Supplemental Digital Appendix 2
Post-course Survey[a]

Tolerance of Ambiguity (10 items):

Please indicate how strongly you AGREE or DISAGREE with the following statements.
[1=strongly agree, 2=agree, 3=neither agree nor disagree, 4=disagree, 5=strongly disagree]

1. I try to avoid solving ambiguous problems.
2. I try to avoid problems, which are so complex some people call them "mind-boggling".
3. Ambiguity stops me from having a firm opinion.
4. It frustrates me NOT having a firm opinion.
5. When it is time to act ambiguity paralyzes me.
6. Being uncertain means I lack confidence.
7. A good task is one where what is to be done and how it is to be done are always clear.
8. I prefer familiar learning situations to new ones.
9. I rarely find myself looking for a new aspect of a concept, rather than trying to practice what is known to me.
10. I prefer to use learning tools that I am familiar with compared to new ones.

Please describe how you fell about making mistakes in small group discussions.
[1=very comfortable, 2=quite comfortable, 3=comfortable, 4=somewhat comfortable, 5=not comfortable]

Reasoning skills (1 item):

Please rate how you perceive the overall impact of the Homeostasis I course on your reasoning skills by clicking on the bar scale below.
[Scale of 1-10, 1= no change and 10=significant shift to more mechanistic reasoning]

Teamwork (1 item):

Please rate how you perceive the overall quality of your small group's (in-class) teamwork in the Homeostasis I course on a scale of 1 (poor) to 10 (outstanding) by clicking on the bar scale below.
[Scale of 1-10, 1=poor and 10=outstanding overall quality of small group's teamwork]

Helpfulness of the various learning tools:

Please rate how helpful the following items were for you to understand the concepts in the Homeostasis I course.
[1-5 scale, 1=extremely helpful and 5=not at all helpful]

1. Mechanistic Concept Maps (for MCM group) / Drawing diagrams (for control group)
2. Your own flashcards

3. Your own study notes
4. Readiness assessment quiz

SURVEY ITEMS ONLY FOR THE MCM GROUP

Frequency of MCM use:

How often did your small group use Mechanistic Concepts Maps in the small group discussions during the morning sessions (8-9 am) to answer questions/problems?
[1=always, 2=most of the time, 3=about half of the time, 4=sometimes, 5=never]

How often did your small group use Mechanistic Concept Maps during class work (Mini-case) to answer the in-class questions/problems?
[1=always, 2=most of the time, 3=about half of the time, 4=sometimes, 5=never]

MCM's helpfulness in collaborative learning:

Please indicate how strongly you AGREE or DISAGREE with the following statements.
[1=strongly agree, 2=agree, 3=neither agree nor disagree, 4=disagree, 5=strongly disagree]

Mechanistic Concept Maps helped our group...
1. ...to form detailed answers
2. ...to understand "Why" questions
3. ...to come up with different conceptual pathways.
4. ...to re-state the conclusion of the problem.
5. ...to think critically about the problem.

Potential burden experienced by students while using MCM:

Please indicate how strongly you AGREE or DISAGREE with the following statements.
[1=strongly agree, 2=agree, 3=neither agree nor disagree, 4=disagree, 5=strongly disagree]

Mechanistic Concept Maps (MCM) made it more difficult for our group to work on problems, because...
1. ...creating MCM was too long.
2. ...while creating MCM we went off topic.
3. ...we struggled to find each step in the process.
4. ...while creating MCM we got stuck on tiny details.
5. ...MCM made it difficult to find a specific conclusion.

Plans for future use of MCM:

Do you intend to use Mechanistic Concept Maps in future courses?

[Yes, Maybe, No]

[a]From a study comparing a group of medical and dental students who were exposed to and used mechanistic concept maps (MCMs) as the primary learning tool to explain the concepts of a required first-year course (Homeostasis I) with groups of students in the same course who were not exposed to MCMs, Harvard Medical School, February-March 2016.