



Reflection & Self-Assessment Cycles in Medical School Anatomy Course

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knowledge changing life

BACKGROUND

Developing character traits including professionalism, self-awareness, and empathy is a current focus in medical education. These traits are crucial for success in the medical field but are harder to teach than medical knowledge. Critical reflection and self-assessment can be used as tools to develop these skills.

- Character development depends on **critical reflection** of strengths and weaknesses in the areas of professionalism and emotional intelligence¹
- Reflective writing allows students to **analyze and judge** what will or has happened
- Medical students need to **evaluate themselves** clearly to care for themselves & patients²

The aim of this study was to use repeated critical reflection and self-assessment in a first-year medical school human gross anatomy course to develop professional identity and emotional intelligence.

METHODS

This study involved medical students taking a cadaveric dissection-based Clinical Human Anatomy course during their first semester of medical school.

Learners wrote a critical reflection in response to a writing prompt, then completed a self-assessment which involved self-ratings in areas of emotional intelligence (self-awareness, self-regulation, motivation, empathy, and social skills), listing 3 personal growth fronts, and developing a SMART goal. Learners received written faculty feedback after each assignment. This paradigm was repeated for each block of the course, resulting in 4 reflection/self-assessment cycles total.

Reflections were blinded and evaluated using qualitative analysis by two independent coders. Codes for each reflection were divided into three themes: emotional intelligence³, teamwork⁴, and wellness/well-being^{5,6}. Student-reported ability in areas of emotional intelligence was plotted for each cycle, showing growth over time in these areas. At the end of the semester, learners completed a voluntary perception survey using Qualtrics. Aggregate exam scores between learners who completed these reflective cycles and those who did not were compared using unpaired t-test.

This project was approved by the Medical College of Wisconsin Institutional Review Board (PRO00032535).

Table 1

BLOCK	QUESTION PROMPT
Block 1 Aug. – Sept.	1. What do you hope to learn about yourself and your teammates? 2. How will you be challenged in this process? 3. How will this make you a better practitioner?
Block 2 October	1. What did you learn about yourself and team building during the first anatomy unit? 2. Outside the academic arena, how were you challenged during the first anatomy unit? 3. What are some areas of personal growth for you and what is your plan to foster growth in those areas?
Block 3 Nov. – Dec.	1. What did you learn about yourself and working as a team during the previous block of anatomy? 2. Outside of academics, what new challenges did you face in the second unit compared to the first? 3. Describe how you have addressed your area of personal growth during the second unit and how do you plan to continue growing in this area during the third unit?
Block 4 Jan. – Feb.	1. Describe how your experiences in the Clinical Human Anatomy course influence future versions of yourself. 2. What is the most valuable thing you learned last semester as a result of working with a human body donor and how will that influence your future life as a clinician?

RESULTS

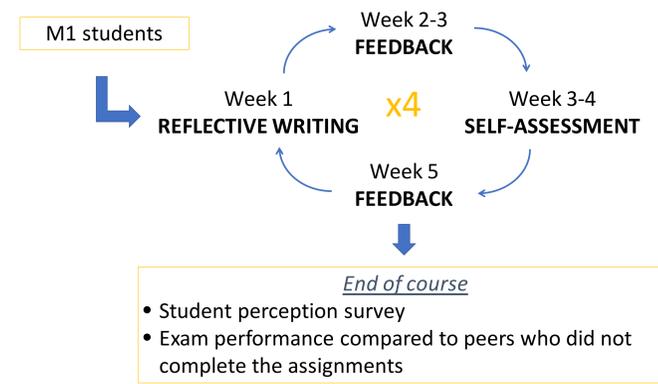


Figure 1. Experimental design of longitudinal assignment.

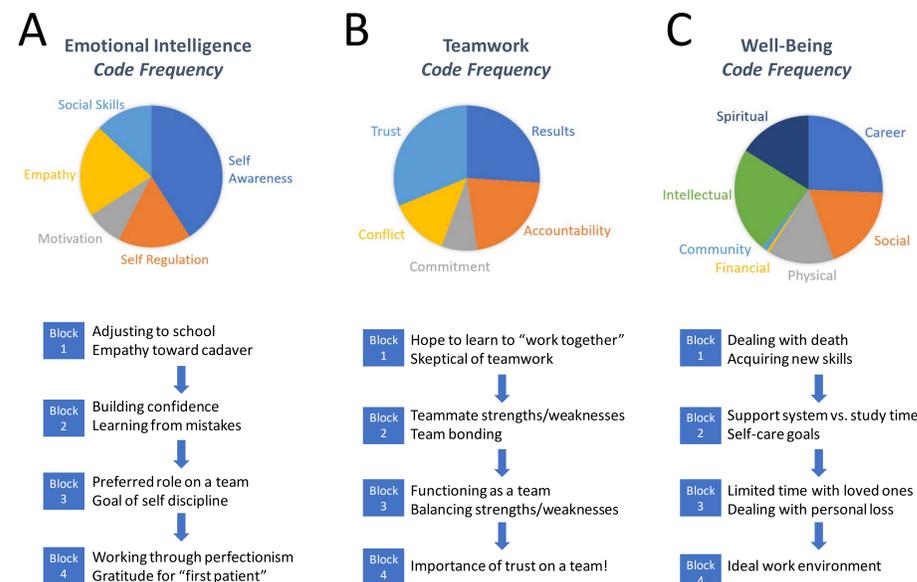


Figure 2. Frequency of topic discussed in a reflection throughout the semester. (A) In the area of emotional intelligence, student writing revealed that in the beginning of the year, learners struggled with perfectionism but by the end many realized that you don't have to be perfect to be a future doctor, leading to increased confidence. Learners also described a lot of empathy for their "first patient" especially at the beginning and end of the course. (B) In the area of teamwork, students started the year skeptical to work as a group longitudinally but over the semester they appreciated the need to openly acknowledge strengths and weaknesses, the importance of goal setting, and appreciate the need to trust each other in a team setting. (C) In the well-being theme, learners began the semester dealing with the concept of death which makes sense given the nature of the course. Around the middle of the semester they really struggled with social and physical wellness, essentially there were not enough hours in the day for studying, spending time with support systems, and taking care of themselves physically.

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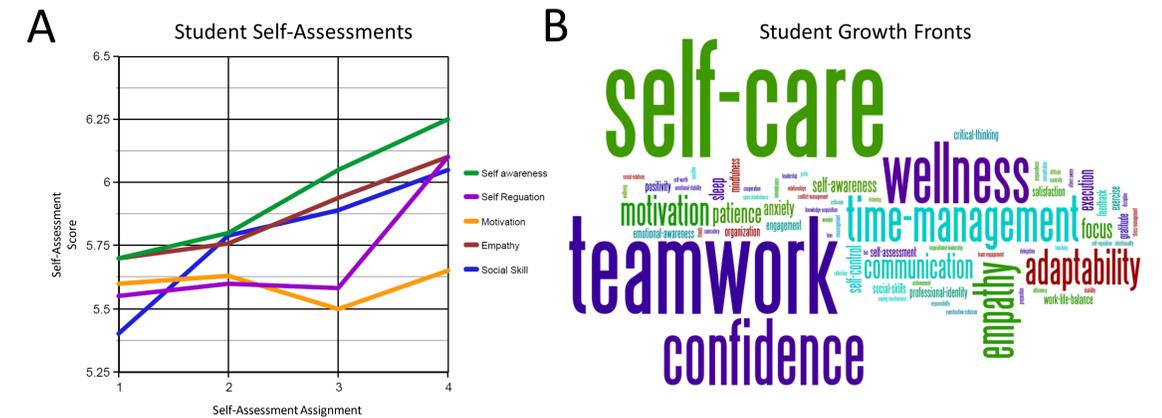
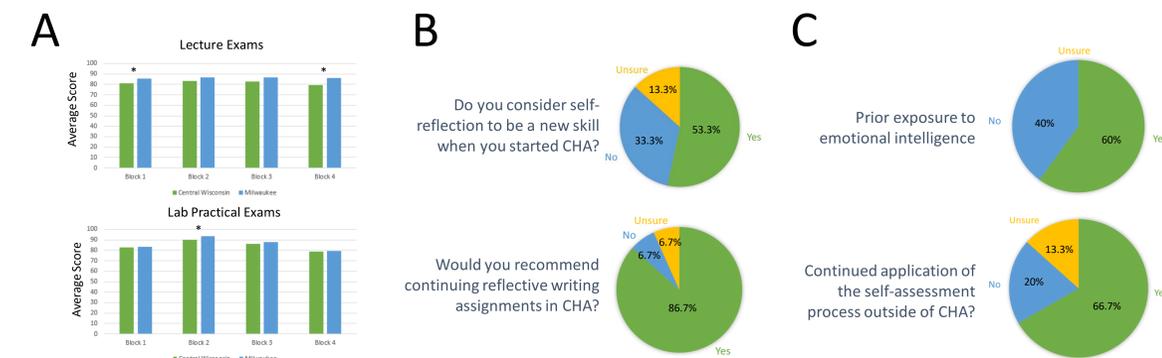


Figure 3. (A) Aggregate data on the Emotional Intelligence Inventory suggest that learners found the reflective process to have a somewhat positive influence on their growth in the 5 domains of emotional intelligence with it trending toward positive in four of five domains. (B) Wordle of student identified growth fronts (where word size correlates with frequency) shows learners most frequently identified self-care, teamwork, confidence, wellness time-management, empathy and adaptability as growth fronts throughout the course.



- Representative student comments from the survey:
- My biggest take away was learning how to take reflections and turn them into SMART goals as a way to improve on what I reflected on
 - I'm consistently adapting and changing as medical school progresses
 - I never have been a fan of reflective writing and don't think it is a benefit to me personally
 - That sometimes it's helpful to step back and actually look back on how far I've come.

Figure 4. (A) Performance on lecture and lab practical exams was compared between students who completed the reflection/self-assessment assignments (Central Wisconsin) and peers who did not (Milwaukee). There were a few statistical differences but we are confident they were unrelated to this assignment. Importantly, students were not concerned about reflections taking time away from class in their survey. The follow-up perception survey was completed by 71% of participants. (B) Interestingly, 86.7% of respondents recommended continuing reflective writing assignments in the anatomy course, and (C) two-thirds could envision themselves adapting the reflection/self-assessment process outside of clinical human anatomy.

CONCLUSIONS

In this study, we learned that the first year of medical school is filled with transitions where ongoing development of emotional intelligence and goal-setting can be beneficial. Our learners reported the most growth in areas of self-awareness and teamwork with continued challenges in the areas of finding time for people they care about, physical & social wellbeing, and personal identity formation (imposter syndrome). We also learned that this process is highly dependent on individualized feedback to achieve its full potential and recommend tailored feedback for each student for such assignments.