

APPROX
HITLER

Where did you learn that?

Appraisal and curation of free online
educational resources for residents

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Resources, References and more available at

APPD.PEMBlog.com



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PEMCURRENTS

THE PEDIATRIC EMERGENCY MEDICINE PODCAST



Educator Portfolio

BradSobolewski.com



#BloomsTaxonomy

**Learn about the scope of online resources
in medical education**

**Learn how to curate and recommend online
asynchronous resources for residents &
colleagues**

**Practice methods of critical appraisal and
evaluation for blog posts, podcasts & videos**

dic·tion·ar·y

^ˈdɪkʃənˌnerē

Asynchronous Learning

A student-centered constructivist teaching method utilizing online learning that allows students to learn when and where they want

Note

I won't be talking about for-fee portals or things that journals or universities/hospitals are producing

Which are great too!

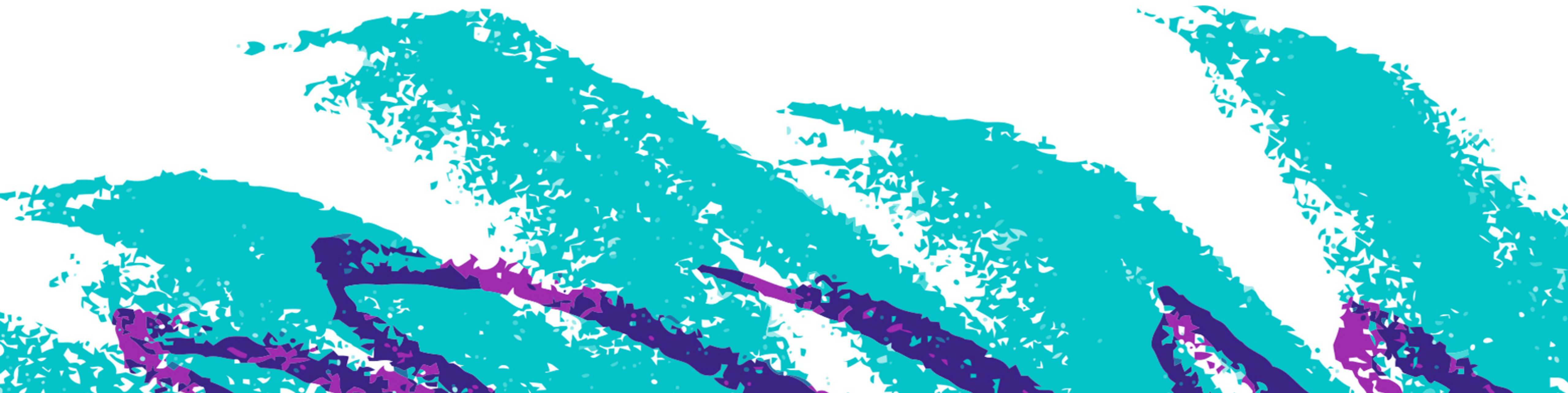
A triumph of ~~esrever~~ chronology

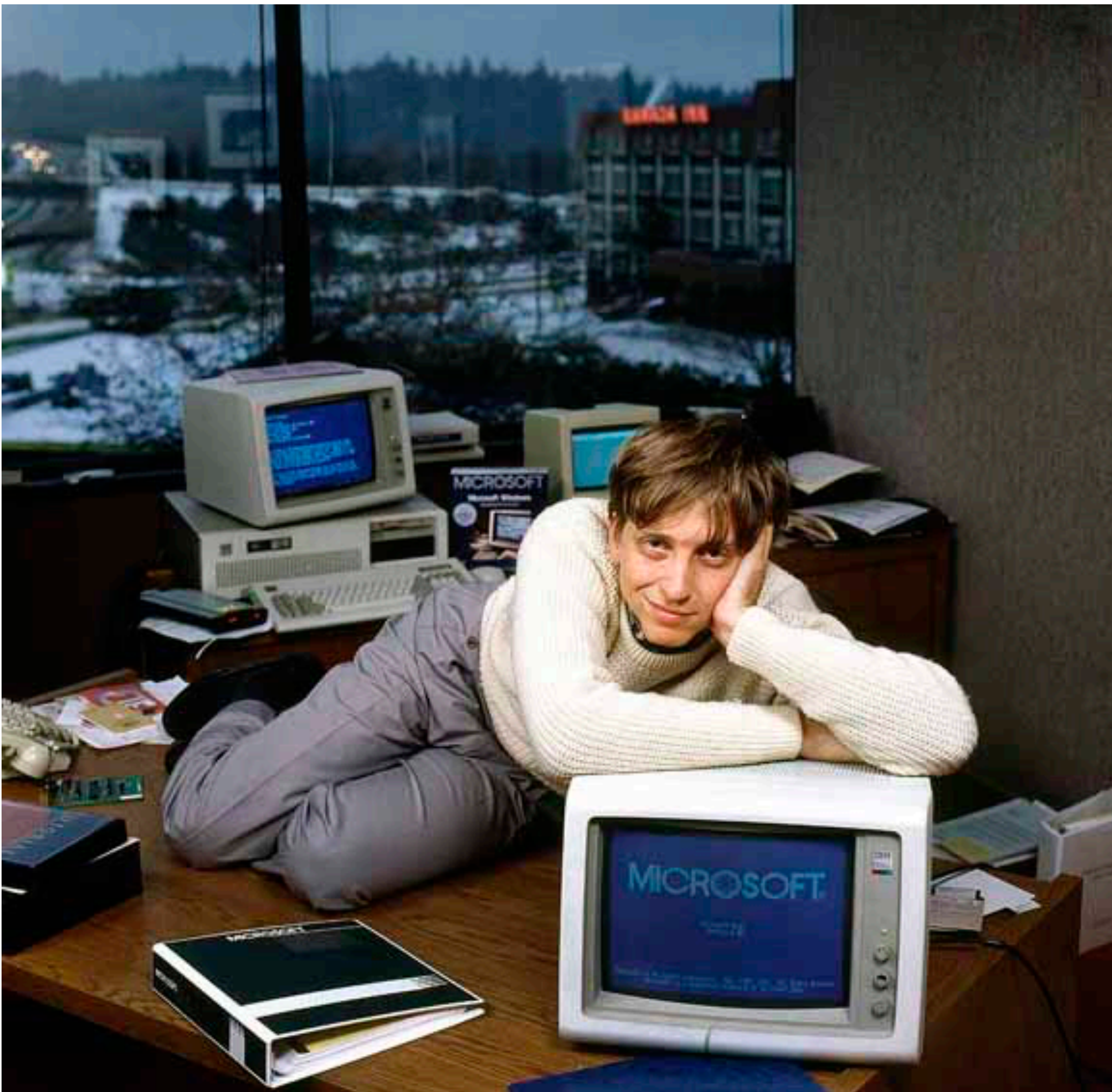
The web 2.0 boom in the late 90s and early aughts was all about...

User content

Organization

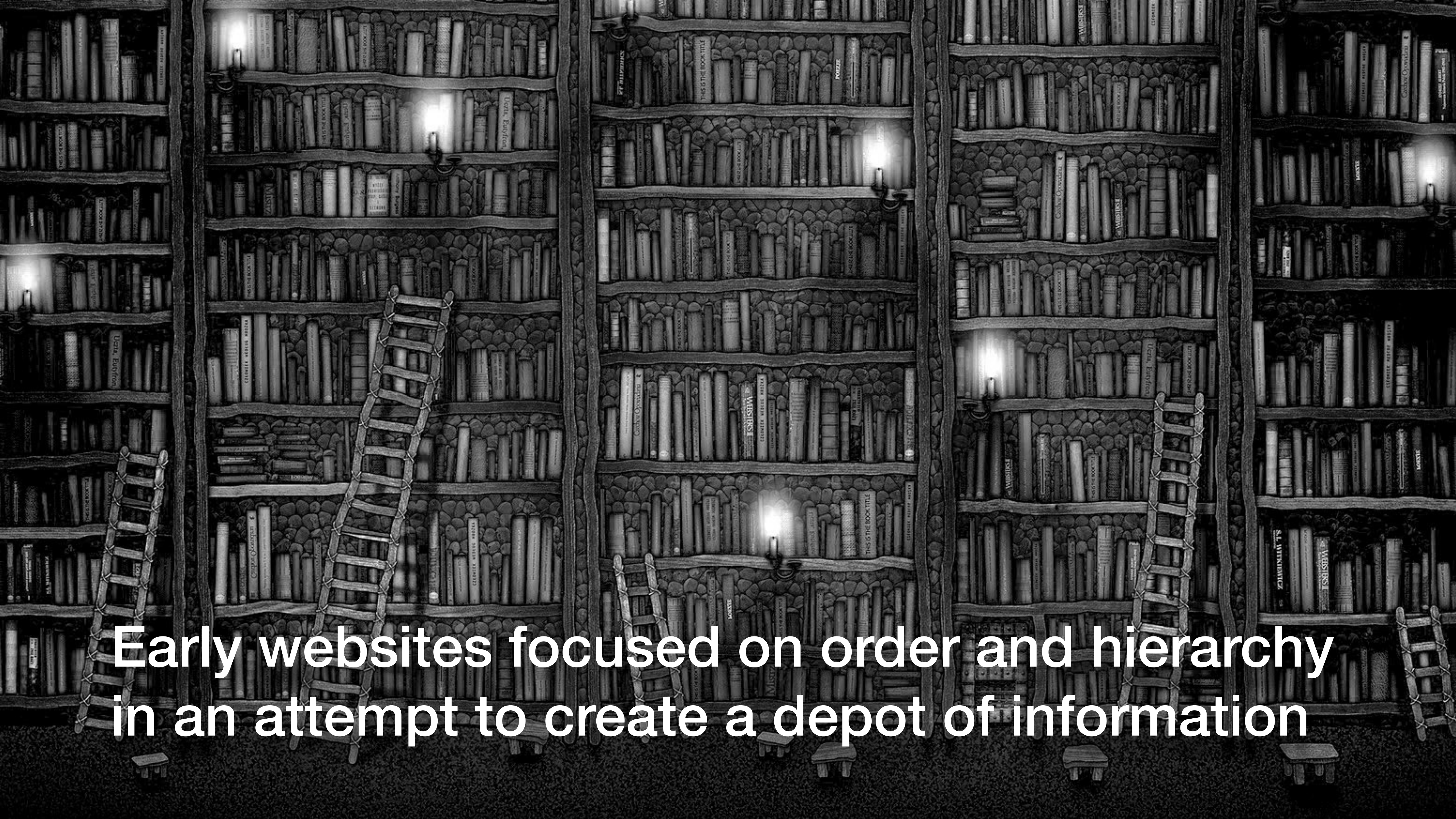
Infinite variety





“Content is king”

–Bill Gates, 1996



Early websites focused on order and hierarchy
in an attempt to create a depot of information

This lead to a backlash against the editorial control imposed by Yahoo-style cataloging

Therefore we got...

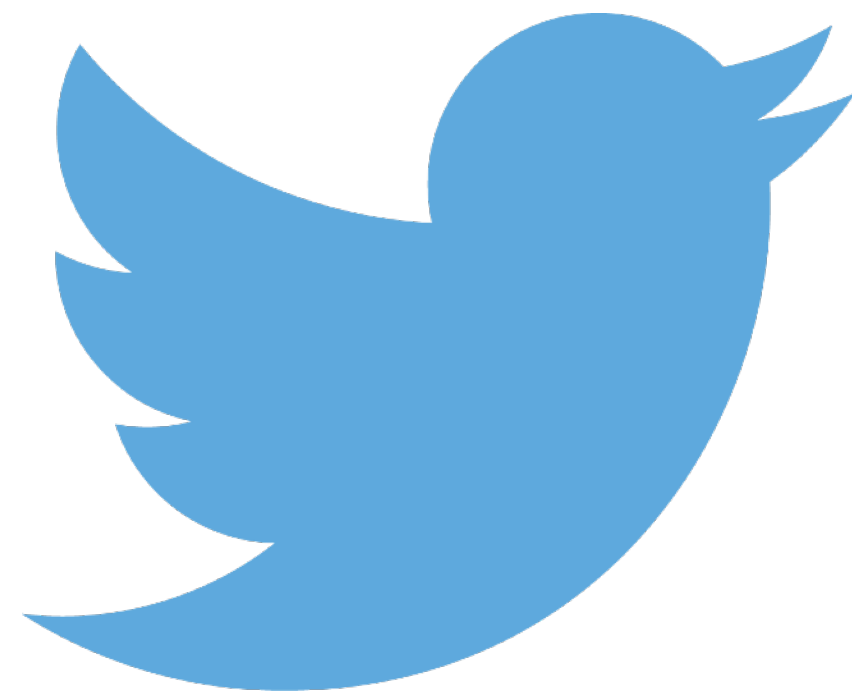


The Stream

The Stream's hierarchy and organization is based on...

nowness

This flow gives the internet a presence



There is no END to the flow of information

The horizon is constantly receding

Half life of a story is <12 hours & the average reader spends 2 minutes on it

This feels like a burden

Since we can't keep up the there has developed
a “melancholy to the infinite scroll”

“Why can't the web be a news ticker and a
museum?”

“Let the web be the web again, a network of
many times, not just now”

Alexis Madrigal

Senior Tech Editor at *The Atlantic*

The Google effect

“A flattening of expertise”

Tara Brabazon, 2006

The internet is used as a personal memory bank for information (transactive memory)

People are more likely to remember *where* they found the information rather than the information itself

Many lack literacy skills and strategies to sort trash from relevant

**Teaching requires expertise in not
only content but context**

**The information age requires
information *management***

Flow

The feed

Posts & tweets

Continual updates that
remind people that you
exist

Stock

Durable content

What people discover
via search

Spreads slowly but
surely, building fans
over time

The trick is to create hugely compelling **stock**
and use the **flow** to get the people there

What does this mean for medical education?

“You’re able to reach across the world almost instantaneously. Information technology has really transformed how we learn and what we learn”

Michelle Lin

Emergency Medicine, University of California San Francisco
Editor-in-Chief, Academic Life in Emergency Medicine

#FOAMed



If you want to know how we practiced medicine 5 years ago,
read a textbook.

If you want to know how we practiced medicine 2 years ago,
read a journal.

If you want to know how we practice medicine now, go to a
(good) conference.

If you want to know how we will practice medicine in the future,
listen in the hallways and use FOAM.

Free Open Access Medical Education (FOAM)
was conceived at the 2012 International
Conference on Emergency Medicine

Mike Cadogan wanted to help used online
technologies to help make education stick
and spread

#FOAMed is the movement and conversation
that supports the concept of **FOAM**



FOAMed is

Independent of a specific blog or media format

An interactive collaboration of like minded individuals free of geographical hinderances

FOAMed is not

Social media

A scientific publication

Free from peer review

A cult, a popularity contest, or a marketing exercise

Why bother with FOAM?

Cut down knowledge translation time

Residents like it



 **PEMBLOG**

 **LIFE IN THE FASTLANE**

 **ALiEM**



Disruptive Innovation

Blogs

Websites where individuals or groups can rapidly post, compile and disseminate information

Concise, current, and referenced synopses of clinical and educational material that can be used for on-shift learning

Blogs feature the experiential commentary that textbooks and journal may lack

Podcasts

Digitally recorded material downloaded or streamed

Began in earnest in 2003-2004

Now >150,000 English language podcasts

Many in medicine - independent entities, associated with traditional journals and organizations

Videos

YouTube is king

Journal sites will produce and host their own video

Many residents look for a procedure video prior to performing one in the ED

And more

Wikis

Reddit

International Conferences (SMACC, DFTB)

**Is any of this blog stuff actually being
used in an *official* capacity?**

**In 2008 the ACGME's Review Committee for
Emergency Medicine launched the Individualized
Interactive Instruction (III) Initiative**

**EM programs can replace up to 20% of didactics with
faculty-monitored asynchronous learning**

ACGME III Criteria

- 1. The program director must monitor resident participation**
- 2. There must be an evaluation component**
- 3. There must be faculty oversight**
- 4. The activity must be monitored for effectiveness**

Is any of this stuff any good?

“Skepticism exists among educators and scholars, especially given that most online medical education resources lack the traditional peer-review process and that one might easily publish material online, using disruptive technologies such as blogs or podcasts.”

Chan et. al

Annals of Emergency Medicine, 2016



The FOAM Social Media Index

The ALiEM Social Media Index

A effort to create a comparable parameter to h-index or Impact factor

Assess the impact sites have on contributing to FOAM

May help learners distinguish reputable and unproven websites

The ALiEM Social Media Index

- 1. Alexa Rank (of the website)**
- 2. Twitter Followers (of the most prominent editor)**
- 3. Facebook Likes (of the website's page)**

For each website, these 3 indicators are normalized and added together to give a score ranging from 0 to 10. The details of the derivation and validation of the SMi are outlined in a freely available article in the Western Journal of Emergency Medicine.

There is temporal stability and long term impact

They compared their methods and found that they roughly correlated with traditional journals' impact measures

It is possible to game the system through SEO tricks and “purchasing” social media followers

**That's great and all, but what actually
makes a blog or a podcast a *good* one?**

Systematic Review

Journal of Graduate Medical Education, 2015

Establishing a consensus...

Modified Delphi

Annals of Emergency Medicine, 2015

Systematic Review

Journal of Graduate Medical Education, 2015

Systematic review of MEDLINE, Embase, Web of Science & ERIC following PRISMA and SRQR

Objective: “Identify quality indicators for secondary resources that are described in the literature, which might be applicable to blogs and podcasts.”

Authors reviewed 157 articles relevant to blogs and/or podcasts

Qualitative, thematic analysis using a constant comparative method to generate themes until saturation was reached

After individual review they convened four focus groups with leading bloggers and podcasters from the Top 10 of the Social Media Index

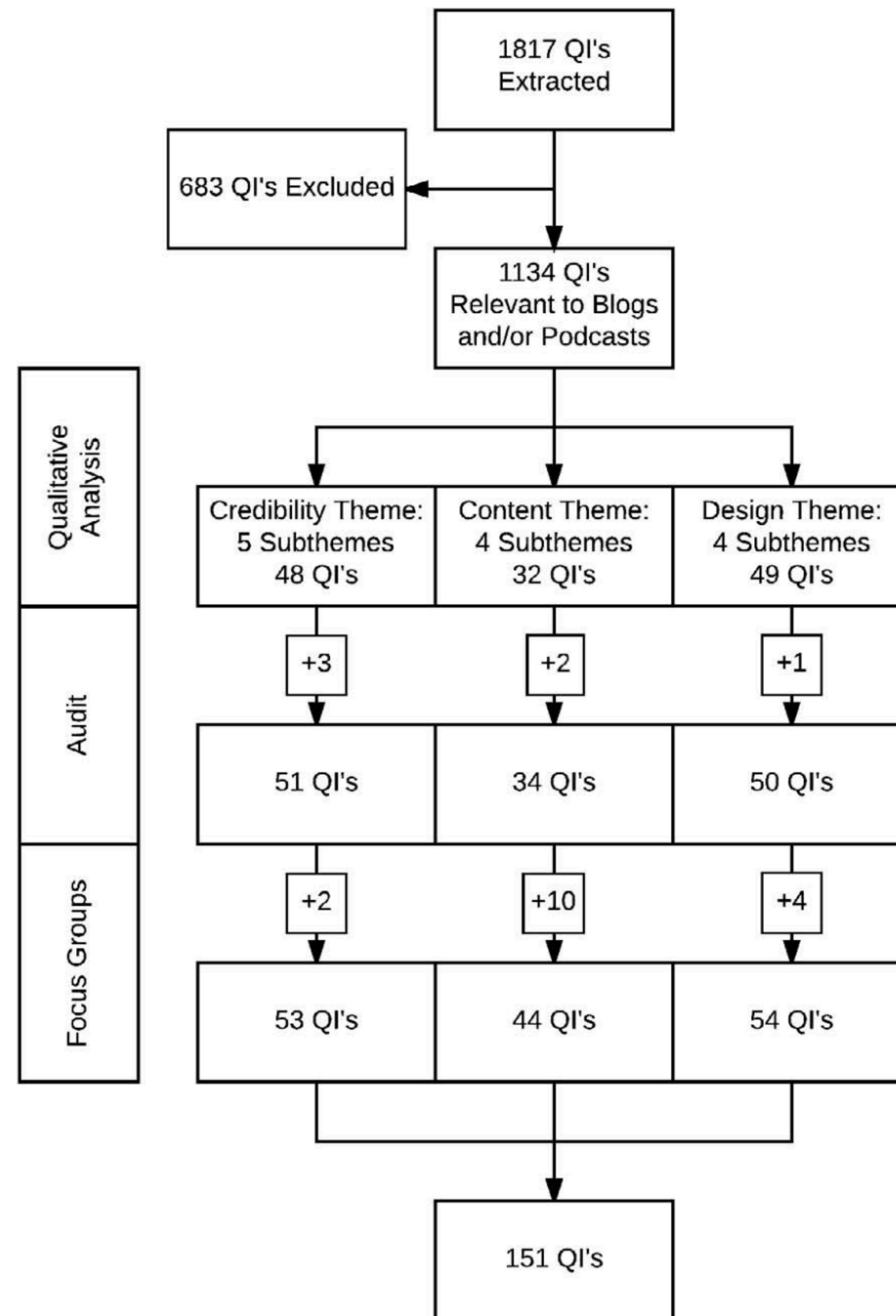


FIGURE 2
Qualitative Thematic Analysis That Resulted in Final List of 151 Quality Indicators (QI's) for Blogs and Podcasts

Themes and Subthemes of Quality Indicators That Reached Consensus

Theme 1: Credibility	Theme 2: Content	Theme 3: Design
Subtheme 1: Transparency	Subtheme 1: Professionalism	Subtheme 1: Aesthetics
Subtheme 2: Process	Subtheme 2: Engagement	Subtheme 2: Interaction
Subtheme 3: Use of other resources	Subtheme 3: Academic rigor	Subtheme 3: Functionality
Subtheme 4: Trustworthiness	Subtheme 4: Orientation	Subtheme 4: Ease of use
Subtheme 5: Bias

A total of 151 quality indicators emerged among the 3 themes: credibility (53 quality indicators), content (44 quality indicators), and design (54 quality indicators)

The interrater agreements were 91 %, 90%, and 89% for the credibility, content, and design themes, respectively.

Systematic Review

Journal of Graduate Medical Education, 2015

Establishing a consensus...

Modified Delphi

Annals of Emergency Medicine, 2015

Modified Delphi

Annals of Emergency Medicine, 2015

Modified Delphi to build expert consensus on quality in Emergency Medicine and Critical Care blogs and podcasts

Two iterative surveys, 22 bloggers and 24 podcasters

~90% response rate

31 items selected from 151 possibilities

Themes: Credibility, content and design

Quality indicators endorsed by $\geq 90\%$ of bloggers and podcasters

Is the resource credible?

Is the editorial process independent from sponsors, conflict of interest, and other sources of bias?

Does the resource cite its references?

Is the content of this educational resource of good quality?

Is the information presented in the resource accurate?

Is the content of the resource presented in a logical, clear and coherent way?

Is the resource transparent about who was involved in its creation?

Is the identity of the resource's author clear?

Are the authorities (eg, author, editor, publisher) who created the resource free of financial conflicts of interest?

Table 2. Interrater agreement between bloggers and podcasters within survey 2.

Theme	Cronbach's α		
	Bloggers	Podcasters	Both
All	.98	.98	.98
Credibility	.92	.90	.91
Content	.95	.94	.94
Design	.97	.96	.97

**Bloggers placed less value on identification of discussion participants
(eg, those commenting on the blog)**

**89% of podcasters strongly endorsed a very nontraditional quality
indicator: the importance of entertainment**

The results of these two papers are largely qualitative without a robust psychometric analysis

Evaluation of individual resources - reliability - is needed



In July 2014 Academic Life in Emergency Medicine launched their Approved Instructional Resources series

A collection of FOAM resources hosted on a single site

Eligible for III credit, and co-sponsored by CORD*



Help residencies determine which blog posts and podcasts are appropriate & high quality

Assist residency programs in promoting asynchronous learning

Reward residents who already effectively utilize FOAM resources

Core topics align with CORD Practice Test Calendar

MCQs based on core teaching points

Quizzes require students to select a correct answer before advancing

Post-module feedback on utility, usage for III credit and plans to revisit content

Each module is estimated to take 63-81 people hours to develop

Regular reviews of content

ACGME III Criteria

1. **The program director must monitor resident participation**

The program director and/or a representative is given read-only access to the private, master Google Drive spreadsheet, which records and tracks the names of all the residents who have completed each module.

2. **There must be an evaluation component**

3. **There must be faculty oversight**

4. **The activity must be monitored for effectiveness**

ACGME III Criteria

1. The program director must monitor resident participation

2. There must be an evaluation component

A post-module assessment quiz is created based directly on each of the featured AIR and honorable mention blogs/podcasts.

3. There must be faculty oversight

4. The activity must be monitored for effectiveness

ACGME III Criteria

1. The program director must monitor resident participation

2. There must be an evaluation component

3. **There must be faculty oversight**

The AIR editorial board members screen and peer review the content for accuracy and resident educational value. Furthermore, residents are encouraged to comment in the blog module with their feedback and questions. In doing so, an AIR editorial board member is automatically notified by e-mail of a blog comment and responds in a timely fashion (typically within 24 to 48 hours).

4. The activity must be monitored for effectiveness

ACGME III Criteria

1. The program director must monitor resident participation
2. There must be an evaluation component
3. There must be faculty oversight

4. **The activity must be monitored for effectiveness**

The AIR Series has an internal quality improvement process as well as a monthly post-module survey to incorporate learner feedback.

Blogs and podcasts curated from the Social media Index from within the previous 12 months ideally

Executive board reviews FOAM resources and score on an objective grading system

Panel of raters includes eight faculty from various institutions (mostly educational leaders) and active educators on social media

Tier 1		Tier 2		Tier 3		Tier 4		Tier 5	
BEEM Rater Scale		Content Accuracy		Educational Utility		EBM		Referenced	
Assuming that the results of this article are valid, how much does this article impact on EM clinical practice?	Score	Do you have any concerns about the accuracy of the data presented or conclusions of this article?	Score	Are there useful educational pearls in this article for residents?	Score	Does this article reflect evidence based medicine (EBM) and thus lack bias?	Score	Are the authors and literature clearly cited?	Score
Useless information	1	Yes, many concerns from many inaccuracies	1	Low value: No valuable pearls	1	Not EBM based, only expert opinion (and thus more biased)	1	No	1
Not really interesting, not really new, changes nothing	2		2		2		2		2
Interesting and new, but doesn't change practice	3	Yes, a major concern about few inaccuracies	3	Yes, but there are only a few (1-2) valuable or multiple (≥ 3) less-valuable educational pearls	3	Minimally EBM based	3		3
Interesting and new, has the potential to change practice	4		4		4		4		4
New and important: this would probably change practice for some EPs	5	Minimal concerns over minor inaccuracies	5	Yes, there are several (≥ 3) valuable educational pearls, or a few (1-2) KEY educational pearls that every resident should know before graduating	5	Mostly EBM based	5		5
New and Important: this would change practice for most EPs	6		6		6		6		6
This is a “must know” for EPs	7	No concerns over inaccuracies	7	Yes, there are multiple key education pearls that residents should know before graduating	7	Yes exclusively EBM based (unbiased)	7	Yes	7



Posts with a mean score ≥ 30 are awarded an AIR badge

Is the scoring system valid?

Comparing AIR module ratings with expert gestalt ratings (face validity)



Generalizability coefficients can help establish validity of multifaceted rating systems

Increasing number of raters will increase reliability

But multiple facets will add variance

An acceptable generalizability coefficient (reliability score) is ≥ 0.7

Decision study analysis was used to predict the number of raters required for reliable outcomes of the ALiEM AIR scoring tool

They used Kane's validity framework to assess 40 randomly selected posts

Each rater used two novel anchored “gestalt” scales

Table 2. Gestalt rating scale on blogs and podcasts for continuing medical education.

Would you recommend this to a learner?	Unsure	1. No, this is an inappropriate resource for this audience	2	3	4. This may be useful to this audience	5	6	7. Yes, this is a great resource for this audience
Would you recommend this to staff to engage in continuing medical education?	Unsure	1. No, this is an inappropriate resource for this audience	2	3	4. This may be useful to this audience	5	6	7. Yes, this is a great resource for this audience

Table 3. Demographic information on the ALiEM AIR raters and expert raters.

	ALiEM AIR Raters (n=8)		Expert Raters (n=20)	
Male, %	62.5		95	
By country of origin, % (country)	100 (United States)		75 (United States)	
			25 (Canada)	
Average years in practice (SD)	11.9 (7.5)		10.3 (10.2)	
With advanced degrees other than MD or DO, %	25		60	
With academic title at institution, %	87.5 total		95 total	
	Breakdown		Breakdown	
	Full professor	25	Full professor	10
	Associate professor	12.5	Associate professor	15
	Assistant professor	50	Assistant professor	65
	Clinical appointment	0	Clinical appointment	10
	None	12.5	None	5
With current or past official medical education position within institution, %	87.5 total		90 total	
	Breakdown		Breakdown	
	Dean/chair	12.5	Dean/chair	15
	Residency PD	12.5	Residency PD	40
	Residency APD	50	Residency APD	45
	Other GME role	25	Other GME role	30
	Clerkship director/UGME role	37.5	Clerkship director/UGME role	30
	Research/quality improvement role	0	Research/quality improvement role	20

PD, Program director; APD, associate or assistant program director; GME, graduate medical education; UGME, undergraduate medical education.

78 blog posts rated and compared with original AIR ratings

When the nesting of articles by subject topic area was taken into account, the absolute IRR was 0.81

Decision study analysis noted that a minimum of 9 raters is needed to achieve reliability

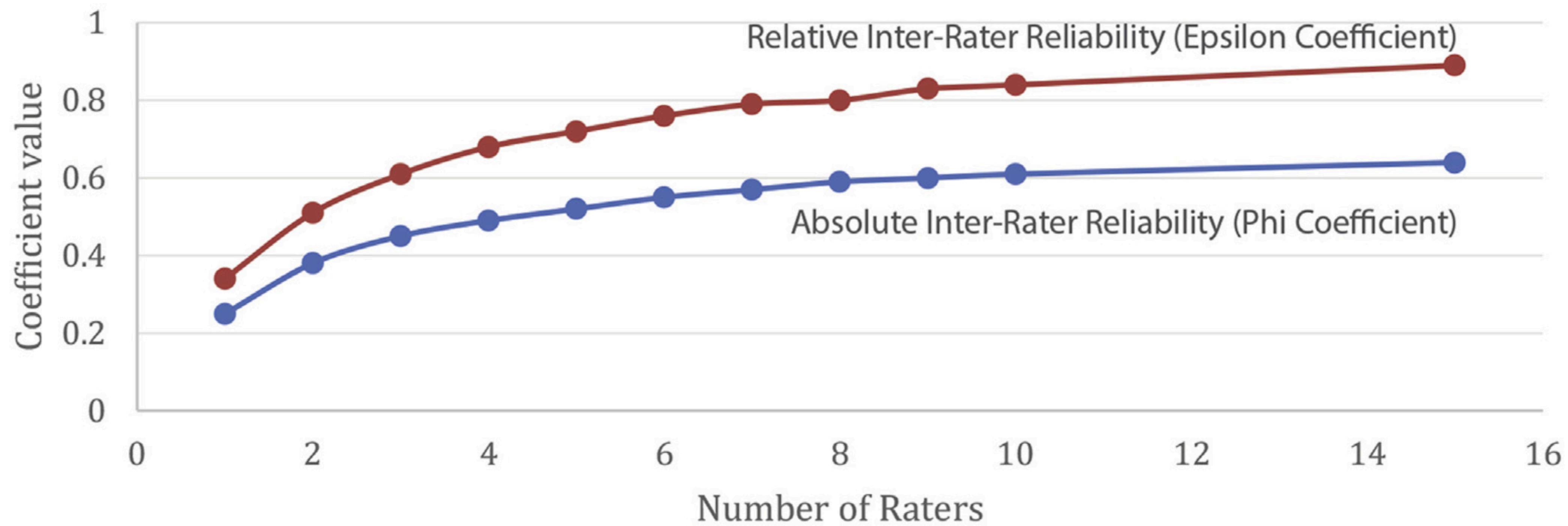


Figure. Decision study results.

Table 4. Spearman correlations between expert educator gestalt score and the ALiEM AIR score.

	Mean Expert Gestalt Score for Recommendation to Colleague (Another Attending Physician) for CME	Mean BEEM Rating Scale Score (Subscore Analysis)	AIR Mean Rating Score
Mean educator gestalt score for recommendation to learner	0.71	0.24	0.40
Mean educator gestalt score for recommendation to colleague (another attending physician) for CME	NA	0.57	0.35
CME, Continuing medical education; NA, not applicable.			

The authors noted that the blog's design and reputation may dictate part of the score (halo bias)

It isn't easy to find 9 raters for each blog post or podcast - but gestalt ratings correlated well enough

They conclude that their instrument does a good job at establishing reliable resources for III

Ongoing work from the crew at ALiEM

They moved to the free ALiEMU platform in 2017

The AIR PRO series focuses on more advanced topics for senior residents

ALiEM Capsules is a pharmacology-based series

The resources are used by 200 programs and >6,000 individual users

What does this all mean for us
pediatricians?

How can **you** get started with
FOAM?

**First, you have to decide that you want to
get started with FOAM**

Use Twitter

Getting started with FOAM

The thread that ties FOAM together

Follow people who share good stuff

Use Twitter to keep up with blogs, podcasts and even the medical literature

Add **#FOAMed** to any tweets you make that share free open-access medical education resources or that have medical education value in their own right

Sub-speciality hashtags **#FOAMcc** for critical care, and **#FOAMped** for pediatrics (among many others)

Be “real” and identifiable, tweet at conferences, use a separate personal handle

See what's out there

Getting started with FOAM

Ask colleagues, residents and students what they are reading

Start with a few key resources and follow by Twitter, RSS or email

Search for online content at GoogleFOAM.com

Know that Emergency Medicine and Critical Care have laid some spectacular groundwork

Don't worry about information overload

Be professional & active

Getting started with FOAM

Always protect patients

Show yourself and your colleagues in the best possible light

The success of FOAM depends on the interaction of like-minded experts and enthusiasts

You can consume (flow) and create (stock)

Share

Getting started with FOAM

Give feedback on blogs/podcasts & suggest corrections

FOAM creators are doing it for the love of it - be generous in support and in what you share - even if it is “just” a PubMed link

FOAM creators must acknowledge original sources including other FOAM resources and use a “Creative Commons” license

Remember, residents like online learning!
Be ready and willing to embrace it.

You be the judge

Blogs & Podcasts

Is this good FOAM?

Be familiar with the sites and podcasts that your trainees are frequenting

If a resident discusses a blog post or podcast ask them to share the link with you and review it together if possible

If this is during rounds think about how you will respond and review later

Blogs & Podcasts

Is this good FOAM?

Quality indicators endorsed by $\geq 90\%$ of bloggers and podcasters

Is the resource credible?

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Does the resource cite its references?

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Blogs & Podcasts

Is this good FOAM?

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New and Important: this would change practice for most EPs	6		6		6		6		6
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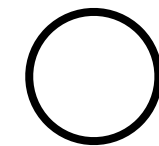
Blogs & Podcasts

Is this good FOAM?

Would you recommend this
to a learner?

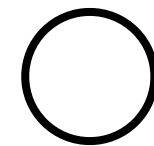
OR

Would you recommend this to a colleague
for their continuing medical education

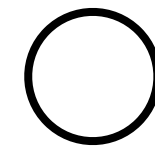


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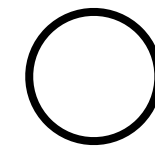
No, this is an inappropriate
resource for this audience



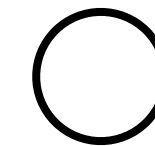
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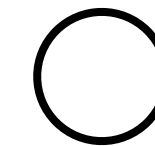
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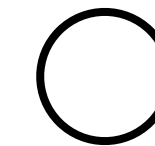
4



5



6



7

Yes, this is a great
resource for this audience



BLOG & PODCAST

PEMBlog.com

Brad Sobolewski

Cincinnati Children's

@PEMTweets



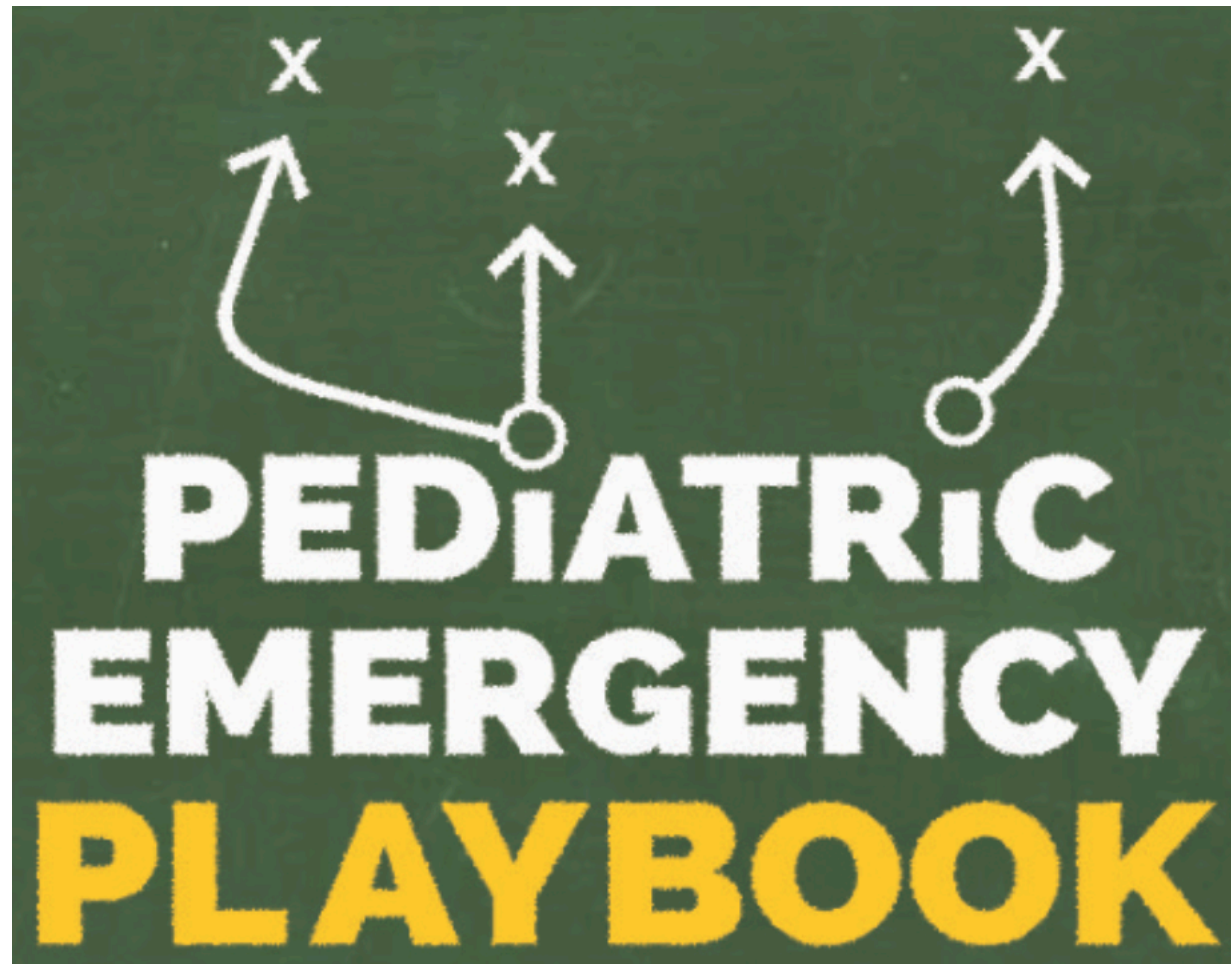
PedEMMorsels.com

Sean Fox

Carolinas Medical Center

@PedEMMorsels

BLOG



BLOG & PODCAST

PEMPlaybook.org

Tim Horeczko

Harbor - UCLA Medical Center

@EMTogether

**Don't Forget
The Bubbles**



BLOG & PODCAST

DontForgettheBubbles.com

Multiple

Australia

@DFTBubbles



PEMAcademy.com

Multiple

Children's National & INOVA Children's

BLOG



Key LIME Podcast

Jason Frank, Jon Sherbino & Linda Snell
Canada

PODCAST

PediaCast
with Dr Mike



PODCAST

Pediacast.org

Mike Patrick

Nationwide Children's

@Pediacast



BestBETs.org

Various

WEBSITE

The NNT

WEBSITE

TheNNT.org

Various

Video killed the procedure
focused textbook chapter?



Knee

RESIDENT I want to inject saline into the joint to see if the capsule is open

YOU Have you done this procedure before?

RESIDENT I watched a YouTube video...

Videos

Is this good FOAM?

A good educational video...

- 1. Is from a reputable source**
- 2. Explains one thing and does it well**
- 3. Shows the steps in a “clutter free” manner**
- 4. Is adequately referenced**

Give it a go



APPD.PEMBLog.com



Blog post



Podcast



Video

contact me



Educator Portfolio @ BradSobolewski.com



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APPD.PEMBlog.com



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