Education & Training in the Blood Bank

Lynsi Rahorst, MHPE, MT(ASCP)SBB\textsuperscript{CM}
Manager, Education & Training, IRL/Genomics Labs
New York Blood Center Enterprises
lrahorst@cbckc.org

Wednesday, June 29, 2022
HAABB
Objectives:

At the end of this presentation, the learner will be able to...

1. Discuss learner-centered principles, including examples of how to employ learner-centered principles in education and training in the blood bank.

2. Describe the importance of the alignment of learning objectives, instructional approaches, and assessment methods.

3. List strategies that can be employed to improve education and training in the blood bank at your facility.
Overview

• Introduction
  Why talk about education & training in the blood bank?

• Educational concepts that might be useful
  What do educators know that blood bankers might not?

• Practical tips for your facility
  What can you do to improve education & training where you work?
Education vs Training

**Education**

- **Gaining theoretical knowledge**
- Applies to: MLS and SBB students, residents, fellows, blood bank technologists (continuing education), new hires
- Examples:
  - What causes ABO discrepancies?
  - What is the GATA mutation?

**Training**

- **Developing specific skills (following the SOP)**
- Applies to: MLS and SBB students, new hires
- Examples:
  - How do you prepare a 3-5% RBC solution?
  - What is the plasma:cell ratio in performing routine antibody screens?
Pat on the Back

You’re doing a fine job!

https://pusparaniology.wordpress.com/2013/03/30/indonesia-seharusnya-suka-memuji/pat-on-the-back-300x300-scaled5951/
Overview

• Introduction
  Why talk about education & training in the blood bank?

• Educational concepts that might be useful
  What do educators know that blood bankers might not?

• Practical tips for your facility
  What can you do to improve education & training where you work?
Learner-Centered Principles

- Active participation/experiential learning
- Variety of activities/Multiple delivery modes
- Social aspect of learning/cooperative learning
- Teacher as facilitator rather than authority
- Intrinsic motivation/self-direction
- Relevant problem/authentic context
- Application of new knowledge
- Self-appraisal/Reflection on learning
- Multiple assessment formats

Associated with…
- Better academic performance
- Increased personal satisfaction
- Accelerated personal & professional growth
# Learner-Centered vs Teacher-Centered

<table>
<thead>
<tr>
<th>ELEMENTS</th>
<th>TEACHER-CENTERED</th>
<th>STUDENT-CENTERED</th>
</tr>
</thead>
<tbody>
<tr>
<td>KNOWLEDGE</td>
<td>Transmitted from Instruction</td>
<td>Constructed by Students</td>
</tr>
<tr>
<td>STUDENT PARTICIPATION</td>
<td>Passive</td>
<td>Active</td>
</tr>
<tr>
<td>ROLE OF LECTURER</td>
<td>Leader/Authority</td>
<td>Facilitator/Partner in Learning</td>
</tr>
<tr>
<td>ROLE OF ASSESSMENT</td>
<td>Few Tests, Mainly for Grading</td>
<td>Many Tests, for Ongoing Feedback</td>
</tr>
<tr>
<td>EMPHASIS</td>
<td>Learning Correct Answers</td>
<td>Developing Deeper Understanding</td>
</tr>
<tr>
<td>ASSESSMENT METHOD</td>
<td>One-Dimensional Testing</td>
<td>Multidimensional Testing</td>
</tr>
<tr>
<td>ACADEMIC CULTURE</td>
<td>Competitive, Individualistic</td>
<td>Collaborative, Supportive</td>
</tr>
</tbody>
</table>

https://co.pinterest.com/pin/111534528261335279/
<table>
<thead>
<tr>
<th>Learner-Centered Instruction</th>
<th>Description/Example</th>
</tr>
</thead>
</table>
| **Problem-based learning**  | • Case examples with Q&A  
                               • Learner works through case from receiving requisition to issuing blood |
| **Flipped classroom**       | • Students learn theory through self-directed work outside of class  
                               • Online modules  
                               • Handout  
                               • Video  
                               • Reading  
                               • Classroom time spent on active learning & application |
| **Self-directed learning**  | • Learner determines objectives, strategy to acquire knowledge, etc.  
                               • Teacher as facilitator |
What is a learning objective?

After this presentation (course, module, rotation, etc.), the learner will be able to…
What makes a good learning objective?

Learner-centered:

Objectives are NOT “what I will talk about today”...
What makes a good learning objective?

Learner-centered:

- My first objective is that I will talk about common characteristics of Dombrock antibodies.

Objectives are NOT “what I will talk about today”…
What makes a good learning objective?

Learner-centered:

– My first objective is that I will talk about common characteristics of Dombrock antibodies.

– (At the end of this presentation, the learner will be able to…) Discuss common characteristics of Dombrock antibodies.
What makes a good learning objective?

Measurable:

– At the end of this presentation, the trainee will know about ABO discrepancies.
What makes a good learning objective?

Measurable:

— At the end of this presentation, the trainee know about ABO discrepancies.

— (At the end of this presentation, the trainee will be able to…) List five common causes of ABO discrepancies.
### Learning Objectives: Why are these words so important?

<table>
<thead>
<tr>
<th>REMEMBER</th>
<th>UNDERSTAND</th>
<th>APPLY</th>
<th>ANALYZE</th>
<th>EVALUATE</th>
<th>CREATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>Associate</td>
<td>Add</td>
<td>Analyze</td>
<td>Appraise</td>
<td>Categorize</td>
</tr>
<tr>
<td>Define</td>
<td>Compute</td>
<td>Apply</td>
<td>Arrange</td>
<td>Assess</td>
<td>Combine</td>
</tr>
<tr>
<td>Describe</td>
<td>Convert</td>
<td>Calculate</td>
<td>Breakdown</td>
<td>Compare</td>
<td>Compile</td>
</tr>
<tr>
<td>Draw</td>
<td>Defend</td>
<td>Change</td>
<td>Combine</td>
<td>Conclude</td>
<td>Compose</td>
</tr>
<tr>
<td>Identify</td>
<td>Discuss</td>
<td>Classify</td>
<td>Design</td>
<td>Contrast</td>
<td>Compose</td>
</tr>
<tr>
<td>Label</td>
<td>Distinguish</td>
<td>Complete</td>
<td>Detect</td>
<td>Critize</td>
<td>Create</td>
</tr>
<tr>
<td>List</td>
<td>Estimate</td>
<td>Compute</td>
<td>Develop</td>
<td>Critique</td>
<td>Drive</td>
</tr>
<tr>
<td>Match</td>
<td>Explain</td>
<td>Demonstrate</td>
<td>Diagram</td>
<td>Determine</td>
<td>Design</td>
</tr>
<tr>
<td>Name</td>
<td>Extend</td>
<td>Discover</td>
<td>Differentiate</td>
<td>Grade</td>
<td>Devise</td>
</tr>
<tr>
<td>Outline</td>
<td>Extrapolate</td>
<td>Divide</td>
<td>Discriminate</td>
<td>Interpret</td>
<td>Explain</td>
</tr>
<tr>
<td>Point</td>
<td>Generalize</td>
<td>Examine</td>
<td>Illustrate</td>
<td>Judge</td>
<td>Generate</td>
</tr>
<tr>
<td>Quote</td>
<td>Give examples</td>
<td>Graph</td>
<td>Infer</td>
<td>Justify</td>
<td>Group</td>
</tr>
<tr>
<td>Read</td>
<td>Infer</td>
<td>Interpolate</td>
<td>Outline</td>
<td>Measure</td>
<td>Integrate</td>
</tr>
<tr>
<td>Recall</td>
<td>Paraphrase</td>
<td>Manipulate</td>
<td>Point out</td>
<td>Rank</td>
<td>Modify</td>
</tr>
<tr>
<td>Recite</td>
<td>Predict</td>
<td>Modify</td>
<td>Relate</td>
<td>Rate</td>
<td>Order</td>
</tr>
<tr>
<td>Recognize</td>
<td>Rewrite</td>
<td>Operate</td>
<td>Select</td>
<td>Support</td>
<td>Organize</td>
</tr>
<tr>
<td>Record</td>
<td>Summarize</td>
<td>Prepare</td>
<td>Separate</td>
<td>Test</td>
<td>Plan</td>
</tr>
<tr>
<td>Repeat</td>
<td></td>
<td>Produce</td>
<td>Subdivide</td>
<td></td>
<td>Prescribe</td>
</tr>
<tr>
<td>Reproduce</td>
<td></td>
<td>Show</td>
<td>Utilize</td>
<td></td>
<td>Propose</td>
</tr>
<tr>
<td>Select</td>
<td></td>
<td>Solve</td>
<td></td>
<td></td>
<td>Rearrange</td>
</tr>
<tr>
<td>State</td>
<td></td>
<td>Subtract</td>
<td></td>
<td></td>
<td>Reconstruct</td>
</tr>
<tr>
<td>Write</td>
<td></td>
<td>Translate</td>
<td></td>
<td></td>
<td>Related</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use</td>
<td></td>
<td></td>
<td>Reorganize</td>
</tr>
</tbody>
</table>

[https://spscoursedesign.commons.gc.cuny.edu/analysis-for-design-and-understanding-learning-outcomes/](https://spscoursedesign.commons.gc.cuny.edu/analysis-for-design-and-understanding-learning-outcomes/)
Domains of Learning

• Psychomotor
  – Skills
• Cognitive
  – Knowledge
• Affective
  – Attitudes/appreciation

http://digitalinstructionalgames.weebly.com/learning-domain-addressed.html
Psychomotor Domain

• Can the learner…
  – Make a 3-5% RBC solution?
  – Test a screen in gel?
  – Prepare an acid eluate?

How do we learn in this domain?
• Observation
• Read written procedure
• Practice

Extremely important for:
• New hires in the blood bank
• MLS students
• Technologist learning new assay

https://www.youtube.com/watch?v=8zwREsu9VWM
Cognitive Domain

• Does the learner know…
  – The clinical significance of anti-Fy\textsuperscript{a}?
  – The expected serologic reactivity of a patient with warm autoimmune hemolytic anemia?
  – How to correctly interpret results of a panel?

How do we learn in this domain?
• Lecture, reading
• Case studies
• Discussion
Affective Domain

• Can the learner describe…
  – The importance of following SOPs exactly?
  – The impact of blood bank testing on patient care?
  – The value of professional development and continuing education?

How do we learn in this domain?

• Exposure, mentorship
• Observation of modeling
• Discussion/reflection

Extremely important for:
• MLS students
• SBB students
Importance of Assessment

• **Guides** learning
  – “There will be a quiz…”
• **Enhances** learning
• **Provides formative feedback** to learner
• **Provides evidence of success** of educational activity

https://quizizz.com/admin/quiz/60b43c4400b6ed001b1d0239/pretest-posttest-design
Assessment Methods

How to measure if learners have achieved the objectives

Psychomotor
- Direct observation
- Student samples
- Formative feedback

Cognitive
- Pretest/Posttest
- Multiple choice questions
- Case studies

Affective
- Self-reporting of attitudes
- Reflective essay
# Learner-Centered Assessment

<table>
<thead>
<tr>
<th>Assessment is…</th>
<th>Assessment is not…</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Opportunity for formative feedback</td>
<td>• Punitive</td>
</tr>
<tr>
<td>• Encouragement of learner/trainee to seek feedback</td>
<td>• Trying to catch learner/trainee doing something wrong</td>
</tr>
<tr>
<td>• Opportunity for learner/trainee to participate in their learning</td>
<td>• Something that should make learner/trainee feel bad</td>
</tr>
</tbody>
</table>

(My opinion)

Assessment for trainees should be “open-book”
## Alignment: Objectives, Instruction, Assessment

<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Instructional Strategies</th>
<th>Learner Assessment Methods</th>
</tr>
</thead>
</table>
| **Cognitive Domain** | ▪ Informal lecture/ Discussion  
▪ Case Studies  
▪ Discussion/Review | ▪ Pretest/Posttest (MCQ format)  
▪ Case Studies |

*Upon completion of the rotation, the learner will correctly interpret test results to identify alloantibodies and autoantibodies in blood samples and in case studies when laboratory results are provided.*

| **Psychomotor Domain** | ▪ Demonstration  
▪ Written description  
▪ Practice | ▪ Direct Observation  
▪ Formative Feedback |

*Upon completion of the rotation, the learner will perform routine blood bank tests on authentic blood samples, including type and screen and antibody identification, to the degree that valid results are obtained.*

| **Affective Domain** | ▪ Exposure  
▪ Modeling  
▪ Discussion/Reflection | ▪ Pretest/Posttest (self-reporting of attitudes)  
▪ Reflective Essay |

*Upon completion of the rotation, the learner will describe the impact of blood banking on patient care.*
Overview

• Introduction
  Why talk about education & training in the blood bank?
• Educational concepts that might be useful
  What do educators know that blood bankers might not?
• Practical tips for your facility
  What can you do to improve education & training where you work?
Practical Tip #1: Make Materials!

- Is each group of students receiving the same experience?
- Do staff members assigned to educational projects understand their responsibility?
Make Materials!

Keep it Learner-Centered

• Students provided “handbook” with spaces to fill in
Make Materials!

New Hire Training:

- Have new hires categorize important information by reading SOPs
- Learner-centered: student/trainee investigation required

**Handout 1.0: Comparison of IAT Methods**

**Instructions**: This handout is meant to help you differentiate the different IAT methods used in the IRL.  
1. Fill in all highlighted spaces.

<table>
<thead>
<tr>
<th>IAT method</th>
<th>Refer to SOP:</th>
<th>Incubation time at 37°C</th>
<th>When is this method used?</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less sensitive</td>
<td>Saline IAT</td>
<td>50μL cell suspension (48h); only 25μL of plasma used per test</td>
<td>Not applicable</td>
<td>HTLA antibodies react best at saline IAT; Saline IAT used for testing prenatal titers</td>
</tr>
<tr>
<td></td>
<td>USS IAT</td>
<td>70μL cell suspension (18h); 180μL of plasma used per test</td>
<td>USS IAT is the default method for warm agglutination tests</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PEG IAT</td>
<td>60μL cell suspension (18h); 180μL of plasma used per test</td>
<td>No reagents or reagents at room temperature; can be performed at any time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FICIN IAT</td>
<td>60μL cell suspension (18h); 180μL of plasma used per test</td>
<td>M1, M13, P1, P2, Xg antigens destroyed (among others); Rh/Kd antibodies enhanced in Ficin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gel testing</td>
<td>60μL cell suspension (18h); 180μL of plasma used per test</td>
<td>Serum gel testing for patient samples; based on hospital methodology or in cases of limited sample volume</td>
<td></td>
</tr>
</tbody>
</table>
Practical Tip #2: Build a Library

Save Samples

• Don’t let lack of samples slow down training/education
• Store frozen plasma with antibodies
  – Categorize
  – Notes on reactivity
• Limitation: long term storage of RBCs


Build a Library

Save Example Cases

• Save paperwork (or electronic copy) of the most interesting cases
• Redact patient information, if necessary
• Reuse cases for multiple learners
Practical Tip #3: Create Ways to Practice

If you want your learner/trainee to master something, help them practice
Create Ways to Practice

“These new techs just don’t catch errors in their self-review… They make so many mistakes…”

“Are they trained in how to do self-review?

“The SOP says to do it…”
Create Ways to Practice

1. Define expectations

RIBC Training
Handout 1.1 Practice Reviewing Workups

As an immunohematology tech, you will be expected to perform both self-review and peer-review of workups, preliminary reports & final reports. Here are some of the things that you are looking for when reviewing:

- ABO
  - ABO/D interpretation correct? Weak D test performed if D-negative?
  - ABO Discrepancy investigated and resolved?
- DAT
  - DAT performed? Saline control negative? Monospecific DAT performed if applicable?
  - Check cells on negative results
- Antibody ID
  - New antibodies identified by 2+2 rule? Antigen typing of corresponding antigen?
  - Clinically significant antibodies to common RBC antigens ruled out appropriately?
  - All check cells documented?
  - Conclusion/Interpretation recorded and supported by data?
  - Testing complete/Includes all required methods per SOP?
- Clerical
  - All documentation complete, accurate and legible? Tech performing testing identified?
  - Errors corrected appropriately?
- Reporting
  - Patient name, birth date and submitting institution matches request form?
  - Phenotype correctly reported
Create Ways to Practice

2. Give opportunity to practice

Practice:
For each patient workup, identify the errors. These may be clerical errors, incomplete rule outs/rule ins, or missing results, etc. Good luck!

Patient 1: Last name Oliveira: Identify 3 errors
•
•
•

Patient 2: Last name Costa: Identify 3 errors
•
•
•

Patient 3: Last name Doherty: Identify 3 errors
•
•
•

Patient 4: Last name Fields: Identify 3 errors.
•
•
•
Practical Tip #4: Record a Presentation

• Easy way to make materials/build a library
• Resources to use:
  – PowerPoint
  – Zoom
  – Microsoft Teams
• Provide contact information for questions
• Enhance learning with supplementary information
Practical Tip #5: Keep Presentations Learner-Centered

PowerPoint Presentation

- Survey questions
- Quizzes
- Cases to work through
- Handouts
  - Fill-in-the-blank

**Prenatal Case Study #2**
Sample of pregnant patient with anti-K, anti-C, and anti-Fy² submitted for titer. Titration studies of current sample performed in parallel with sample from 4 weeks ago.

*What is the anti-K titer on the current sample?*

<table>
<thead>
<tr>
<th>Titer</th>
<th>Neat plasma</th>
<th>1:2</th>
<th>1:4</th>
<th>1:8</th>
<th>1:16</th>
<th>1:32</th>
<th>1:64</th>
<th>1:128</th>
<th>1:256</th>
</tr>
</thead>
<tbody>
<tr>
<td>K⁺, C*, Fy(a+) RBC</td>
<td>Current sample</td>
<td>3+</td>
<td>3+</td>
<td>2+</td>
<td>1+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Previous sample</td>
<td>2+</td>
<td>1+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>K⁺, C*, Fy(a-) RBC</td>
<td>Current sample</td>
<td>1+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Previous sample</td>
<td>1+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>K⁺, C*, Fy(+) RBC</td>
<td>Current sample</td>
<td>2+</td>
<td>1+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Previous sample</td>
<td>2+</td>
<td>1+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

- Anti-K titer <2
- Anti-K titer=2
- Anti-K titer=16
- Anti-K titer=8
Practical Tip #6: Assessment Considerations

Psychomotor domain

– Samples to work up:
  • Did student/trainee get the right answer?

– Direct observation:
  • Did student/trainee perform tasks correctly?

Can’t be assessed with:
- MCQs
- Written test
**Direct Observation Card**

**Learner name** __________________________ **Date** __________________________

**Procedure performed** Prepare and test eluate **Instructor** __________________________

<table>
<thead>
<tr>
<th>Needs Work (0)</th>
<th>Average (1)</th>
<th>Excellent (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades reactions appropriately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follows procedures exactly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rushes through procedures, sometimes skipping steps. Mistakes lead to incorrect results or invalid tests.</td>
<td>Makes effort to follow procedures. Catches own mistakes. Usually obtains correct results.</td>
<td>Consistently follows directions diligently. Obtains correct results the first time.</td>
</tr>
<tr>
<td>Records results promptly and correctly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does not record results after reading each tube. Written records are illegible and incomplete.</td>
<td>Results are recorded promptly after reading each tube. Written mistakes are corrected appropriately.</td>
<td>Records each result appropriately after reading each tube. Results are neat and organized.</td>
</tr>
<tr>
<td>Interprets results correctly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interprets results incorrectly. Does not demonstrate understanding of what results mean.</td>
<td>Arrives at the appropriate conclusion with prompting. Demonstrates understanding of test interpretation with assistance.</td>
<td>Arrives at the appropriate conclusion independently. Demonstrates understanding of test interpretation.</td>
</tr>
</tbody>
</table>

**Comments:** Last wash was not saved and tested.

**Total Score:** 4/8
Assessment

Cognitive domain

– Consider what your student/trainee needs to know BESIDES how to perform tasks & follow SOPs

– Dry case studies, MCQs, pretest/posttest
“Stimulated Recall”

Discussion of a case in addition to bench workup

Goal: assess both psychomotor and cognitive domain through problem solving, completion of bench work, and discussion of process & results

Psychomotor + Cognitive
“Stimulated Recall”

Example questions:
1. Please outline your approach to working up this sample.
2. What specific results led you to approach the problem in this way?
3. How does each assay performed contribute to your conclusion?
4. What more could you have done to support your conclusion?
5. How would you report these results to another health care professional? What information must be communicated prior to transfusing this patient?
“Stimulated Recall”

<table>
<thead>
<tr>
<th>Case Specific Evaluation</th>
<th>Not discussed</th>
<th>Needs Improvement</th>
<th>Satisfactory</th>
<th>Outstanding</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner is able to outline the order of testing, and describe the appropriateness of each test.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner demonstrates understanding of the assays used in the workup, and interprets each correctly.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner uses important clues in initial testing (DAT result, autocontrol result, transfusion history, etc) to determine appropriate subsequent steps.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner arrives at the correct conclusion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner can justify the necessity of all testing and avoids unnecessary testing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner is able to report results to another health care professional, explaining the clinical significance of the findings and recommending appropriate blood for transfusion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall Assessment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall assessment of knowledge and reasoning skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall Comments</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Practical Tip #7: Go Virtual!

- Original goal: minimize in-person time
- Made with Articulate 360
- Learners review theory, observe videos of methods, take quizzes prior to arrival in IRL for benchwork (flipped classroom)
What do the Modules Include?

- 15-56 minutes
- Theory/explanation
- Interactivity/learner participation
- Videos of bench work
Access to Online Modules

- Publicly accessible from organization’s website: www.nybc.org/educationresources
- Learner can download handouts
Results

• Time in the lab reduced
  – Example: Resident rotation went from 40 hours to 10 hours in-person

• Learners reported satisfaction with this new approach

• During times when COVID-19 policies prohibited visitors entirely, online modules still available

• Modules currently used for other purposes across organization
## Results: MLS Programs

<table>
<thead>
<tr>
<th>Study period</th>
<th>Pre-online modules</th>
<th>Post-online modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLS students</td>
<td>61</td>
<td>19</td>
</tr>
<tr>
<td>Ave. in-person rotation</td>
<td>8.48 hours</td>
<td>5.28 hours</td>
</tr>
<tr>
<td>Ave. posttest score</td>
<td>81%</td>
<td>87%</td>
</tr>
</tbody>
</table>

**Ave. student feedback (scale of 5):**

- Pre-online: 4.70
- Post-online: 4.76

**Length of Rotation (hours):**

- Before online modules: 9 hours
- After online modules: 8 hours

**Posttest Scores:**

- Before online modules: 80%
- After online modules: 85%
Practical Tip #8: Take Advantage of Available Material

Examples:

- www.bbguy.org
- www.indianinitiative.org
- www.nybc.org/educationresources
- youtube videos
- Biorad, Immucor, Grifols webinars

Caution: Information Overload

- Best approach may be to refer students/trainees to specific information/resources
Acknowledgments

• Thank you to my colleagues in the immunohematology reference labs & genomics labs of the NYBCe who participate in education & training.

• Thank you to Michelle Lodermeier, MBA, MLS(ASCP)CMSBBCM for her help reviewing this presentation.
Further Reading


Objectives:

At the end of this presentation, the learner will be able to...

1. Discuss learner-centered principles, including examples of how to employ learner-centered principles in education and training in the blood bank.

2. Describe the importance of the alignment of learning objectives, instructional approaches, and assessment methods.

3. List strategies that can be employed to improve education and training in the blood bank at your facility.
Thank you!

Lynsi Rahorst, MHPE, MT(ASCP)SBB<sup>CM</sup>
Manager, Education & Training, IRL/Genomics Labs
New York Blood Center Enterprises
lrahorst@cbckc.org