Topic

In a software driven world, the pace of change, empowered, knowledge-worker based teams and flatter organizational structures push us toward a learning analytics ecosystem (covering people, process and technology) that provides visibility and insights across the "continuum of formality" (Eraut, 2004, pg. 250). A learning analytics ecosystem that only provides visibility to formal learning, typically via an LMS, misrepresents and underrepresents how people learn and the impact of that learning. With a work year that is over 2000 hours; we need to consider how to provide visibility to the many learning experiences that occur day-in and day-out, rather than focusing just on formal, short, periodic interactions. Such an ecosystem needs to be dynamic, networked, team-attuned, and ever-present.

While recognizing that Big Data enables liberal data ingestion, we should still be thoughtful about the data we'll be collecting, the questions we want to answer and how we'll use those answers. Informal learning experiences could be implicit, reactive or deliberative (Eraut, 2004, pg. 250). Such interactions occur in a variety of ways including face-to-face or in an organization's digital tools such as Slack, GitHub, Jenkins, or ServiceNow. The Experience API (xAPI) and a Learning Record Store (LRS) should serve as a key technology underpinning for learning analytics that capture, interpret and leverage these experiences and for introducing appropriate and timely interventions.

Guiding Questions
- What informal learning experiences (actor-verb-object) are available to be captured?
    - Which are valuable and have potential to guide interventions?
- How does a team-based collaboration model provide a lens on capturing and analyzing informal learning data?
    - For instance, can reviewing Slack and Github events through the lens of team orientation, team leadership, communication, monitoring, feedback, backup behavior and coordination (McIntyre & Dickinson, 1997) lead to identification of key experiences, outcomes and potential interventions?
- What are the leading approaches to analyzing and visualizing team-based collaborations and informal learning?
    - Are there examples of such approaches already in use?
    - What has been the impact?

Proposal
Creation of a research paper based on secondary research, exploration, and critical review in pursuit of answering the guiding questions. Secondary research will include analysis of various papers (quite a few listed below) that provide insights into informal learning (models, challenges, benefits), constructivist learning, and collaboration. Exploration will focus on a subset of digital tools (Slack, GitHub, Jenkins, ServiceNow, etc.) and the APIs that they provide for capturing potential learning events. The expectation is that some of the events will be "noise" and have little educational value while other events, whether in isolation or combination, are expected to provide potential for educational impact.

Resources and References

Adlnet. (n.d.). Adlnet/xapi-profiles. Retrieved March 9, 2019, from https://github.com/adlnet/xapi-profiles/blob/master/xapi-profiles-about.md

Adlnet. (2017, March 21). Adlnet/xAPI-Workshop. Retrieved March 9, 2019, from https://github.com/adlnet/xAPI-Workshop/tree/master/Presentations

ADLNet.gov. (n.d.). Experience xAPI - ADL Initiative. Retrieved March 9, 2019, from https://www.adlnet.gov/experience-api

Avella, J. T., Kebritchi, M., Nunn, S. G., & Kanai, T. (2016). Learning analytics methods, benefits, and challenges in higher education: A systematic literature review. Online Learning, 20(2), 13-29.

Barnett, T. (2018, October 16). Tracking GitHub Data with Keen IO. Retrieved from https://blog.keen.io/tracking-github-data-with-keen-io/

Berg, A., Scheffel, M., Drachsler, H., Ternier, S., & Specht, M. (2016, April). The dutch xAPI experience. In Proceedings of the Sixth International Conference on Learning Analytics & Knowledge (pp. 544-545). ACM.

Berg, A., Scheffel, M., Drachsler, H., Ternier, S., & Specht, M. (2016, July). Dutch cooking with xAPI recipes: The good, the bad, and the consistent. In 2016 IEEE 16th International Conference on Advanced Learning Technologies (ICALT) (pp. 234-236). IEEE.

Conde, M. Á., Rodríguez-Sedano, F. J., Sánchez-González, L., Fernández-Llamas, C., Rodríguez-Lera, F. J., & Matellán-Olivera, V. (2016, November). Evaluation of teamwork competence acquisition by using CTMTC methodology and learning analytics techniques. In Proceedings of the Fourth International Conference on Technological Ecosystems for Enhancing Multiculturality (pp. 787-794). ACM.

Cooper, A. (2014). Learning analytics interoperability-the big picture in brief. Learning Analytics Community Exchange.

Eraut, M. (2004). Informal learning in the workplace. Studies in continuing education, 26(2), 247-273.

Ferguson, R., & Shum, S. B. (2012, April). Social learning analytics: five approaches. In Proceedings of the 2nd international conference on learning analytics and knowledge (pp. 23-33). ACM.

Fidalgo-Blanco, Á., Sein-Echaluce, M. L., García-Peñalvo, F. J., & Conde, M. Á. (2015). Using Learning Analytics to improve teamwork assessment. Computers in Human Behavior, 47, 149-156.

Freifeld, L. (2017, January 27). Goodbye, Group E-Learning. Retrieved from https://trainingmag.com/trgmag-article/goodbye-group-e-learning

Galanis, N., Mayol, E., Alier, M., & Garcia-Peñalvo, F. J. (2015, October). Designing an informal learning support framework. In Proceedings of the 3rd International Conference on Technological Ecosystems for Enhancing Multiculturality (pp. 461-466). ACM.

GitHub. (n.d.). Webhooks. Retrieved from https://developer.github.com/webhooks/

Goodlett, K. (2018, October 18). Moving and receiving xAPI data in an LRS rich environment. Retrieved from https://xapi.com/blog/moving-receiving-xapi-data/

Hruska, M., Long, R., Amburn, C., Kilcullen, T., & Poeppelman, T. (2014). Experience API and team evaluation: evolving interoperable performance assessment. In The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC).

Kevan, J. M., & Ryan, P. R. (2016). Experience API: Flexible, decentralized and activity-centric data collection. Technology, knowledge and learning, 21(1), 143-149.

Kitto, K., Cross, S., Waters, Z., & Lupton, M. (2015, March). Learning analytics beyond the LMS: the connected learning analytics toolkit. In Proceedings of the Fifth International Conference on Learning Analytics and Knowledge (pp. 11-15). ACM.

Koh, E., Shibani, A., Tan, J. P. L., & Hong, H. (2016, April). A pedagogical framework for learning analytics in collaborative inquiry tasks: an example from a teamwork competency awareness program. In Proceedings of the Sixth International Conference on Learning Analytics & Knowledge (pp. 74-83). ACM.

Mangaroska, K., Vesin, B., & Giannakos, M. (2019, March). Cross-platform analytics: A step towards personalization and adaptation in education. In Proceedings of the 9th International Conference on Learning Analytics & Knowledge (pp. 71-75). ACM.

McIntyre, R. M., & Dickinson, T. L. (1997). A conceptual framework for teamwork measurement. In Team performance assessment and measurement (pp. 31-56). Psychology Press.

Pardo, A., & Kloos, C. D. (2011, February). Stepping out of the box: towards analytics outside the learning management system. In Proceedings of the 1st International Conference on Learning Analytics and Knowledge (pp. 163-167). ACM.

Rustici Software LLC. (n.d.). Learning Design Transformed: How xAPI is changing instructional design. Retrieved March 9, 2019, from https://xapi.com/learning-design-transformed/

Skule, S. (2004). Learning conditions at work: a framework to understand and assess informal learning in the workplace. International journal of training and development, 8(1), 8-20.
XAPI.VOCAB.PUB. (n.d.). Retrieved from http://xapi.vocab.pub/

Tarmazdi, H., Vivian, R., Szabo, C., Falkner, K., & Falkner, N. (2015, June). Using learning analytics to visualise computer science teamwork. In Proceedings of the 2015 ACM Conference on Innovation and Technology in Computer Science Education (pp. 165-170). ACM.

Vivian, R., Falkner, K., Falkner, N., & Tarmazdi, H. (2016). A method to analyze computer science students' teamwork in online collaborative learning environments. ACM Transactions on Computing Education (TOCE), 16(2), 7.