ensure fairness and objectivity in grading</u>¹.
- 3. **Fairness**: The rubric should be transparent and accessible to students from the beginning of the assessment process. <u>This includes clearly defined criteria and performance levels so students understand what is expected of them</u>¹.
- 4. **Efficiency**: The rubric should facilitate timely and detailed feedback, helping students understand their strengths and areas for improvement. It should also streamline the grading process for instructors¹.
- 5. **Clarity**: Each criterion and performance level should be clearly described, avoiding ambiguous language. This helps students know exactly what is required to achieve each level of performance².
- 6. **Comprehensive Criteria**: The rubric should cover all important aspects of the task or skill being assessed, typically including 3-10 criteria to balance thoroughness with manageability¹.
- 7. **Performance Levels**: Effective rubrics usually have 3-6 performance levels, each with distinct and descriptive labels that avoid subjective or overly negative terms¹.
- 8. **Descriptive Feedback**: The rubric should provide specific, actionable feedback for each performance level, helping students understand how to improve their work².

By incorporating these characteristics, a rubric can be a powerful tool to enhance learning and ensure fair and effective assessment at the university level.

Do you have a specific assignment or project in mind that you need help creating a rubric for?

Learn more 1 teaching.unl.edu 2 files.eric.ed.gov 3 colorado.edu

4 learningandteaching.anu.edu.au



.

Prompt 2: Can you please use the principles above to create a rubric for a team project in a first-year engineering course. The students are designing a solar powered vehicle concept. Please use 3 performance levels, and include criteria focusing on creativity, effective collaboration, feasibility of technical solution, application of concepts learned in class and effective documentation

Rubric for Solar-Powered Vehicle Design Project

Criteria	Excellent (3 points)	Satisfactory (2 points)	Needs Improvement (1 point)
Creativity	Innovative and original design; demonstrates exceptional creativity and problem-solving.	Design shows some creativity and originality; meets basic requirements.	Design lacks creativity; minimal effort in problem- solving.
Effective Collaboration	Team works seamlessly together; roles are well-defined and communication is excellent.	Team works well together most of the time; roles are somewhat defined.	Team struggles to work together; roles are unclear and communication is poor.
Feasibility of Technical Solution	Technical solution is highly feasible and well-supported by research and data.	Technical solution is feasible but may have some minor issues or gaps.	Technical solution is not feasible; lacks sufficient research and data.
Application of Concepts Learned in Class	Demonstrates thorough understanding and application of class concepts; integrates multiple concepts effectively.	Demonstrates basic understanding and application of class concepts.	Shows limited understanding and application of class concepts.
Effective Documentation	Documentation is thorough, clear, and well- organized; includes detailed explanations and visuals.	Documentation is adequate but may lack some detail or organization.	Documentation is incomplete, unclear, or poorly organized.



Case Study Creation

Prompt 1:

"I'm teaching a fourth-year undergraduate marketing course at a Canadian university. I would like my students to learn better team communication skills before they start a group project. Help me write a 1-2 paragraph case study that I could use in class as the starting point for discussion. In the case study, I would like to have a team member who doesn't do their share of the work, and a team member who provides harsh feedback to others. Please provide some guiding questions that engage the students in problem solving and analysis."

Copilot Output:

Case Study: The Rocky Road to Marketing Success

In a team of four students working on a major marketing project for a local business, two members stand out. Alex, a talented strategist, has a tendency to procrastinate and often fails to meet deadlines, leaving the rest of the team scrambling to pick up the slack. On the other hand, Jordan, the team's graphic designer, is known for their high standards and attention to detail. However, Jordan's feedback often comes across as harsh and demoralizing, leading to tension within the team. Despite their individual talents, the team's progress is hindered by these issues, causing concern about the successful completion of the project.

Here are some guiding questions for discussion:

- 1. How could the team address Alex's procrastination without causing further conflict?
- 2. What strategies could Jordan use to provide constructive feedback that encourages rather than discourages team members?
- 3. How might the team establish a more effective communication strategy to ensure everyone is on the same page and feels valued?
- 4. What steps can the team take to ensure equitable distribution of work and accountability among all members?
- 5. How can the team leverage the individual strengths of Alex and Jordan to their advantage?

Prompt 2:

Can you expand the case study with a description of two more team members. Kyla, who is quiet, and rarely contributes, but when she does, she is really insightful. She is particularly uncomfortable with Jordan's harsh feedback on to others as well as herself. And Prakash, who is very social, and is comfortable with public speaking, but he says he is not a great writer, so we would prefer to focus on giving the presentation at the end of the term.



Assignment Instructions

Prompt 1:

- You are an experienced instructor in Health Promotion. Please draft a set of instructions for students that will help them succeed in a semester-long group project. Students will work together in teams of 5 to create a health promotion campaign to encourage teens to spend less time on social media and electronic devices.
- The project needs to include (1) literature review on the health effects of screen time and social media on teens (2) an audience focus group at least 5 with teens to get feedback on the campaign (3) a 15-minute presentation of the proposed campaign during the last week of the class. Students can choose the format of the campaign, including a website, posters, Instagram stories, or a podcast or storyboards for TV ads.
- Students will meet weekly for 30 minutes in class, and can organize additional group meetings on their own. Please include suggestions for how students can identify and divide roles and responsibilities in their group, and how they can manage their time during the term.

Prompt 2:

• I would like to make sure that my students are prepared in case disagreement or conflict arises in their group project. **Can you create a handout with recommendations for resolving challenges during a group project constructively?** Please address issues such as: what happens if someone is too busy and not able to do their part on the project; or what to do if two people disagree, or how to provide peers with constructive feedback.

Please see the response from Copilot on the LTC website at:

Generative AI to Help Instructors Teach - BCIT



Reminder Emails

Prompt: You are an instructor in a first-year engineering course. Students will be working in groups on a design project to create a solar powered vehicle twice a week. The project is due at the end of the semester. Final project date is December 10th. **Please compose an email to students reminding them to:** (1) Hand in a draft project plan by October 1st (2) identify and divide roles within the team (3) Be ready to share a prototype with the class by Nov 1st and (4) give a final presentation and hand in their specifications on December 10th.

Output

Subject: Important Deadlines and Reminders for Solar Powered Vehicle Design Project

Dear Students,

I hope this email finds you well. As we continue our journey in creating a solar-powered vehicle, I wanted to remind you of some important upcoming deadlines and tasks to ensure the successful completion of your project. Please read carefully and mark these dates in your calendars.

- Draft Project Plan Due October 1st Each group is required to submit a draft project plan by October 1st. This plan should outline your objectives, timelines, materials needed, and initial design concepts. It will serve as a roadmap for your project, so please be thorough and detailed.
- 2. **Team Roles and Responsibilities** By now, you should have identified and divided roles within your team. Clearly define who will be responsible for each aspect of the project, including design, construction, testing, documentation, and presentation. Effective teamwork and clear communication are crucial for your success.
- 3. **Prototype Presentation November 1st** Be prepared to share a working prototype with the class by November 1st. This prototype should demonstrate your progress and allow you to receive valuable feedback. It does not need to be fully functional, but it should showcase your design and initial functionality.
- 4. **Final Presentation and Specifications December 10th** The final project presentation and submission of your detailed specifications are due on December 10th. Your presentation should cover the design process, challenges faced, solutions implemented, and the overall performance of your solar-powered vehicle. Additionally, you must hand in a comprehensive set of specifications and documentation of your project.

Please ensure you adhere to these deadlines and work collaboratively within your teams. Should you have any questions or need further guidance, do not hesitate to reach out to me during office hours or via email.

Best of luck with your projects, and I look forward to seeing your innovative designs! Kind regards,

[Your Name]

[Your Contact Information]



Recommendation Letter

Prompt:

You are a faculty member in computer science at the British Columbia Institute of Technology (BCIT). You are writing a letter of recommendation for one of your students to support their application for an internship. The name of the student is Rashi Durga, and you have known them for two years. The internship is with a game design company named GameVision. Rashi is pursuing an associate certificate in applied software development at BCIT, has taken several courses with you, including game design, and is proficient in the programming languages Java and C++. Their strengths include professionalism, excellent communication skills, ability to work well in diverse teams, and a creative approach to game design.

Output

To Whom It May Concern,

I am writing to highly recommend Rashi Durga for the internship opportunity at GameVision. I have had the pleasure of knowing Rashi for the past two years as <u>their</u> instructor in several computer science courses at the British Columbia Institute of Technology (BCIT).

Rashi is an exceptional student who stands out for <u>their</u> dedication, professionalism, and creativity. Here are some key points that make Rashi an excellent candidate:

1. Technical Proficiency:

- Rashi has a strong foundation in programming languages, particularly Java and C++. <u>Their</u> ability to write clean, efficient code is commendable.
- <u>They</u> have applied their skills in practical projects, including game development, demonstrating a deep understanding of software development principles.

2. Collaborative Skills:

- Rashi thrives in team environments. <u>They</u> actively contribute to group discussions, listen attentively to others, and offer constructive feedback.
- Their ability to work well with diverse teams ensures a positive and productive work atmosphere.

3. Communication Skills:

- Rashi's communication skills are exemplary. They express ideas clearly, both in writing and verbally.
- They actively engage in class discussions, fostering meaningful conversations and encouraging their peers.

4. Creativity and Game Design:

- Rashi's creative approach to game design sets them apart. They consistently bring fresh ideas to the table, pushing boundaries and exploring innovative solutions.
- Their passion for creating immersive and enjoyable gaming experiences is evident in their coursework and personal projects.

In summary, Rashi Durga is a dedicated, talented, and reliable individual who would be a valuable asset to GameVision. I wholeheartedly recommend them for the internship position, confident that they will contribute positively to your team.

Please feel free to reach out if you need any further information or have additional questions.

Sincerely, [Your Name] Faculty Member, Computer Science