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Wayne Mathews

University of Nebraska Medical Center, wayne.mathews@unmc.edu

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# Looking Through the WINDOW©: a Metacognitive Instrument to Teach Physical Exam to Pre-clinical PA Students

Wayne Mathews, MS, PA-C, DFAAPA  
Division of Physician Assistant Studies, College of Allied Health, University of Nebraska Medical Center,  
Omaha, NE 68198

## Abstract

The initial transition from pre-clinical learning to clinical immersion is a significant and unique phase in a PA student's education when students transition from spending more time learning in the classroom to experiential learning in the clinical setting. One essential component of that transition is the teaching of physical examination skills. The author introduces an instrument based on metacognitive theories of learning called WINDOW©. The instrument is evaluated using two consecutive PA student surveys employing a Mixed Methods approach.

Student response gauged at two phases was positive: 79.31% agreed the WINDOW© instrument was relevant to clinical problem solving; 72.42% thought it was useful to their learning physical exam skills; and 72.41% thought it was a helpful adjunct to the rote format of the physical exam Green Sheet (n=59). Utilization of metacognitive techniques may be especially useful in the transition of learning physical exam to applying it in clinical phase of education.

## WINDOW© Format and Rationale

### What am I seeing?

The first skill of physical exam is objectively and accurately describing that you are seeing, hearing or feeling.

### Is my technique correct?

Reassess your technique while doing. Example: am I listening in the proper chest location to hear a particular murmur?

### Normal or not?

The most important question: does this fit into the 'Bell curve' of a normal finding?

### Does this fit a pattern?

Are there other physical exam or history findings that fit a pattern with this?

### Over time, has this finding changed?

Try to ascertain a baseline from previous exams or medical record documentation.

### Why am I seeing, hearing, or feeling this?

Begin to think about differential diagnosis, pathology, correlation with history.

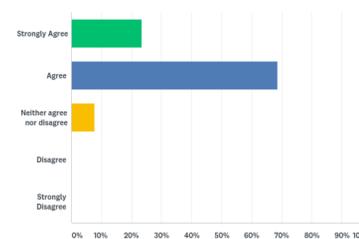
**Rationale:** The WINDOW© instrument stimulates structured metacognitive awareness of clinical information gathered while performing physical examination as a learner of clinical medicine.

**Metacognition definition:** A form of critical thinking, which is a key criterion for acquiring and assessing new information. For scientific thought, metacognition entails awareness of one's background knowledge, assumptions, and auxiliary hypotheses regarding how an observation occurs and in assessing its validity. -Segen's Medical Dictionary. © 2012 Farlex, Inc. All rights reserved

**Method:** The WINDOW© instrument is introduced in Phase I, midway through Clinical Skills I class, while learning the rote format of physical examination, known as the Green Sheet. During this introduction, the concept of metacognition is introduced to the learner, in addition to the application of Bloom's Taxonomy to learning physical examination. After Clinical Skills I is completed, the students were sent a followup survey on the usefulness and relevance of using the WINDOW© instrument. Another followup survey was sent two months after beginning Phase II clinical rotations. The surveys were constructed and analyzed using a Mixed Methods approach.

## PA Student Feedback

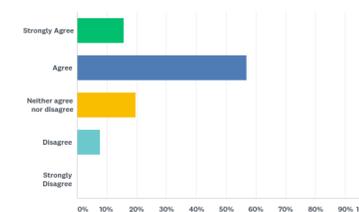
Q3 I think the WINDOW method of physical exam is relevant to clinical problem solving.



"In my Phase 1 experience, I did not have much experience or time using the WINDOW method. However, now in clinical rotations, I am able to use the method as I see patients, formulate a differential, and diagnose based on symptoms."

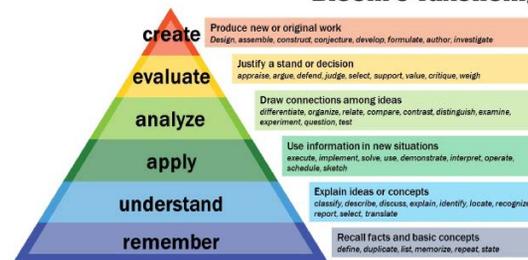
"In the pre-clinical Phase 1, the WINDOW method helped me to develop a way to approach a patient, and in my current Phase 2 clinical rotations, the method helps me if I'm not sure how to approach a problem or patient."

Q10 I would like further training and instruction in applying metacognitive skills to improve my clinical skills.



"In Phase 1, I used the WINDOW method throughout our clinical skills class. So far in Phase 2, I have used it everyday but it comes more naturally than having to actually think through each step. I think the WINDOW method is a helpful tool at the beginning that begins to train your mind to do what will feel like second nature as you continue getting experience."

## Bloom's Taxonomy



Examples of Bloom's Taxonomy in Physical Diagnosis:

- **Remember:** Green Sheet
- **Understand:** recognized certain physical findings (including normal)
- **Apply:** Compile history and physical findings in an effective way
- **Analyze:** Discern probabilities and relationships among differential diagnoses
- **Evaluate:** Formulate a working diagnosis using previous information and analysis such that a definite treatment plan can be made
- **Create:** develop novel diagnostic models and methods to improve effectiveness and accuracy

## Conclusion and Future Directions

The application of metacognitive techniques to facilitate the transition of learning physical examination skills to developing clinical problem solving skills has not been extensively studied in PA education. Our development of an instrument called WINDOW© has shown promise as a structured self regulation technique for students making that transition. The technique uses principles introduced by Bloom's taxonomy. Further research should be done to evaluate the longer term measures of clinical competency over time, using more rigorous outcome measures. Since Mnemonics depend on creative memorization recall of the user, other more readily memorized Mnemonics may be developed. The initial introduction of the WINDOW© instrument shows promise as a technique to facilitate transition of physical exam skills to the clinical phase of PA education.

## References

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