The purpose of this guide is to assist facilitators in becoming more familiar with the educational foundation of case-based instruction, introduces UA COM eTools for facilitating teaching and learning, and offers scholarly resources for further inquiry.

Facilitator’s Guide to CBI

Medical problem-solving in Case-based Instruction

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Introduction

This facilitator guide contains a description of the CBI curriculum goals and methods of instruction, online learning tools as well as links to scholarly articles, practical tips for facilitation, video tutorials for logging into CBI ThinkShare™ and finding ThinkShare™, and other CBI facilitator resources.

The Case-based Instruction (CBI) Team

The Co-Directors for CBI are John Bloom, MD, and Paul St. John, PhD. Dr. Bloom and St. John lead an interdisciplinary team in developing curriculum, providing support for case authoring, and facilitator instructional development. Team members are: Herman Gordon, PhD (eTools); Celia O’Brien, PhD (Research and program evaluation); Susan Ellis, EdS (Assessment of student performance and evaluation); and Karen Spear-Ellinwood, PhD, JD (facilitator instructional development).

If you have questions or suggestions, please contact Karen Spear-Ellinwood, Phd, JD.

Contact

- Co-Director John Bloom, MD
- Co-Director Paul St. John, PhD
- To schedule facilitator training: Karen Spear-Ellinwood, PhD, JD
- Referral or Request for Faculty Instructional Development Support

CBI Curriculum

The role of reflection in learning

The UA College of Medicine emphasizes the importance of engaging in reflection on an ongoing basis to promote the cultivation of reflection in future professional practice. The UA College of Medicine utilizes a structured approach to medical problem-solving in case based instruction to assist students in:

- Developing medical problem-solving skills
- Developing Interpersonal & communication skills
- Engaging in practice-based learning & improvement
- Practicing and building on science concepts and medical knowledge.

A structured approach to medical problem-solving

To achieve these goals, students learn a structured approach to medical problem solving that emphasizes the processes involved and questions that must be asked to resolve each case. This approach is modeled on the scientific method and inspired by the considerations essential to evidence-based decision making. The 5-step medical problem-solving structure we use in CBI (Figure right) emerged from the pedagogy that underlies the developmental curriculum at the UA College of Medicine. Read More...

Each "step" focuses on the process of generating a desired outcome. For example, when students formulate hypotheses and articulate their reasoning for each, they are generating a list of provisional diagnoses. We emphasize process by naming the
step for how students will engage in producing that outcome, and not by the outcome itself. But however you would name these steps, by the time students’ work through a case they will have engaged in the kind of thinking and critical reflection highlighted by each step.

The purpose of using such a structure is to scaffold students’ internalization of a systematic approach to clinical reasoning, much like using the mnemonic VINDICATES does to ensure burgeoning clinicians consider the various systems in developing provisional diagnoses. As students’ progress in the curriculum, they will need less scaffolding and greater challenges. CBI instructional methods are designed to reflect increasing challenge with the appropriate tools for meeting those challenges across the curriculum.

In the first year, students engage in small group facilitated discussions about cases as well as use web based social networking tools to prepare for live sessions. These tools, called CBI ThinkShare™ and ThinkShare™, are designed to promote reflection in and on their decision making process (Schön, 1983). These online learning tools provide scaffolding for first year students by making the structure for problem-solving visible, reminding students what type of thinking is involved in the medical problem solving process, where they are in that process, what to consider, and the importance of consulting the ideas of others to advance one’s own thinking.

These online tools allow students and facilitators to view all student work before attending the facilitated session. These tools are designed to help students organize thinking, visualize the structure for medical problem-solving and provide access to peer thinking. They do not intend to replace group discussion.

We expect that second year students will have developed the facility in using the structured approach without needing the visual reminder of the processes involved. Thus, in second year, students use Group Share, which enables them to articulate their provisional diagnoses and reasoning and identify what else they need to know and why. Group Share does not impose a structure but allows students to create their own. As with CBI ThinkShare™, students can review what their peers have said prior to the facilitated session. Facilitators can also review what students are thinking and their reasoning to generate strategies for facilitating discussion and promoting reflective exploration of the issues involved in each case.

For a discussion by clinicians of the concept of reflection and critical thinking in clinical reasoning processes, please see the books, How Doctors Think by Jerome Groopman, and How Doctors Think: Clinical Judgment and the Practice of Medicine, by Kathryn Montgomery. Click here to view additional practical and scholarly resources.

Technology for learning how to problem-solve

An introduction to e-Tools

UA COM employs two eTools, called CBI ThinkShare™ and ThinkShare™, to promote reflective teaching and learning in case based instruction. The idea is to promote reflection in and on decision making processes as professionals are required to do in order to engage in reflective practice (Schön, 1983). Reflective practice, at best, involves reflection at three critical junctures in decision-making: preparation or planning, engagement in activity, and after making and implementing a decision (Plack and Santasier, 2005). This is to ensure that the decision is well-considered and based on evidence and that the person making the decision examines for error and learns from his or her mistakes.

CBI ThinkShare™ and ThinkShare™ encourage students to think metacognitively about the cases before attending and following a facilitated session with peers. Students’ thinking is shared with peers and facilitators. Facilitators are encouraged to review student pre- and post-case reflections to extract guidance for future medical problem-solving and offer the benefit of an experienced perspective. Below are brief descriptions of these e-tools.

If you have questions about these e-Tools, please contact Herman Gordon, PhD. If you have questions about facilitator training or want to facilitate CBI, please contact Karen Spear Ellinwood, PhD, at OMSE FID.
Related Resources
See Resources below for more information.

About CBI ThinkShare™

CBI ThinkShare™ is a web-based social networking tool developed under an award from the NSF (DUE-0942277), entitled "Social Networking to Support Scientific Problem Solving" for use in a UA course called The Art of Scientific Discovery (Principal Investigator, Herman Gordon, PhD). CBI ThinkShare™ has been adapted for use in medical problem-solving for case-based instruction (CBI).

CBI ThinkShare™ is based upon the 5-step structure for problem-solving described above, which is adapted from Polya: 1) Define the problem, 2) Formulate hypotheses with rationales, 3) Develop strategies for assessment, 4) Narrow diagnoses and generate a plan, and 5) Reflect. We view this as an iterative process, encouraging students to apply what they have learned about the process, the case and their problem-solving skills to future cases.

One advantage of CBI ThinkShare™ is that it makes this problem-solving process a visible structure, reminding students of what they ought to be considering at each juncture and to continually review and revise their thinking as well as to consult the thinking of peers.

CBI ThinkShare™ provides more scaffolding for students by making the structure for problem-solving visible to remind students where they are in the process, what to consider, and to consult the ideas of others. In the first year, students use ThinkShare™ first, which introduces them to the idea of articulating reasoning while working through a case. In January of the first year, students begin working on cases using ThinkShare, which provides a visible structure outlining the 5-step process. Students work through the first three steps, and enter their initial narrowed differential diagnosis, before attending the facilitated session.

As with every step in CBI ThinkShare™, students may view peer entries only after contributing an entry. In addition, as students work through a case in CBI ThinkShare™, for example, they receive releases of new information after entering a response to Step 2 and again after submitting an entry for Step 3. After each release, students are asked to reconsider whether the new information alters their approach or offers new rationales for including or excluding particular provisional diagnoses.

Facilitators review all student entries in their group before the session, which assists them in preparing more strategically for discussion. While CBI ThinkShare™ can help to organize thinking and stimulate peer consultation; it does not replace group discussion.
About ThinkShare™

As students learn to adopt and adapt a structured approach to medical problem-solving, we expect that they will have less need for such a visible structure. Therefore, in their second year, students will use Group Share.

Students access ThinkShare™ through ArizonaMed, the online course management and delivery system at the UA COM. In blocks using ThinkShare™, students generally have two assignments per case, one asking them to articulate their hypotheses, rationales and strategies for developing their differential diagnoses in response to information extracted from a case, and then a post-case reflection following facilitated sessions.

Thus, ThinkShare™ provides less structure but nonetheless encourages students to engage in reflection before and after each case and can help students prepare to engage in more productive discussion in facilitated sessions.

As with CBI ThinkShare™, students and facilitators can review what all other students in their group have said prior to the facilitated session. Facilitators can use post-case reflections to offer guidance for future problem-solving or in giving formative feedback to students.

Where to find ThinkShare
To find ThinkShare™ you can go to Arizona Med online. Your homepage should have a green icon for ThinkShare™.

Where to find CBI ThinkShare™
To find CBI ThinkShare™, go to cbi.thinkshare.arizona.edu. You will also find the link on the banner menu of the OMSE FID website.

CBI Facilitator Training

All CBI facilitators are required to complete a two-part training program. The first part addresses the structured problem-solving approach to medical cases, the role of reflection in teaching and learning, facilitation methods and an introduction to the e-Tools that will be used in a given block (i.e., CBI ThinkShare™ or ThinkShare™). The second part addresses assessing student performance in CBI.

In the course of training, some UA COM CBI facilitators requested additional resources from education research literature on the role of reflection in teaching and learning. Below are links to resources, some created by OMSE and others to external sources. If you would OMSE to post resources on other topics, please visit our CBI Facilitator Training page or contact us.
Resources for Facilitators

Online Resources

OMSE Faculty Instructional Development Website, CBI Facilitator Resources page

References


CBI ThinkShare™ FAQs

☞ How is case information released to students in CBI ThinkShare™?

After making an entry for Steps 2, CBI ThinkShare™ releases more case information to the student, in addition to making peer entries visible. The release appears below the entries for that step and ends with questions for thinking about approaching the next step. The same is true for Step 3.

☞ Can students revise their answers?

After making a revision, only the latest version of a student’s entry is visible to his or her peers, but each student may view his or her prior versions of any entry.

☞ How far do students work through the case before coming to the session?

Students will work through the initial entry to Step 4.

☞ What is the notebook?

The Notebook contains each case the student works on and includes the latest version of the entry for each step completed. This allows the student to review the progression of their thinking in one place from the first to current case.

☞ What is the CBI ThinkShare™ Wiki?

The Wiki contains short descriptions of the problem-solving structure, with graphics, a collection of questions to guide students in understanding what the issues are at each step in the process, and other contributions designed to offer guidance in using CBI ThinkShare™ or solving medical cases. For example, Charley Putnam, MD, PhD, revamped the Strategic Guidance from a clinician's perspective when he facilitated in the MSS block this year (2012) and Herman Gordon, PhD, posted these to the Wiki for everyone to consider. Students and facilitators can view and contribute to the Wiki.

Video Tutorials for CBI ThinkShare™

☞ How to login to CBI ThinkShare™

☞ What’s on the CBI ThinkShare™ menu?

☞ How do students work a case using CBI ThinkShare?

☞ Viewing peer entries: Students make an entry before they can see peer entries
CBI ThinkShare™ Wiki Resources

- Charley Putnam, MD - Clinician's perspective on strategic guidance in working a case in CBI ThinkShare™

Scholarly Resources on Reflection, Facilitation & Cognitive Error

- Encouraging students to examine for cognitive error
- References and abstracts to recent articles on cognitive error
- References to scholarly articles on the role of reflection in learning
- Guided Inquiry Learning
- Socratic question guide
- Facilitation Tips
- Evidence-based decision making
- The importance of science for physicians (SCIENCE VOL 329 24 SEPTEMBER 2010)