

UTILIZATION AND EVALUATION OF SOCIAL MEDIA AS A LEARNING TOOL IN PROFESSIONAL HEALTH SCIENCE EDUCATION

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WHAT IS SOCIAL MEDIA?



Background

Social Media:

- **Computer-mediated technologies** that **facilitate** the creation and **sharing of information**, ideas, career interests and other forms of expression **via virtual communities and networks** (Wikipedia.org).
- Forms of **electronic communication** through which users create **online communities** to **share information**, ideas, personal messages, and other content (Mirriam-Webster).

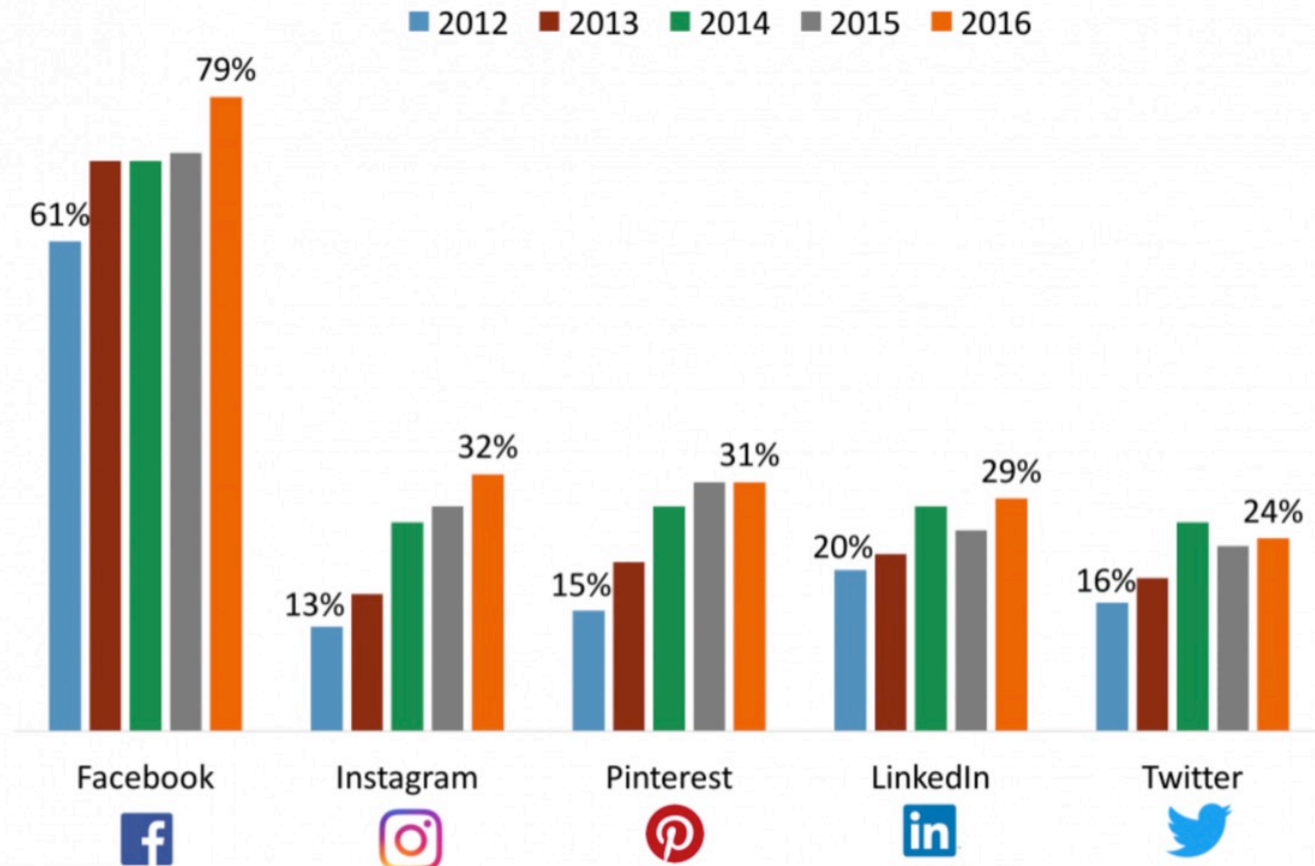
SO, WHAT EXACTLY IS SOCIAL MEDIA



Background

Percentage Of Internet Users Who Use Each Service

US adults



Background

- Social Media for Learning:
 - Wikipedia
 - Youtube® search engine (i.e. Dr. Najeeb's lecture)
 - Khan Academy
 - edX.org
 - Reddit (/r/pharmacy)
 - ed.ted.com
 - Academia.edu



DR. NAJEEB LECTURES



Background

- Social Media in Medicine:
 - The Human Anatomy Education Page is a Facebook page that incorporated anatomy resources for 157 medical students (Jaffar, 2013).
 - www.facebook.com/AnatomyEducation/ has 118,200 followers
 - @EDUltrasonnd is a Twitter handle that supplemented a longitudinal fourth-year elective ultrasound course at The Ohio State University College of Medicine (Bahner et. al., 2012).
 - twitter.com/edultrasound has 1,144 followers

Background

- Social Media in Dentistry:
 - Mind Dentistry is a Facebook page with videos of dental procedures
 - <https://www.facebook.com/minddentistry/> has 97,907 followers
 - “Rapid increases in dental knowledge and associated technologies ... have profoundly altered dental education.” (McAndrew, 2011)

Background

- Social Media in Nursing:
 - A Facebook group for Nursing students was created in order to support their study for the end of semester examination. (Tower et. al., 2013)
 - 373 BN students joined the group (70% of the student cohort).
 - 89 students who completed the survey agreed that the quality of the posts on the Facebook group was high.

Background

- Social Media in Pharmacy:
 - An anonymous 36-question online survey was administered via Blackboard to third-year students enrolled in the Drug Information and Clinical Literature Evaluation course from 2011 to 2013. (Hamilton et. al., 2016)
 - 58% used social networking websites to communicate with classmates while 21% used these websites to work on group assignments.

METHODOLOGY

Methodology

- A Facebook page for the Introduction to Disease Management (IPDM) class was created for the class of 2020 in order to enhance learning
 - <https://www.facebook.com/ipdmproject/>



Methodology

- The study lasted for two months (April to June 2017)
- The Facebook page utilized various tools to enhance learning:
 - Google Forms
 - Giphy
 - Youtube

Methodology

- Types of posts:
 - **Image** that includes terminology and/or concepts: 12 images
 - Animated **GIF** image about a concept: 9 GIFs
 - **Practice quizzes** through Google Forms: 13 tests
 - Student-made **videos** (less than 2 min long): 4 videos

Methodology

- Images:

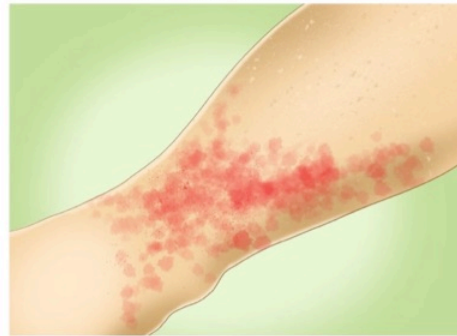


Counseling 101

Prednisone, a corticosteroid, is often consulted to be taken after breakfast because it may upset the stomach and it may cause difficulty in sleeping.

Image source: <https://morethanmedocrity.files.wordpress.com/2012/05/diet45.gif>

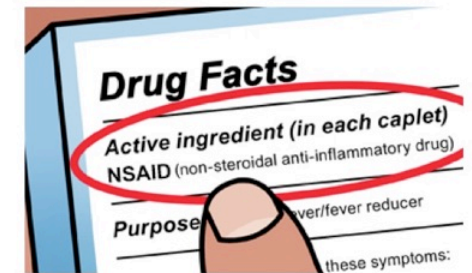
Petechiae



Pinpoint flat round red spots under the skin surface caused by intradermal hemorrhage

Image source: <http://pdf1.webstatic.com/images/thumb/6/68/Treat-Petechiae-Step-3-Version-2.jpg?add4646995v4-722px-Treat-Petechiae-Step-3-Version-2.jpg>

Analgesia, Hematemesis & Melena



A patient who is using NSAIDs, a common Analgesic (pain reliever), chronically may suffer from Peptic Ulcer disease. PUD is characterized by Hematemesis (vomiting of blood) and Melena (Dark tarry stools)

Image source: <https://www.fda.gov/ocm/groups/fda.gov/public/documents/image/ucm433628.png>

MCV

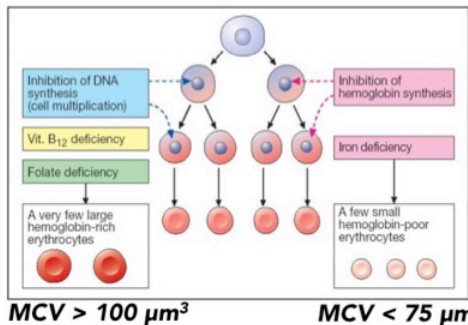
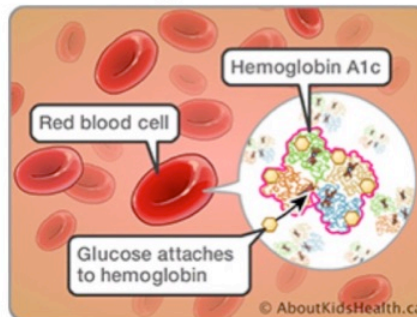


Image source: http://tntmeat.tamu.edu/~davis/sofado/INTERNAL/Pharmacology/Classes_students/prev_pharm/pts/Pharmacology/7%20year/16/20Preparation%20Influence%20on%20the%20Body%20System/Review/002.jpg

Hgb A1C



The lifespan of RBC is about 90-120 days. Therefore, Hgb A1C, is the amount of Glycosylated RBC over the past 3 months.

Image source: <https://pbs.twimg.com/media/CWfGj8GUSAAvRc.jpg>

Supratherapeutic



Vancomycin is an antibiotic with a goal trough (minimum concentration in the blood). If the goal trough is 15-20 mg/L and the lab values show that the concentration is 27 mg/L, it is SUPratherapeutic

Image source: <https://www.pfizerinjectables.com/sites/default/files/prod/cbl6/images/0409-6509-01.jpg>

Methodology

- GIFs:

A patient was recently prescribed Bactrim for infection. When verifying the patient's medication, you discover that they are also taking a BP medication Lisinopril.

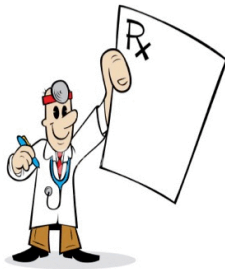


Image source: <https://michiganskinassociates.files.wordpress.com/2015/01/rx.jpg>

YP is a 60 yo male who was prescribed Tramadol for his Osteoarthritis



Image source: <http://st1.thehealthsite.com/wp-content/uploads/2015/05/joint-pain-1.jpg>

You are performing your rounds and you noticed that the patient's INR = 3.0



Image source: http://img.clipartall.com/boy-sick-in-hospital-bed-with-hospital-bed-clipart-550_409.jpg

Methodology

- Practice Quiz:

RA Case

PJ is a 60 yo female who visited your clinic with complaints of having knee pain. She brings a bottle of prescription that is labeled with Naproxen 500mg. The patient neither has any records in the clinic nor any information about herself. She said she does not remember what the medication was for but she was taking it for some sort of arthritis.

The physician has determined that the patient has established RA with low disease activity and has requested for a treatment recommendation. Which would be the most appropriate?

1 point

- Initiate Methotrexate SQ weekly
- Add Tylenol to the patient's current regimen
- Initiate Enbrel daily
- Add a corticosteroid to the patient's current medication
- Add Colchicine 0.6 mg daily in order to prevent rheumatoid attacks
- Initiate Tofacitinib PO BID

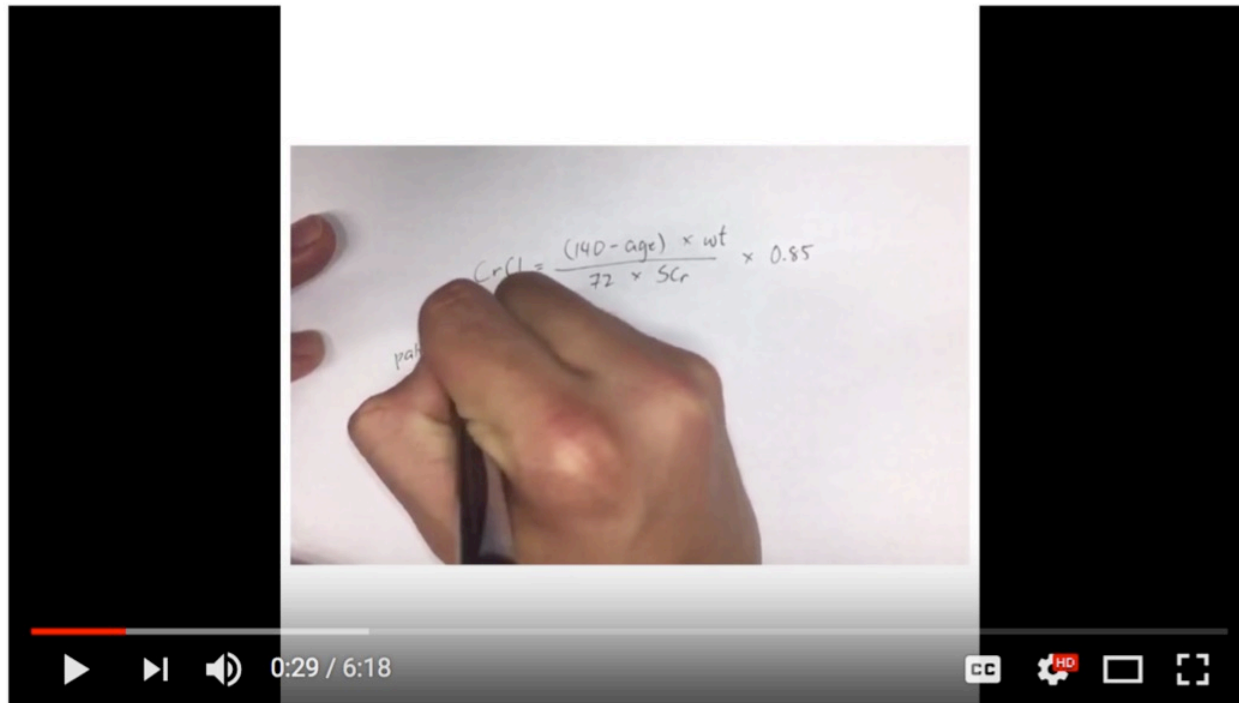
A few months after the first visit, the patient returned with high disease activity after given the medication from question 3. Which would be the least appropriate recommendation?

1 point

- Add a short-term corticosteroid
- Add Plaquenil
- Add Xeljanz
- Switch to Humira
- Add Tofacitinib and Abatacept

Methodology

- Videos:
 - Creatinine Clearance Calculation



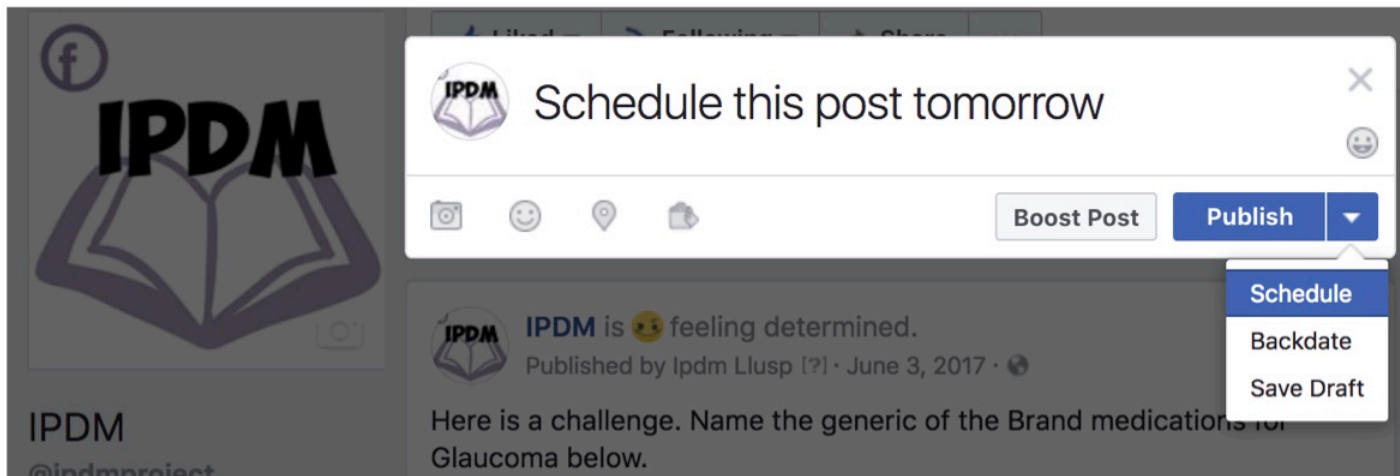
CrCl Calculation example

2,313 views

👍 10 💬 4 ➔ SHARE ≡ ⋮

Methodology

- Materials relevant to the most recent topic discussed were prepared by a 3rd year Pharmacy student
 - Information is screened by the professor prior to publication for accuracy and correctness
- Facebook pages has a scheduled posting feature
 - Materials were prepared ahead of time and scheduled based on syllabus



OUTCOMES

Outcomes

- Survey
 - Comparison of Pre-survey and Post-survey
 - Anecdotal testimonies
- Student performance
- Facebook metrics



RESULTS & DISCUSSION

Survey

- An optional survey before and after the course was requested from the students in the class
- From the class of 61, only 38 (62%) participated in the pre-survey and 32 (53%) participated in the post-survey



Survey

Table 1. "I feel that Facebook will supplement my education this quarter"

	Pre-survey (n = 38)		Post-survey (n = 32)		Absolute Difference (Post minus Pre)
Strongly Agree	5	13%	9	28%	+15%
Agree	21	55%	15	47%	-8%
Neutral	10	26%	4	13%	-14%
Disagree	0	0%	3	9%	+9%
Strongly Disagree	2	5%	1	3%	-2%
No Answer	0	0%	0	0%	0%

Survey

Table 2. "I feel that the benefit of using Facebook as a learning environment exceeds the harm and distraction potential"

	Pre-survey (n = 38)		Post-survey (n = 32)		Absolute Difference (Post minus Pre)
Strongly Agree	4	11%	6	19%	+8%
Agree	13	34%	12	38%	+3%
Neutral	13	34%	10	31%	-3%
Disagree	7	18%	4	13%	-6%
Strongly Disagree	0	0%	0	0%	0%
No Answer	1	3%	0	0%	-3%

Survey

Table 3. "I would like to see use of Social Media integrated into more of my classes"

	Pre-survey (n = 38)		Post-survey (n = 32)		Absolute Difference (Post minus Pre)
Strongly Agree	2	5%	11	34%	+29%
Agree	8	21%	12	38%	+16%
Neutral	20	53%	5	16%	-37%
Disagree	7	18%	3	9%	-9%
Strongly Disagree	1	3%	1	3%	0%
No Answer	0	0%	0	0%	0%

Survey

Table 4. "I would like it if more Professors interacted with students via Social Media for teaching purposes"

	Pre-survey (n = 38)		Post-survey (n = 32)		Absolute Difference (Post minus Pre)
Strongly Agree	4	11%	10	31%	+21%
Agree	12	32%	11	34%	+3%
Neutral	15	39%	8	25%	-14%
Disagree	6	16%	1	3%	-13%
Strongly Disagree	1	3%	2	6%	4%
No Answer	0	0%	0	0%	0%

Survey

Table 5. "I feel that this project will increase my test-taking confidence"

	Pre-survey (n = 38)		Post-survey (n = 32)		Absolute Difference (Post minus Pre)
Strongly Agree	4	11%	7	22%	+11%
Agree	8	21%	9	28%	+7%
Neutral	23	61%	10	31%	-29%
Disagree	1	3%	3	9%	+7%
Strongly Disagree	2	5%	2	6%	+1%
No Answer	0	0%	1	3%	3%

Survey

Table 6. "I feel that the discussion on Facebook will clarify unclear and confusing concepts in class"

	Pre-survey (n = 38)		Post-survey (n = 32)		Absolute Difference (Post minus Pre)
Strongly Agree	9	24%	7	22%	-2%
Agree	18	47%	8	25%	-22%
Neutral	10	26%	12	38%	11%
Disagree	1	3%	4	13%	+10%
Strongly Disagree	0	0%	0	0%	0%
No Answer	0	0%	1	3%	3%

Survey

- Q: What were the most memorable posts?
 1. “**Pre-quiz posts** on the IPDM page **were extremely helpful**”
 2. “The **quizzes** and study posts for IPDM. **Beneficial**”
 3. “The mini quizzes that **supplemented our ability to recall information.** They were beneficial to me.”
 4. “Posts that involved practice questions.”
 5. “The “**quizlets**” **were the most beneficial.** The videos were enjoyable but not entirely beneficial, other than providing a nice break from studying.”
 6. “The most memorable ones were certainly distracting”
 7. “**I liked the quizzes** they offered as well as the quirky videos. They were pretty beneficial..I never really found them distracting.”
 8. “**Practices quizzes which helped me retain a lot of stuff** versus just simply reading the posted materials.”
 9. “Can't remember but most of the time distracting”
 10. “Good quotes. New invention, ideas, or news around the world. Beneficial”

Survey

- Q: Were they beneficial or distracting?



Survey

- There is a net increase in those who:
 - **Agreed** that using Facebook provided more benefit than harm
 - **Wanted** to integrate social media into other classes
 - **Wanted** professors to interact with students on social media for teaching purposes
 - **Agreed** that the project increased their test-taking confidence
 - **Agreed** that Facebook supplemented their education during the quarter
- There is also a net increase in people that thought Facebook **did not help** clarify unclear and confusing concepts in class

Student Performance

Topic	Question	Fraction correct on practice test	% correct on actual test
Medical Terminology	Osteopenia	63/78 (80.8 %)	60 %
	Polydipsia	63/77 (81.8 %)	64 %
Physical Examination	Heart Rate	64/74 (85.6 %)	59 %
SOAP	Assessment	29/79 (36.7 %)	65 %
Gout	Contraindications	77/91 (84.6 %)	48 %
R. Arthritis	Arava MOA	50/56 (89.3 %)	88 %
	Xeljanz MOA	62/62 (100 %)	66 %
UI	Brand-Generic	83/87 (95.4 %)	86 %
Lab Interpretation	Range of normal values	56 students averaged 83%	74%

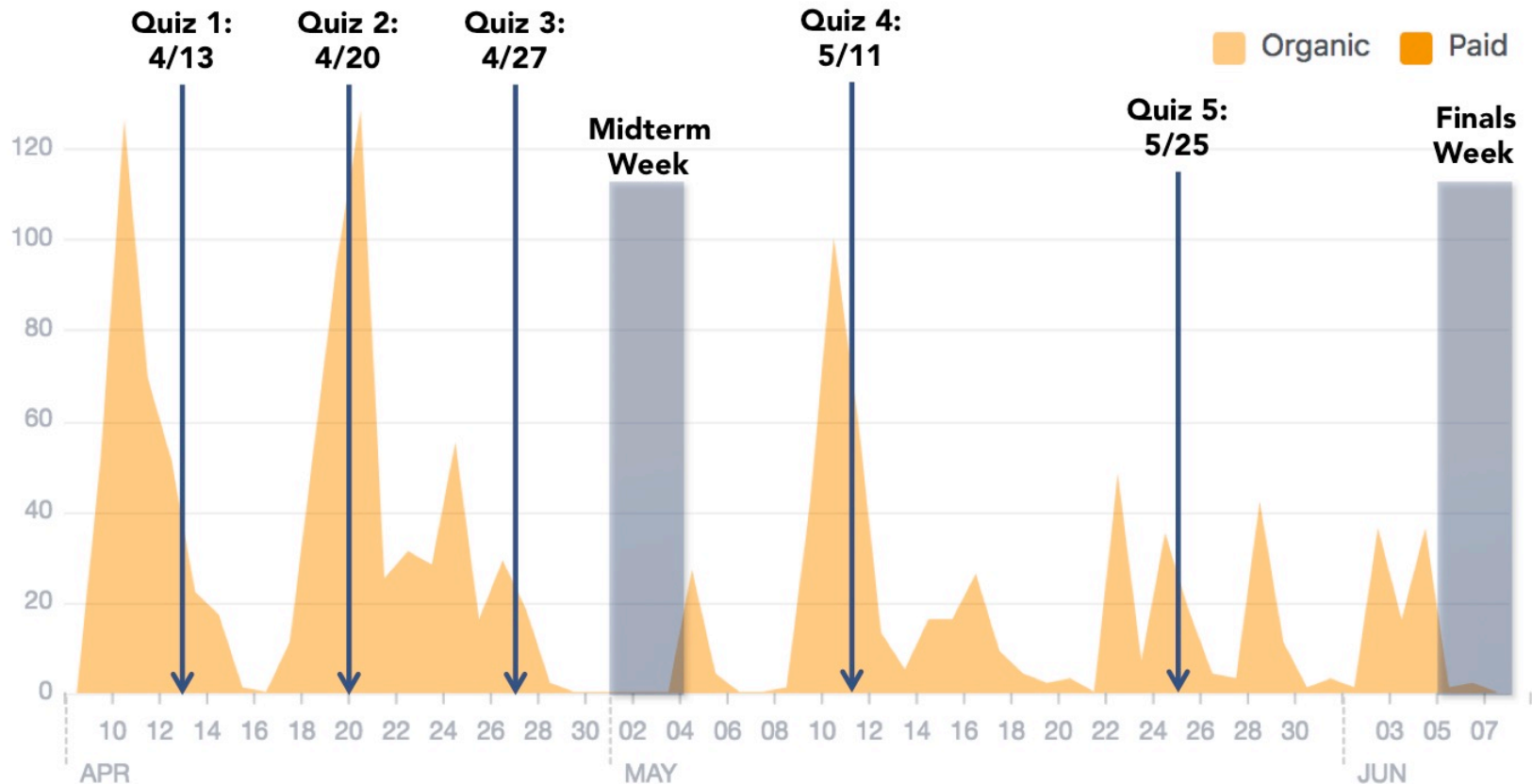
Student Performance

- On average, a practice test is accessed 73 times. There is no correlation between student performance on the practice test and actual test
- Students tend to perform better on simple recall questions that were asked on practice tests:

Question	Fraction correct on practice test	% correct on actual test
Arava MOA	50/56 (89.3 %)	88 %
Brand-Generic	83/87 (95.4 %)	86 %

Facebook Metrics

Chart 1. Students reached from 4/8/17 to 6/7/2017



Facebook Metrics

- As seen in Chart 1, the noticeable increase in students reached (100 or more) before quizzes shows that posts are revisited and reviewed prior to quizzes.
 - Before Quiz 1: over 120
 - Before Quiz 2: over 100
 - Before Quiz 3: over 60
 - Before Quiz 4: around 100
 - Before Quiz 5: over 60
- More people were “reached” by static images and practice tests than animated GIFs

Facebook Metrics

- Students “reached” from 4/8/17 to 6/7/2017
 - Total reached by all (40) posts: **2208**
 - Average of **57 students** reached per post
- Highest and Lowest numbers reached by a single post:

Number Reached	Type of Post	Time
136	Image	2:52 pm 4/19/17
111	Practice Test	7:06 pm 4/9/17
109	Image	9:09 am 5/10/17

Number Reached	Type of Post	Time
22	Animated GIF	10:03 am 4/12/17
28	Youtube video	7:03 pm 4/22/17
30	Animated GIF	11:00 am 5/10/17

- More students were “reached” by static images and practice tests than animated GIF and youtube vidoes

AREAS OF IMPROVEMENT

Areas of Improvement

1. Advertising of the public Facebook page
2. Social Media presence by the professor through discussions and/or post interactions
3. Types of materials posted
4. Survey accuracy

RESOURCES

Resources

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7. Tower, Marion, et al. "Social networking as a learning tool: Nursing students perception of efficacy." *Nurse Education Today*, vol. 34, no. 6, 2014, pp. 1012–1017., doi:10.1016/j.nedt.2013.11.006.