Digital Scholarship

Contents

Definition

For purposes of the Duke University School of Medicine (SoM) Appointments, Promotion and Tenure (APT) process, digital scholarship is defined as scholarly activity that ***exclusively*** utilizes digital tools to create, share, disseminate and advance scientific knowledge. This digital scholarship must be openly accessible, inclusive, collaborative, archivable, and promote scholarly discourse.

Rationale

Social media and other digital platforms are being increasingly used as academic tools to advance scholarly discourse and have influenced the conversation around the value of digital scholarship.[1] The academic value of scholarly discourse should not discount the use of non-traditional methods for advancing scientific knowledge such as podcasts, blogs, and other social media platforms. As faculty members increasingly participate in digital scholarship, there is a need to recognize, measure and reward their contributions commensurate with academic value to the individual and the institution. Quantifying digital scholarship with traditional metrics remains challenging. However, novel methods have emerged that leverage the tools enabled by digital technology to track users, usage and engagement in a manner substantially different from traditional methods such as print publishing.[2] In addition, the use of machine learning and deep learning within some digital platforms allows characterization of engagement in a manner not previously possible.

This document articulates a structure for defining digital scholarship within the academic framework of the APT process at Duke University School of Medicine.

Principles

The foundational principles of digital scholarship align with the SoM values across the spectrum of scholarship. Scholarship may be demonstrated in any of the following categories.[3]

- *Discovery* – original research that advances knowledge
- *Integration* – synthesis that brings new insight about information and knowledge across disciplines, across topics within a discipline, or across time

- *Engagement* – application and evaluation of knowledge and expertise applied to consequential problems and societal needs of individuals and institutions
- *Teaching* – systematic study of teaching and learning processes

As with traditional scholarship, the work cited within the area of digital scholarship must also be defined by its ***impact*** and ***quality***.

Quality

The lower barrier to entry into the digital space makes it even more important that quality be assured through available measures within the specific chosen domain (*see 'Domains' below*). An example of a metric is the rMETRIQ score, which is based on an aggregate score that accounts for a 4-point rating in the three dimensions of content, credibility and review.[4] Another example is the Social Media Index, which was developed to assess quality in emergency medicine blogs, but may be used for any website that promotes digital scholarship.[5] Of note, this index awaits validation in other domains.

Impact

Digital scholarship work using social media platforms (e.g., Twitter), should be accompanied by relevant engagement metrics, such as views, number of comments, retweets, average following, and other analytics from primary or 3rd party platforms. One such impact measure in the broad field of healthcare has been created by Symplur.com (Symplur, LLC, Pasadena, CA) and is known as the Healthcare Social Graph Score.[6] The score was developed in collaboration with Stanford University and the Mayo Clinic and uses deep learning algorithms tracking over 40,000 healthcare topics and conversations in real time.

Domains

There are several domains within digital scholarship that may meet the scholarship principles outlined in '*Principles*' above. These include, but are not limited to:

- *Podcast*: content produced as an audio file that can be accessed on demand
- *Blog*: curated and regularly updated written material on a website that allows users to share opinions
- *Twitter journal club*: moderated open conversation on specific journal articles using a hashtag that can be linked to analytics
- *Virtual education website*: digital course / online lectures in video format that may be accessed on demand and includes learning objectives and assessments
- *YouTube channel*: instructional video-based material that facilitates moderated sharing of opinions
- *Facebook specialty group*: closed or open group of professionals that facilitates exchange of educational material in a moderated forum

Criteria

Criteria for digital scholarship metrics at different levels of the APT process are challenging to define. A general framework for Department APT Committees for evaluating scholarship in the digital domain in a promotion dossier includes the following.[7]

Goals: The overall goal and philosophy of digital scholarship should be clearly articulated in the Intellectual Development Statement (IDS) of the faculty member. This should include a clear description of how digital scholarship aligns with the candidate's overall career development plan.

Description: Digital scholarship items should describe originality, curation of content, candidate's role, community management, platform administration, data analysis, and archival or retrieval method.

Examples

- Suggested impact grid:

Role	Low impact	Medium impact	High impact
Editor-in-chief, clinical blog	2-5K page views/month over 1 year	5-20K page views/month over 1 year	>20K page views/month over 1 year
Editor-in-chief, A/V podcast	2-5K downloads/month over 1 year	5-20K downloads/month over 1 year	>20K downloads/month over 1 year
*Healthcare influencer**	Top 10%	Top 5%	Top 1%
Author-blog post, article (no DOI)	3-15K views	>15K views	>30K views
Author-blog post, article (w/DOI)	1-5K views	5-10K views	>10K views
Learning platform	Contributor: 1-10 lectures	Host with > 20 lectures in up to 10 modules	Platform director with > 20 modules
Healthcare social media network: Editor, content manager, host	Up to 10K active users	10-50K active users	>50K active users

*Adapted from Cabrera et al.[7] Abbreviations: A/V=audio/video; DOI=digital object identifier. *=third party analytics (e.g., Symplur.com)*

- Suggested documentation:

1. **Twitter Journal Club**
   Thamman, R. Moderator, *American Society of Echocardiography Twitter Journal Club on ASE Statement on POCUS during COVID-19*. April 21, 2020. #ASEchoJC; 4.6M impressions with 872 tweets during the 48 hours of discussion. Top influencer: data available at https://bit.ly/3bVAEhk; accessible on https://www.symplur.com/healthcare-hashtags/. Twitter URL: https://twitter.com/iamritu

2. **Social media editor**
   Thamman, R. *Social media editor, Circulation, Cardiovascular Quality and Outcomes-Journal of the American Heart Association*. Goal: To disseminate and promote discussion on new publications of interest to the cardiovascular medicine community. 186K Facebook followers (@CircAHA – parent journal). 12.4K Twitter followers (@CircOutcomes).

3. **Blog post**

   Nicholson, T. Lead author: *The neurology and neuropsychiatry of COVID-19*. Hosted by the Journal of Neurology, Neurosurgery and Psychiatry from the British Medical Journal. Available at https://blogs.bmj.com/jnnp/2020/05/01/the-neurology-and-neuropsychiatry-of-covid-19/. Published May 21, 2020. Page views >21,000; Alexa website rank = 6,402. Social Media Index score = 7.37.

4. **Learning Platform**

   Bottiger, B. *Cardiothoracic anesthesia virtual education portal*. Program director, Adult Cardiothoracic Anesthesiology Fellowship. Portal hosted by Duke Anesthesiology. Available at https://anesthesiology.duke.edu/?page_id=821021. Supervision of education portal for CT Anesthesiology with more than 60 educational audio-visual items including didactic recordings, accessible within the Duke firewall only for current Duke Anesthesiology trainees. Assessment and evaluation performed through MedHub.

5. **Healthcare Influencer**

   Doe, J. *Healthcare Twitter user and contributor*. Hashtags #medtwitter, #cardiotwitter, #FOAMed. Followers: > 15,000. Healthcare Social Graph Score = 96.2. Accessible at www.twitter.com/jane-doe.

References

1. Cabrera D, Roy D, Chisolm MS. Social Media Scholarship and Alternative Metrics for Academic Promotion and Tenure. *Journal of the American College of Radiology : JACR.* 2018;15(1):135-141.
2. Husain A, Repanshek Z, Singh M, et al. Consensus Guidelines for Digital Scholarship in Academic Promotion. *West J Emerg Med.* 2020;21(4):883-891.
3. Boyer EL. *Scholarship Reconsidered: Priorities of the Professoriate.* Lawrenceville, NJ 08648: Princeton University Press; 1990.
4. Colmers-Gray IN, Krishnan K, Chan TM, et al. The Revised METRIQ Score: A Quality Evaluation Tool for Online Educational Resources. *AEM Educ Train.* 2019;3(4):387-392.
5. ALIEM. Social Media Index. https://www.aliem.com/social-media-index/. Published 2020. Accessed September 8, 2020.
6. Symplur. Healthcare Social Graph Score. https://www.symplur.com/healthcare-social-graph-score/. Published 2020. Accessed September 8, 2020.
7. Cabrera D, Vartabedian BS, Spinner RJ, Jordan BL, Aase LA, Timimi FK. More Than Likes and Tweets: Creating Social Media Portfolios for Academic Promotion and Tenure. *J Grad Med Educ.* 2017;9(4):421-425.

Acknowledgement

Principal author of this synopsis: Madhav Swaminathan, MD