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*The Academic Studies Centre for
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CRITICAL THINKING SKILLS

Author: Angela Patricia Gaitan

Critical Thinking Tools

In our modern and globalized world, using technology effectively is part of our daily basis. It should be clear for both students and teachers that information is constantly changing and that as digital natives or digital immigrants we should cope with today's technological challenges and the critical thinking skills needed to solve the 21st century problems. This guide will provide some examples of digital tools to excel using critical skills based on Bloom's taxonomy: Remembering, understanding, applying, analysing, evaluating, creating.

Bloom's categories

Remembering is: *recognizing, listing, describing, identifying, retrieving, naming, locating/finding*

In the tech world, this looks like: *Highlighting, bullet-pointing, bookmarking, social networking, social bookmarking, favouriting/local bookmarking, searching, googling*

Tools to Try: [YouTube](#) and other "flipped learning" video sites that allow teachers to create and post their lectures online are great ways to reach learners when they're most comfortable, and when they have time. With Remembering skills being practiced before class, your meeting time with students is reserved for higher-order thinking skills.

Any tool that can help you create great flipped lectures belongs in this list. There's [PowToon](#), [EdTED](#), and [Clarisketch](#) as other great examples.

Understanding is: *Interpreting, exemplifying, summarizing, inferring, paraphrasing, classifying, comparing, explaining*

In the tech world: *advanced searches, blog journaling, tweeting, categorizing and tagging, commenting, annotating, subscribing, Boolean search* is a type of search allowing users to combine keywords with operators (or modifiers) such as AND, NOT and OR to further produce more relevant results. For example, a Boolean search could be "hotel" AND "New York". This would limit the search results to only those documents containing the two keywords.

- **Quotes:** Use quotes to search for an exact phrase. *Example: "network administrator"*
- **Parenthesis:** Combine modifiers to create a more complex search. *Example: network AND (administrator OR architect)*
- **AND:** Include two search terms. *Example network AND administrator*
- **OR:** Broaden your search with multiple terms. *Example: "network administrator" OR "network manager"*

- **NOT:** Use to exclude a specific term. *Example: administrator NOT manager*

Tools to Try: Tools like [Mindmaple](#) and [MindNode](#) stand out among some of the best mind mapping tools available on the Web. Students can also get answers to their questions by making use of simple tools like forums, or by conducting Skype interviews.

Applying is: Implementing, Carrying Out, Using, Executing, Doing.

In the tech world, this looks like: Running, Loading, Playing, Operating, Hacking, Uploading, Sharing, Editing, Wiki Editing.

Tools to Try: Website/blogging tools like Weebly and Edublogs are the resources you can use to motivate students to apply their knowledge and share it with the world. The best tools are ones that help you plan a course of action for application. *Gantt charts* can give you an idea of a timeline for progression and completion of any project, you can also use HTML5 from the University website.

You may also want to dabble in organized task management applications. For this kind of process, great tools like Basecamp and Asana can help you get the job done.

Analyzing is: Comparing, Organising, Deconstructing, Attributing, Outlining, Structuring, Integrating

In the tech world, this looks like: Mashing, Linking, Reverse-Engineering, Cracking, Mind-Mapping, Validating, Calculating

Evaluating is: Checking, Hypothesizing Critiquing, Experimenting, Judging, Testing, Detecting, Monitoring

In the tech World, this looks like: Blog/Vlog Commenting, Reviewing, Posting, Moderating, Collaborating, Networking, Reflecting, Alpha/Beta Testing

Tools to Try: The key difference between analyzing and evaluating is collaboration. Students can upload their product or project for critique and beta testing.

For evaluating information, tools like Snopes and FactCheck.org are worth looking at. As you use these tools, remember to “balance check” various news sources and information resources for patterns and connected ideas.

Creating is: Designing, Constructing, Planning, Producing, Inventing, Devising, Making, Building

In the tech world, this looks like: Programming, Filming, animating, Blogging, Video Blogging, Mixing, Remixing, Wiki-ing, Publishing, Videocasting, Podcasting, Directing/Producing

Tools to Try: Students can build digital portfolios using Google Sites, Evernote, and VoiceThread. If they're into podcasting, get them on Audacity or Podbean.

Blogging tools include the ones mentioned in Apply, along with Wix, WordPress, and Ghost. Video tools to look at are ones such as Jahshaka, WeVideo, or Magisto.

Reflection activities: Reflection activities provide students with opportunities to track their learning and demonstrate their progress throughout the semester. To enhance the level of critical thinking students do through reflective activities, tell students to cite course materials that have helped them advance their knowledge and thinking.

Tools to try: Use Google Doc, a collaboration feature in Canvas, and tell students to keep a journal in which they reflect on what they are learning, describe the progress they are making in the class, and cite course materials that have been most relevant to their progress. Students can share the Google Doc with you, and instructors can comment on their work.

Peer review activities: Peer review activities enable students to demonstrate communication skills by giving feedback on each other's work, expose students to alternative perspectives, and allow students to question what they are reading. Doing peer review activities online can protect students' anonymity, making students more likely to be honest in their feedback (Lin, S. S., Liu, E. Z. F., & Yuan, S. M., 2001, Web-based peer assessment: feedback for students with various thinking-styles).

Tools to try: Use the peer review assignment feature in Canvas and manually or automatically form peer review groups. These groups can be anonymous or display students' names. Tell students to give feedback to two of their peers on the first draft of a research paper. Use the rubric feature in Canvas to create a rubric for students to use. Show students the rubric along with the assignment instructions so that students know what they will be evaluated on and how to evaluate their peers.

Discussion forums: Discussion forums allow students to communicate with their peers, answer questions that require them to demonstrate both lower-level and higher-level critical thinking skills, and analyze course content. When instructors set clear guidelines for participation and model critical thinking skills through their participation in discussion forums, students can also demonstrate how they are engaging in the critical thinking process.

Tools to try: Use the discussions feature in Canvas and tell students to have a debate about a video they watched. Pose the debate questions in the discussion forum, and give students instructions to take a side of the debate and cite course readings to support their arguments.

Small group activities: Small group activities allow students to communicate, problem solve, hear different perspectives, and collaborate to analyze and synthesize course content. By assigning small group activities, instructors can engage students in multiple levels of critical thinking.

Tools to try: Use goreact, a tool for creating and commenting on online presentations, and tell students to design a presentation that summarizes and raises questions about a reading. Tell students to comment on the strengths and weaknesses of the author's argument. Students can post the links to their goreact presentations in a discussion forum or an assignment using the insert link feature in Canvas.

Digital Storytelling Activities: Telling digital stories allows students to use multimedia (images, audio, video) to present information. Digital stories can include 1) personal narratives, 2) stories that document events, and 3) stories that inform and instruct. Creating digital stories allows students to evaluate, reflect on, or analyze course content (Robin, 2006, Digital storytelling: A powerful technology tool for the 21st century classroom).

Tools to try: Use goreact, a narrated Powerpoint, or a Google Doc and instruct students to tell a story that informs readers and listeners about how the course content they are learning is useful in their professional lives. In the story, tell students to offer specific examples of readings and class activities that they are finding most relevant to their professional work. Links to the goreact presentation and Google doc can be submitted via a discussion forum or an assignment in Canvas. The Powerpoint file can be submitted via a discussion or submitted in an assignment.

Adapted from <https://globaldigitalcitizen.org/26-critical-thinking-tools-blooms-taxonomy>

<http://fod.msu.edu/oir/critical-thinking>

<https://dl.sps.northwestern.edu/blog/2015/09/using-technology-to-develop-students-critical-thinking-skills/>

