

Beyond usability: Considering student preferences around point-of-need instructional resources

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CHEM 101 library lab, c. 2012: Stale & unsustainable



Redesign: Blended & flipped



CHEM 101 library lab tutorial = 4 videos

1. Is My Substance **Organic or Inorganic**?
2. Finding **Physical Properties** in the CRC Handbook of Chemistry and Physics
3. Finding **Thermodynamic Properties** in the CRC Handbook of Chemistry and Physics
4. Finding **Material Safety Data Sheets** (MSDS)

Initial focus: Tutorial functionality



Current focus: Preferences & use



So...

- Do students prefer written or video tutorial instructions?
- Do students revisit the tutorial later on in the semester?
- Do students use the tutorial in class when completing their assignment?
- How do students use the tutorial?
- Is this duplication of effort worthwhile?





Surveying the literature

- **Learning styles**

- Popular & lucrative
- Unsupported

(Pashler et al., 2008; Cuevas, 2015)

- **Text & video tutorials**

- Best practices
- Strengths & weaknesses
- No clear winner

(Nielsen, 1993; Bury & Oud, 2005; Bowles-Terry et al., 2010; Turner et al., 2015; Alexander, 2013; Mestre, 2014; Jackson, 2014; Dold, 2016)

- **Preferences, abilities & practices**

- Frequently at odds
- Convenience

(Pashler et al., 2008; Alexander, 2013; Connaway et al., 2011; Dold, 2016)

Winter 2017: Semester timeline



Tues January 17

⇒ 4:30-7:30 PM

Wed January 18

⇒ 8:00-11:00 AM

⇒ 12:00-3:00 PM

⇒ 4:00-7:00 PM

Thurs January 19

⇒ 8:00-11:00 AM

⇒ 12:30-3:30 PM

⇒ 4:30-7:30 PM

Fri January 20

⇒ 8:00-11:00 AM

⇒ 12:00-3:00 PM

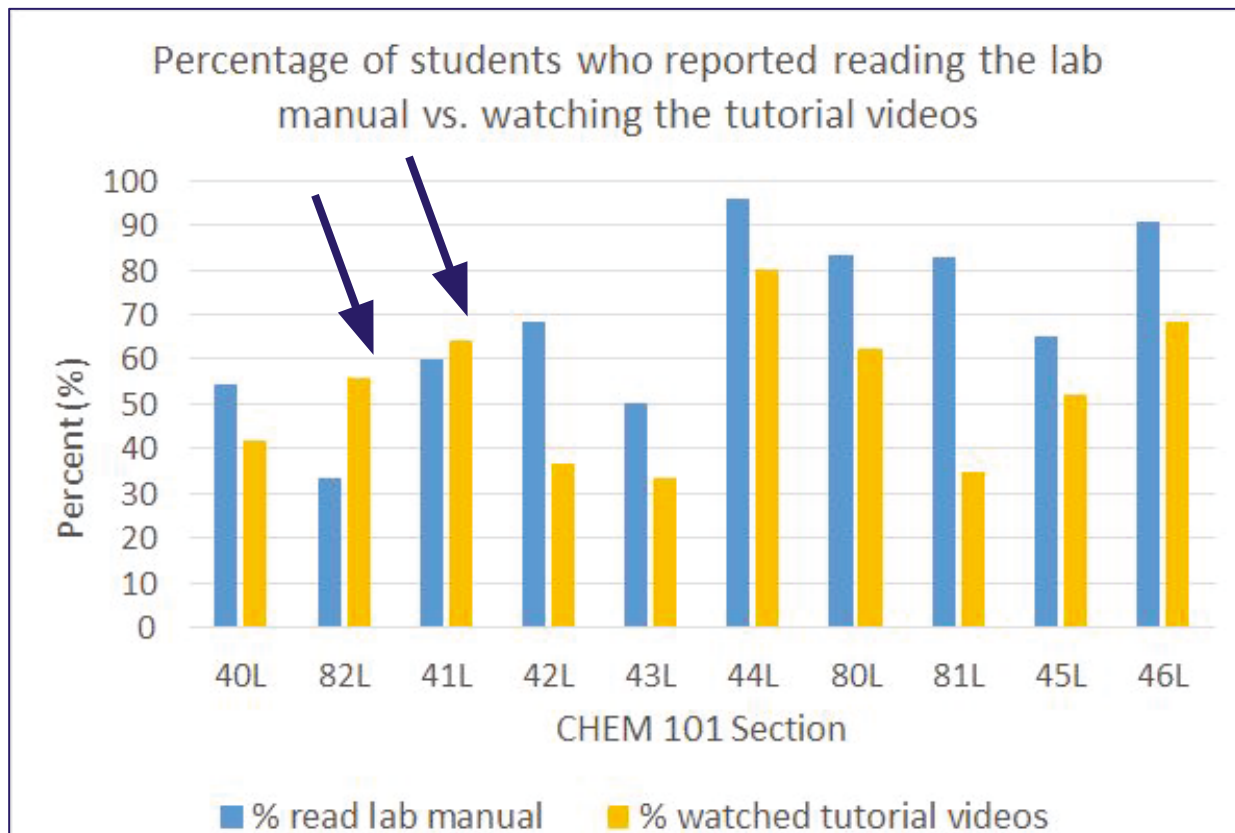
⇒ 4:00-7:00 PM



1. Do students prefer **written** or **video** tutorial instructions?

Lab manual vs. tutorial videos

- 227 students attended sections of CHEM 101
 - 69% read lab manual
 - 53% watched tutorial videos



Survey results

- **102 students completed survey (45% response rate)**
 - *82% read lab manual*
 - *61% watched videos*
 - *55% did both*

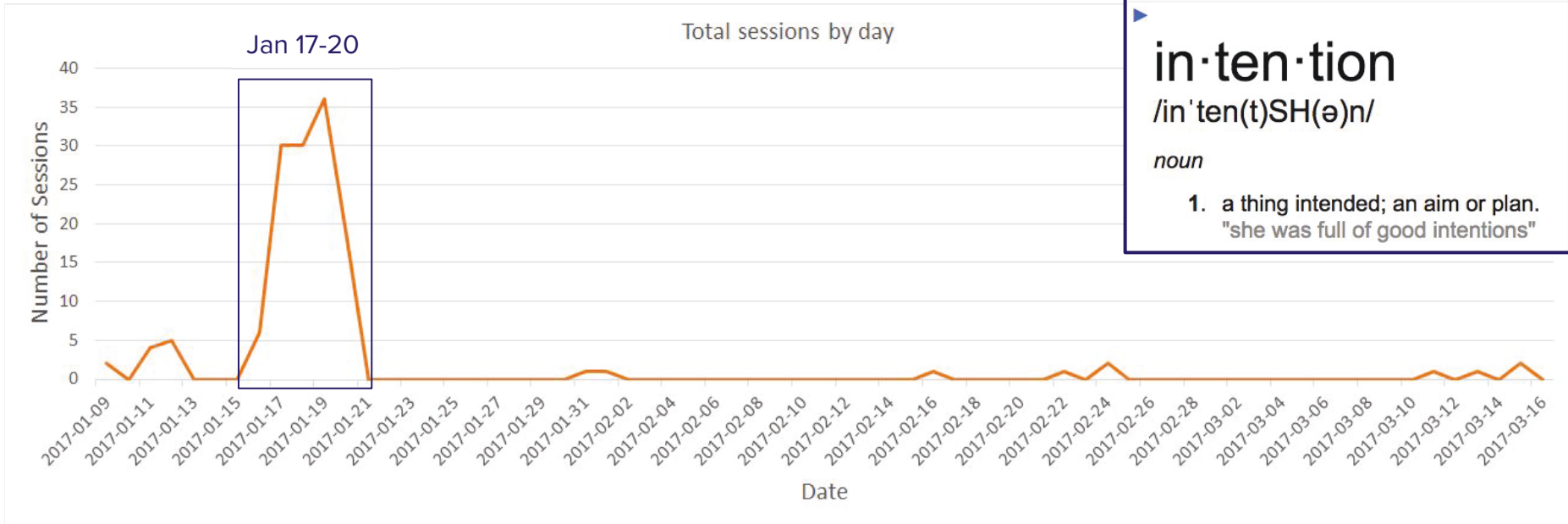
- **On average, no format preference (rating scale: 0>manual, 10=videos)**
 - *5.6 among all respondents*
 - *6.5 among students who both read manual & watched videos*



2. Do students **revisit** the tutorial later on in the semester?

The interest is definitely there! But...

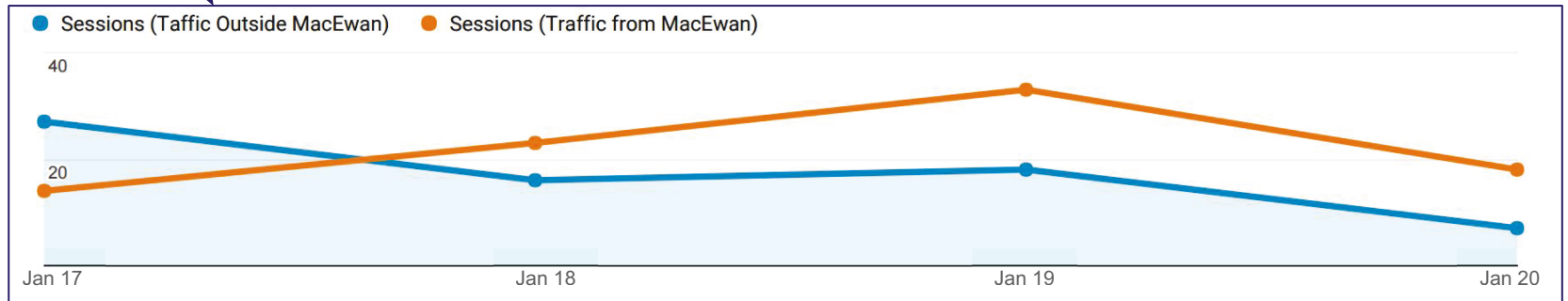
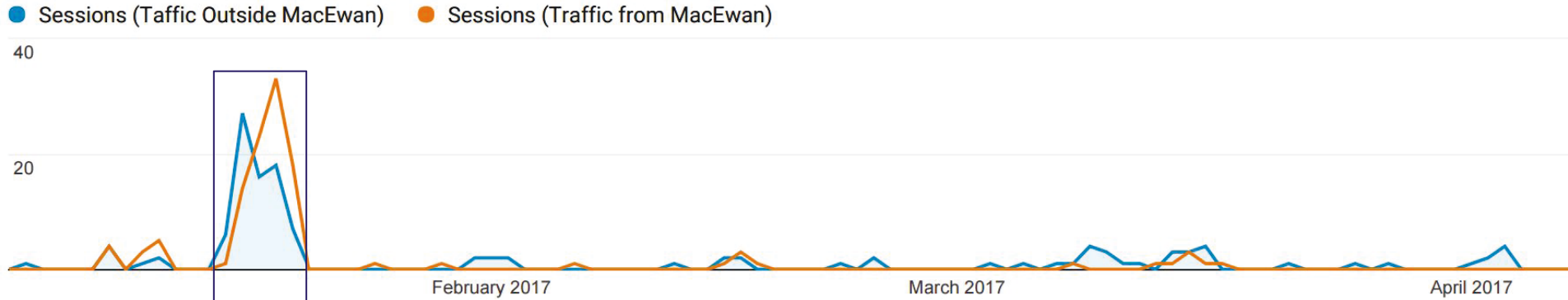
77.4% said they *see themselves* revisiting the tutorial content.





3. Do students
use the tutorial
in class when
completing their
assignment?

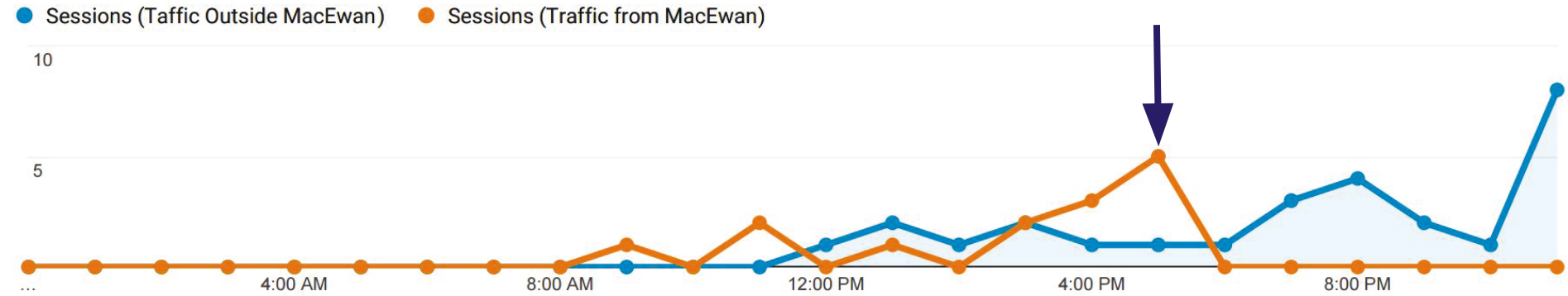
Daily tutorial sessions (Jan 3rd - Apr 7th)



Sessions during class time

Class day & time	Students attending CHEM 101	Estimated students using tutorial in class
Jan. 17, 4:30-7:30 PM	24	6
Jan. 18, 8:00-11:00 AM	18	4
Jan. 18, 12:00-3:00 PM	25	5
Jan. 18, 4:00-7:00 PM	19	6
Jan. 19, 8:00-11:00 AM	24	6
Jan. 19, 12:30-3:30 PM	25	5
Jan. 19, 4:30-7:30 PM	24	4
Jan. 20, 8:00-11:00 AM	23	3
Jan. 20, 12:00-3:00 PM	23	5
Jan. 20, 4:00-7:00 PM	22	4

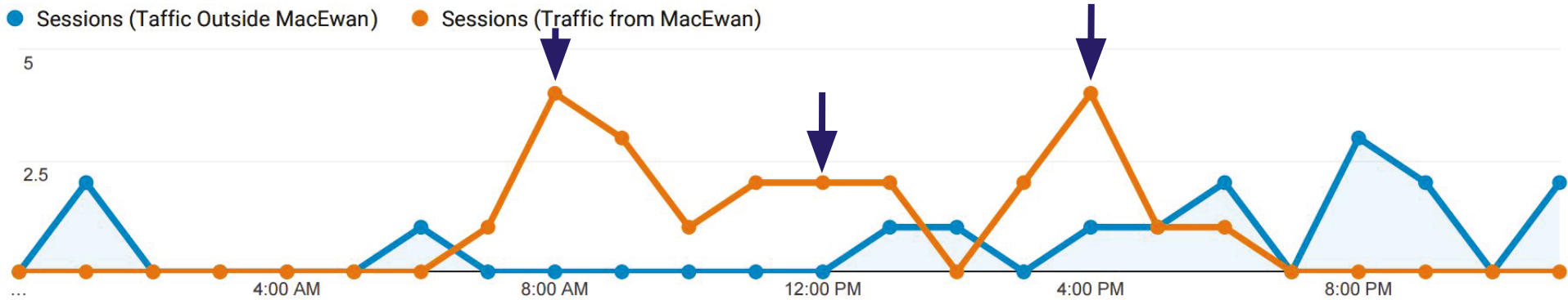
January 17th hourly sessions



1x CHEM 101 Section

- 16:30-19:30

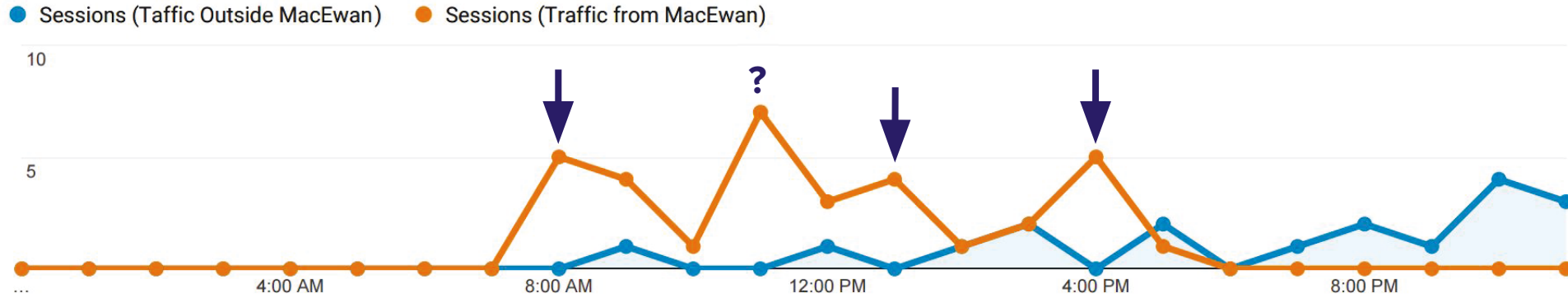
January 18th hourly sessions



3x CHEM 101 Section

- 8:00-11:00
- 12:00-15:00
- 16:00-19:00

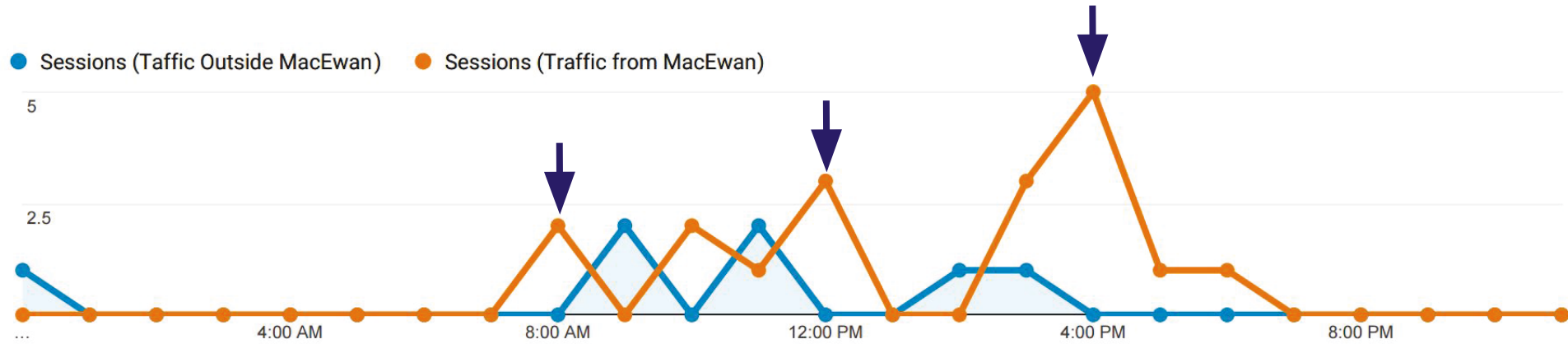
January 19th hourly sessions



3x CHEM 101 Section

- 8:00-11:00
- 12:30-15:30
- 16:30-19:30

January 20th hourly sessions



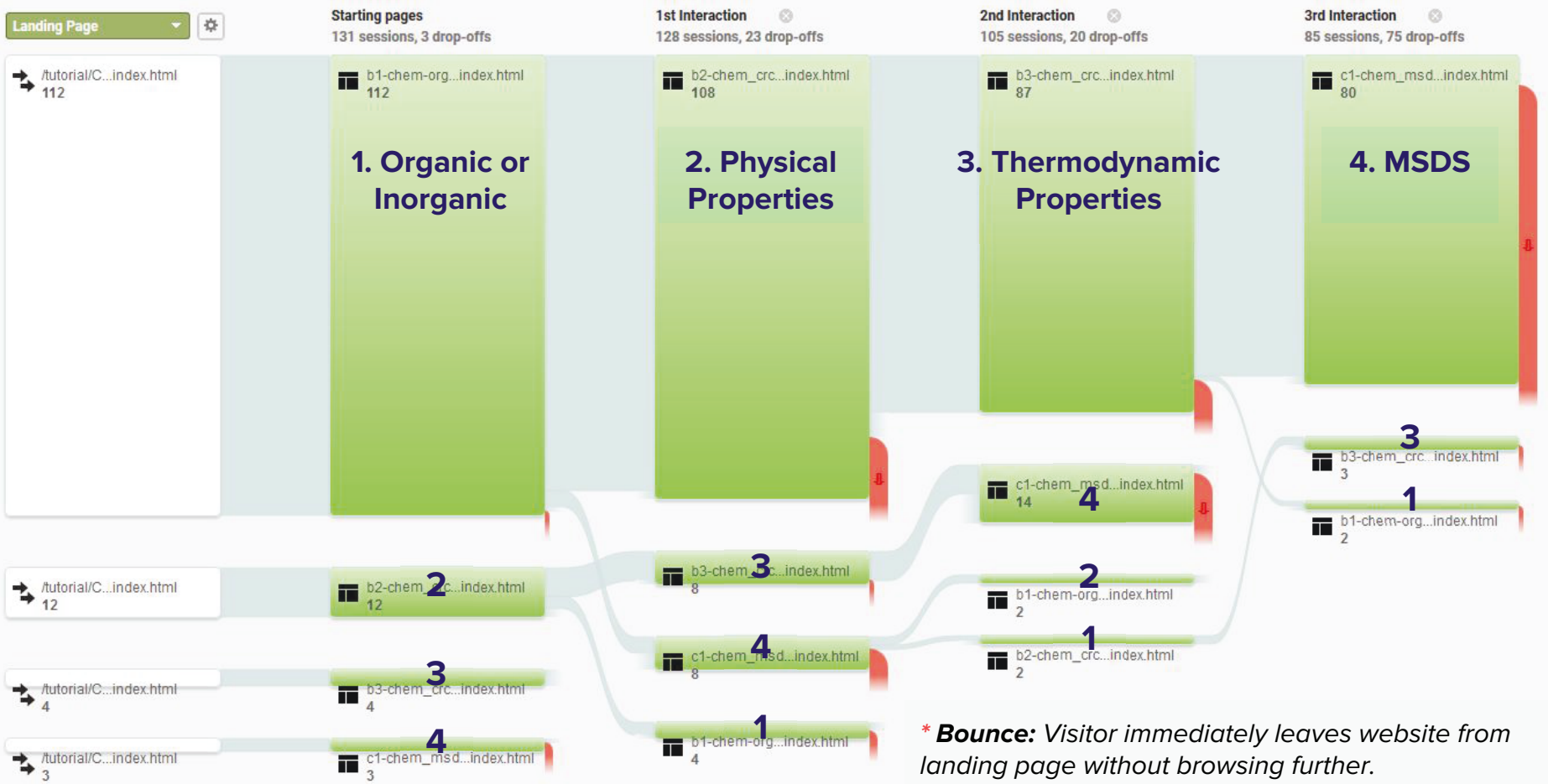
3x CHEM 101 Section

- 8:00-11:00
- 12:00-15:00
- 16:00-19:00



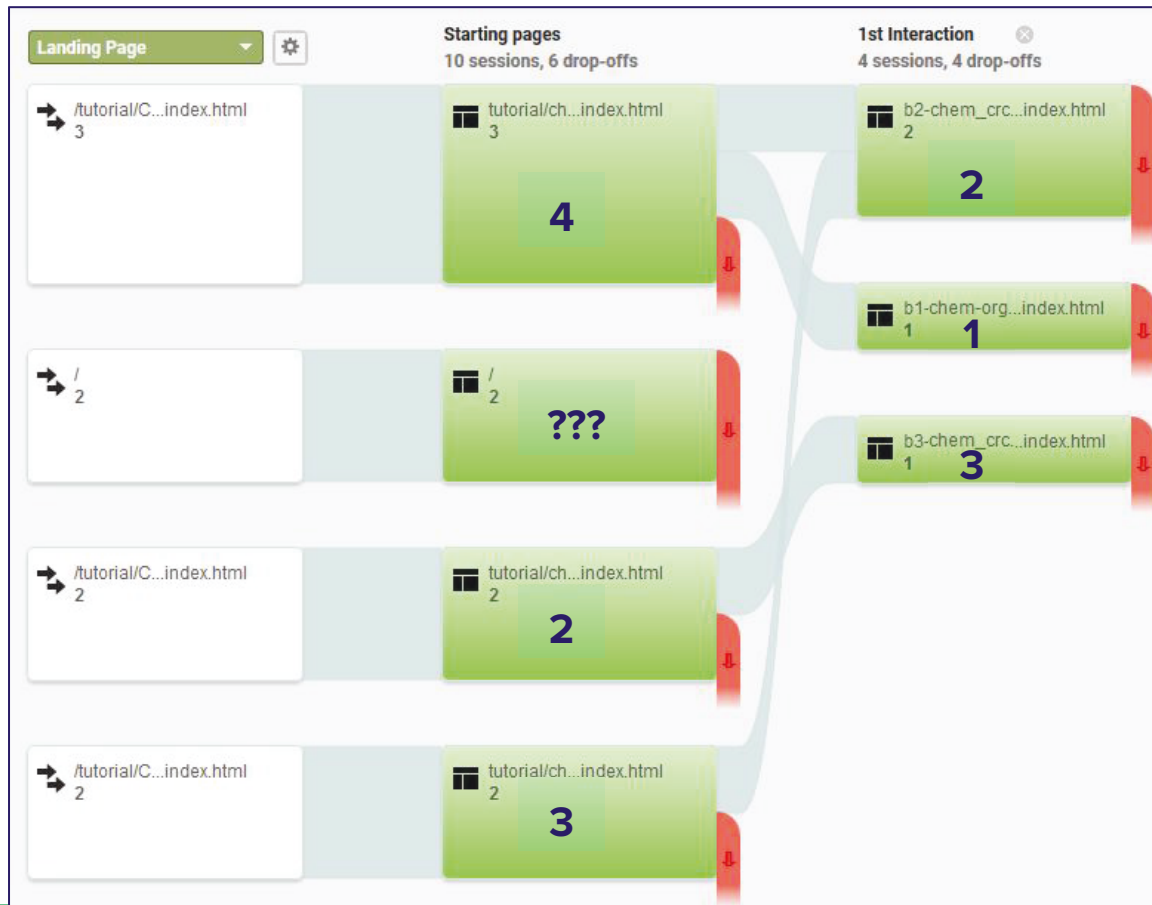
4. How do students
use the tutorial?

Behaviour flow: Before & during library labs (Jan 3rd - 20th)



Behaviour flow: Post-library labs (Jan 21st - Apr 7th)

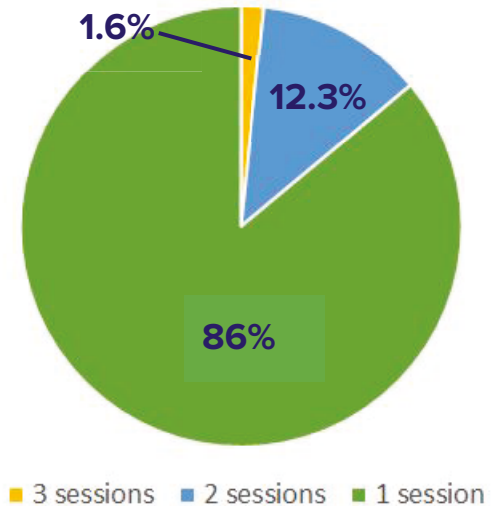
1. Organic or Inorganic
2. Physical Properties
3. Thermodynamic Properties
4. MSDS



[SomeMoreNumbers!]

- Total of 246 sessions, from 194 unique users, over winter semester
 - 105 bounce* sessions
 - 72 users (37%) had only bounce sessions
 - 24 users (12%) had a mix of bounce and engaged sessions
 - 122 engaged users (63%) having at least 1 non-bounce session
- Of those 122 engaged users
 - 15 users watched the tutorials before Jan. 17 (first day of labs)
 - 103 users watched the tutorials between Jan. 17 & 20
 - 7 watched the tutorials after Jan. 20
 - Average session duration was 13 minutes, 51 seconds
 - Most users (86%) had only one session

Number of Sessions Per User



* **Bounce:** Visitor immediately leaves the website from landing page without browsing further.



5. Is this **duplication**
of effort worthwhile?

Absolutely! Explicit support for the video tutorial

“Watching the videos makes it easier for me to familiarize myself with the sites used. Visually seeing what is required (Sections in the CRC, NFPA layout) make me comfortable in being able to find what I'm looking for. The lab manual can make it hard to understand things in a logical path, but the tutorials make this easier.”

“I liked the videos. They helped me a lot because I learn a lot better by watching than by reading.”

“I like how there are different options such as the video to help us do our labs.”

“It's easier for me to use the videos as I am more of a visual learner.”

“The lab manual works well, but the videos were more helpful and more engaging.”

“I liked the interactive parts of the videos.”

And the lukewarm responses...

"I found the tutorials very tedious for such little information and then we covered the same thing in class again."

"tutorials could easily be summarized into manual."

"Did not watch the videos."

te·di·ous

/ˈtēdēəs/ 

adjective

too long, slow, or dull: tiresome or monotonous.

"a tedious journey"

synonyms: boring, dull, monotonous, repetitive, unrelieved, unvaried, uneventful; [More](#)



Looking ahead

- Evaluation of student learning
- Additional tutorial content

Thoughts Questions Suggestions

Find this presentation on  **RO@M**
Research Online at MacEwan

<http://roam.macewan.ca>



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