

The “New” PBL: Case Inquiry (IQ)

Amy L. Wilson-Delfosse, Ph.D.
Associate Professor of Pharmacology
Assistant Dean for Basic Science Education
Case Western Reserve University
School of Medicine

Scholarship of Teaching and Research in Medical Education
Boonshoft School of Medicine
Wright State University
September 13, 2012

Goal:

Workshop participants will understand the Case InQiry method and the advantages of using this method in the education of medical students.

Objectives:

At the end of this workshop, participants will be able to:

1. Define “IQ” and explain how it differs from “traditional” PBL.
2. List the advantages of the IQ small group learning approach.
3. Distinguish the role of the faculty facilitator and the role of the learners in IQ.
4. List and define key teamwork behaviors in the IQ process.

Introduction to Western Reserve2

Guiding Principles of WR2

The School of Medicine at Case Western Reserve University will prepare students for the ongoing practice of evidence-based medicine in the rapidly changing healthcare environment of the 21st century. The curriculum will be developed in a framework that is based on the following principles.

1. The core concepts of health and disease prevention will be fully integrated into the curriculum.
2. **Medical education will be experiential and emphasize the skills for scholarship, critical thinking, and lifelong learning.**
3. **Educational methods will be chosen that stimulate an active interchange of ideas among students and faculty.**
4. **Students and faculty will be mutually respectful partners in learning.**
5. **Students will be immersed in a graduate school educational environment characterized by flexibility and high expectations for independent study and self-directed learning.**
6. Learning will be fostered by weaving the scientific foundations of medicine and health with clinical experiences throughout the curriculum. These scientific foundations include basic science, clinical science, population-based science, and social and behavioral sciences.
7. Every student will have an in-depth mentored experience in research and scholarship.
8. Recognizing the obligations of physicians to society, the central themes of public health, civic professionalism and leadership will be longitudinally woven throughout the entire curriculum.

9. The systems issues of patient safety, quality medical care, and health care delivery will be emphasized and integrated throughout the curriculum.

10. Students will acquire a core set of competencies in the knowledge, mastery of clinical skills and attitudes that are pre-requisite to graduate medical education. These competencies will be defined, learned and assessed and serve as a mechanism of assessment of the school's success.

WR2 Curriculum Components

Key Features

Flexibility

Emphasize **independent study** and scheduling choices (guiding principles 2,5)

Begin mentored experiences in research during the first 18 months, and provide multiple opportunities in the schedule for a dedicated 4 month research block and future ongoing research experiences (guiding principle 7)

Redesign elective structure to supplement educational experiences in core curriculum (guiding principles 2,3, 5)

Process of Teaching and Learning

Focus on the amount of student-focused and self-directed learning time instead of calculating the amount of teaching time (guiding principles 2, 3, 4, 5)

Promote student responsibility for learning (guiding principles 2,3,4,7)

Hold 3 interactive student-centered discussions/week (guiding principles 2, 3, 4, 5)

Schedule a maximum of 20 contact hours/week (including student-centered discussions, laboratories, lectures, clinical skills, etc.) (guiding principles 2, 3,5)

Emphasize clinical mastery through clinical exposure and simulation (guiding principles 2, 3, 9, 10)

Emphasize learning from multiple sources (including a rich array of web-based resources) and limit the use of an extensive syllabus (guiding principles 2, 3, 5)

Content

Initiate medical school education at the macro level with a focus on the social and behavioral context of health and disease in the broader population (guiding principles 1,6,8,9)

Identify new educational focus at the interface of clinical medicine and public health (guiding principles 1,6,8)

Weave biomedical science, population health, scholarship, clinical medicine, leadership and civic professionalism longitudinally across the curriculum (guiding principles 1,6, 7,8,9)

Create clinical experiences within biomedical and population sciences, as well as basic science

instruction within clinical rotations (guiding principles 2, 6)
Recommit to clinical mastery in the craft of Medicine

Assessment

Change assessments from methods that emphasize passive learning (e.g., the memorization and recall of specific facts to methods) to those that emphasize **active learning and concept synthesis** (guiding principles 2, 3, 5)
Define core competencies for clinical mastery (guiding principle 10)
Evaluate of all elements of the new system rigorously (guiding principle 3, 10)

Faculty Support

Provide development around interactive teaching and facilitation of student-centered discussions (guiding principles 3, 4, 5)

Foster clinical teaching faculty who directly observe students' clinical skills (guiding principles 9, 10)

Provide financial and academic support for faculty curriculum leaders during curriculum design, implementation and ongoing delivery (guiding principles 1, 2, 3)

Provide enhanced financial support and academic rewards for the instruction of medical students (guiding principles 1, 2, 3)

Introduction

During the first 1 ½ years of medical school, students will learn in large group interactive sessions, medium group interactive sessions, and in Case Inquiry Teams (IQ). IQ teams will meet for two hours every Monday, Wednesday and Friday morning from 8:00am-9:50 am (year 1) or 10:00-11:50am (year 2). These student-centered and faculty-facilitated case inquiry discussions, enhanced by more traditional didactic sessions, will serve as one of the core methods of learning in the new curriculum. Each group will have 8-9 students and one faculty facilitator. The students will change every block and the facilitators will serve for half a block or a whole block.

A Case Inquiry Team is a small student-centered learning group that uses cases and discussion to learn, retain, synthesize and integrate knowledge. Our IQ teams use some aspects of a teaching tool called Problem Based Learning. In a case inquiry team, students prepare for and do most of the talking. The faculty member facilitates the discussion, ensures that learning objectives are addressed, and ensures that each member of the group contributes to the learning effort. The following table is a rough outline of a student's typical week. IQ groups are an important teaching tool in the larger tool box of the new curriculum. This diagram below shows how a wide variety of teaching and learning environments are used in the curriculum.

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00am-10:00am	IQ group start case 1 & case 2	Foundations of Clinical Medicine Seminars	IQ group finish case 1	SDL	IQ group Finish case 2
10:00am-12:00pm	Med./Large group session	Structure Anat/rad/histopath	Med./Large group/research and scholarship	SDL	Med./Large group sessions
After-noon	SDL or Clinical Skills	SDL or Clinical Skills	SDL or Clinical Skills	SDL or Clinical Skills	

Theme of the Week	Each week has a theme such as “T cell activation”
IQ case	Each IQ is related to the theme of the week, for example: “ A patient with a new rash is diagnosed with psoriasis and begins therapy with immune modulators”
Med./Large group sessions	Each session relates to the theme of the week, for example: “The functioning of the immune system, focusing on B and T cell activation”
Clinical training	1 afternoon per week and relates with the block and weekly themes

SDL= Self Directed Learning

Advantages and Professionalism

Advantages

IQ groups prepare you for the job of caring for sick people.

Learning in IQ groups is more like a clinical experience rather than a classroom experience. This is true because

- **You learn information within the context of solving a problem.** This gives you a mental scaffold to hang facts on, instead of just remembering random factoids. Research shows that this improves understanding, the ability to transfer knowledge from one setting to another, integration, and student satisfaction.
- **This is an active process.** The quality of the group work depends upon group members; all must participate for everyone to learn fully. You are no longer an anonymous person jotting notes in a dim lecture hall.
- **You improve your communication skills.** Learning in a group prepares you to function in the healthcare team. You are allowed to practice, in a safe environment at the medical school, the skills you will need to care for patients in the hospital.

Professionalism

Professionalism;

Show up

Be on time

Prepare

Participate

Mastery

Reflective

Students must have high professional standards in an IQ group. Since this kind of teaching is more like a clinical experience rather than an anonymous large classroom experience, students must act like a professional.

Responsible: Students must attend every session and show up on time.

The quality of the work in the group depends upon the participants presence, preparation, and preparation. If students do not attend, prepare, or participate, this will hurt the learning of the group.

Honest: Students will communicate correct information.

Assess
Quality
Integrity
Respectful
Altruistic

Quality and Integrity: Students will insure the quality of their own learning and the integrity of the process by engaging in truthful reflections and assessments of personal and group performance.

Respectful. Students will listen to one another and create a safe learning environment that is non-threatening.

Altruistic. Students will help one another by preparing, participating and creating a positive learning environment.

The Psychology of Groups Explained

Organizational psychologists describe group formation progressing through four stages.

Themes:
Safety
Dependence
Testing
Quest:
Safe environ.
Role definition

Forming: Group members are getting oriented. They will test the boundaries of interpersonal relationships and of their roles within the group. This testing is a natural part of finding their place. They will fall back on safe patterns of behavior and defer to the facilitator for direction. They will avoid controversy.

The job of the group is to create a safe and non-threatening environment where students and facilitator understand their roles. Facilitators need to be directive, asking members to define and name their roles.

Themes:
Resistance
Quest:
Compromise

Storming: Group members resist the social pressures of the group and the role they play in the group. They become polarized: some members will dominate and others will go silent. Facilitators need to be more directive and model behaviors, helping the group members to name the conflicts and problem solve about solutions. The checkout time at the end of each group is used to address the conflict

Themes:
Openness
Cohesion
Quest:
Don't interfere
Track learning

Norming: Group members are gelling. Resistance is over. The group is a cohesive and effective machine. Members feel like they belong to something important and they take ownership of the group. Facilitators often speak less often. Members may start to fear the breakup of the group.

Theme:
Independence
Quest:
Don't interfere
Track learning

Performing: Group functions independently. Groups do not always reach this stage and they do not need to in order to be effective. Members will mourn the ending of the group.

Reference:

Tuckman, B.W. (1965). Developmental sequences in small groups. *Psychological Bulletin*, 63, 384- 399.

Anatomy of an IQ Session

Forming- Setting the stage for a well functioning group

*Get comfortable,
establish the rules:
Group logistics,
student and
facilitator
responsibilities*

*Set logistics:
Stud. Leader
scribe
time keeper
scheduling*

*Set climate:
Computers
Participation
Respect
Preparation*

Start with brief introductions. At the start, everyone in the group is feeling each other out: students are unclear of their role and their position in the group.

Set group norms. Students and facilitator agree on a list of expectations for the group and the climate of learning is set. The group must also agree on logistics and the learning environment. Common topics are:

Logistics

- Appointment of a student facilitator
- Appointment of a group scribe, records the group work on the white board
- Appointment of a time keeper
- What to do if a student needs to miss a group
- Alternative meeting time to accommodate the facilitator's schedule

Learning environment

- Computer use in class
- Participation
- Respect for others
- Preparation

. This time is critical. If expectations are clearly articulated at the start of the group, this will prevent much trouble later in the block.

Initially, it may be helpful to have student scribe to make a table and fill it in. "From your past experience, what has made a group work well? What climate? What behaviors?"

A student should copy down and distribute this list to the group. The group may want to revisit this document later if there is a problem in group functioning or it may be helpful when a facilitator changes or a substitute is necessary.

First Day of a Case

*Housekeeping:
Student
facilitator
Time*

In the beginning, the faculty facilitator may need to model the way an IQ works, then evolves to more of a coach's role, then fade as the students take control of group functioning.

The group appoints a student leader, a time keeper and a scribe. Generally, groups find it most efficient to retain the same leader for the entire week. The leader is in charge of group functioning: calling the group to order, asking for volunteers, taking charge if things become chaotic. The time keeper will alert the group at regular intervals of their progress and the scribe will record relevant information on the white board.

Read Goal

Goal. A student will read the goal of the case out loud.

*Read Case
Take breaks and
generate
hypotheses*

Read the case. Students should read through the case paragraph by paragraph, pausing to work on hypothesis generation after each paragraph. Media assets (photos, x-rays, and pathology specimens) may be provided. The group may have a separate reader for each paragraph thereby involving more students.

*Clarify terms
and words*

Hypothesis generation. It is often a good place to start by clarifying unfamiliar terms or words. The students begin to explore and ask questions about mechanisms of action, pathophysiology, and epidemiology. The scribe will go to the board and record the ideas of the group. This brainstorming session involves coming up with answers to questions like these:

*Generate
hypotheses*

What do you think is going on here?

Let's go deeper to find out the how this reaction works?

What is going on at the cellular level?

What does this treatment tell us about the functioning of the immune system?

What are the linkages between these concepts that you have put up on the board?

*Identify learning
points*

Questions that cannot be answered. When students come to the limits of their knowledge or didactic reasoning, they have found the learning points (LPs) of the case. **If facilitated well, these learning points will be the same as the learning objectives for the case** that are written in the facilitator guide. A group scribe will record the LPs on the white board. **All students will research all the LPs identified by the group.** This is critical because when the group returns for the second part, each group member must be knowledgeable so that they can engage in discussion. It is common

*All students
research all the
LPs*

*Make it better
next time
Recalibrate*

for students to identify certain “personal” learning points that may be important but not central to the case.

Check out: The last 10 minutes of each session is reserved for group, self and facilitator assessment. Each student in the room will comment on their own participation and their assessment of the hypothesis generation process. This is not a time to answer a safe question like, “How did things go today”. Inevitably, this kind of statement will return bland comments like, “Things were fine, I thought that I did okay”. The group needs honest and constructive feedback to improve its efficiency.

Time Between Sessions

*Students will
research all the
LPs*

During this time, students in the group will research all the LPs identified by the group. For each two hours of class time, they will have about 4-6 hours of research. Students will have an online portal through the blackboard system where they can post references and share ideas.

Second Day of The Case

*Read the goals
Summarize the
case*

Refresh. The student leader will take control and ask for a volunteer to reread the case goal. He/she will ask, “Will someone summarize the case?”

*Apply your
research, discuss
and share
knowledge*

Application. Students will apply their self study to clarifying the learning points. They will discuss, draw diagrams, and disagree. This should not be mini-book reports or reading material off a laptop screen. This is a highly interactive time. Facilitators will make sure the students interact and stay on course to cover the objectives.

*Reconcile LPs
with the LOs
prepared by the
faculty*

Reconciliation. At the end of a case, the group will compare the learning points LPs they generated to the learning objectives (LOs) articulated by the faculty. The facilitator will pass out, or view on line, the objectives prepared by the faculty. . This is quality control for the group. If certain learning objectives were not discussed, the group must figure out why this happened and come up with strategies to address the LO’s that were not explored within the group.

*Make it better for
next time*

Check out: The last 10 minutes of each session is reserved for group, self and facilitator assessment.