



Evolution of the Conversation and Knowledge Acquisition in Social Networks related to a MOOC Course

Francisco J. García-Peñalvo, Juan Cruz-Benito
Oriol Borrás-Gené, Ángel Fidalgo Blanco

HCI International 2015

Los Angeles, CA, USA, August 2-7

Informal Learning

- *Learning resulting from daily activities related to work, family or leisure. It is not organized or structured in terms of objectives, time or Learning support*

iMOOC

- Platform for providing MOOC courses developed by Technical University of Madrid, University of Zaragoza and University of Salamanca (Spain)
- Based on Moodle technology
- Follows Connectivism Theories
- In MOOC courses allows personalization, gamification, cooperation, etc.
- <http://gridlab.upm.es>

Purpose of this research

- Retrieve interaction evidences through hashtags related to an iMOOC course within social networks like Twitter and Google+
- Detect informal (and non-formal) learning features in these interaction evidences retrieved

Results

Table 1. Total interactions in Twitter and Google+ with teachers' proposed *hashtags*

<i>Total interactions</i>	<i>Twitter</i>	<i>Google+</i>	<i>Total</i>
Publications	108	119	227
Replies/Comments	17	76	93
Retweets/Reshares	42	17	59
Favorite / +1	45	315	360
Total	212	527	739

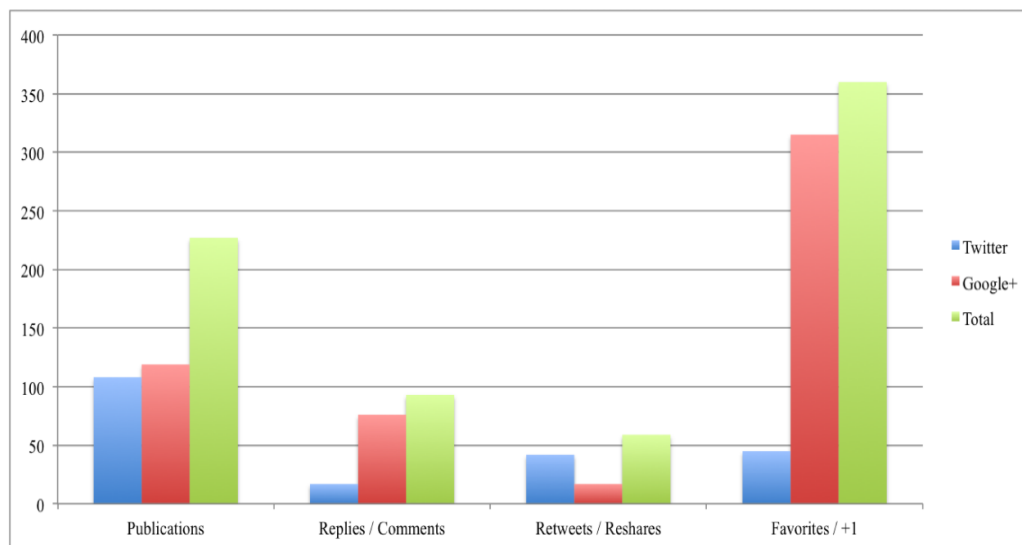


Fig. 1. Total interactions versus interactions in each social network related to the MOOC course

Results

Table 2. Official *hashtags* interactions in each social network (*hashtags* most used)

Interactions/ Hashtag	#RSEMOOC	#RSEHangout	#RSEejemplosRRSS	#RSE-MalasPracticas	#RSEmiKlout	#RSE-MoodleTwitter	Total interactions per type
Twitter Tweets	9	19	4	5	8	59	104
Google+ Publications	16	4	35	27	20	0	102
Twitter Replies	2	4	1	0	1	9	17
Google+ Comments	33	15	9	2	8	0	67
Twitter Retweets	5	16	0	1	5	9	36
Google+ Reshares	3	2	6	5	1	0	17
Twitter Favorites	5	15	0	2	6	11	39
Google+ +1's	57	25	84	47	51	0	264
Total Hashtag Interactions	130	100	139	89	100	88	

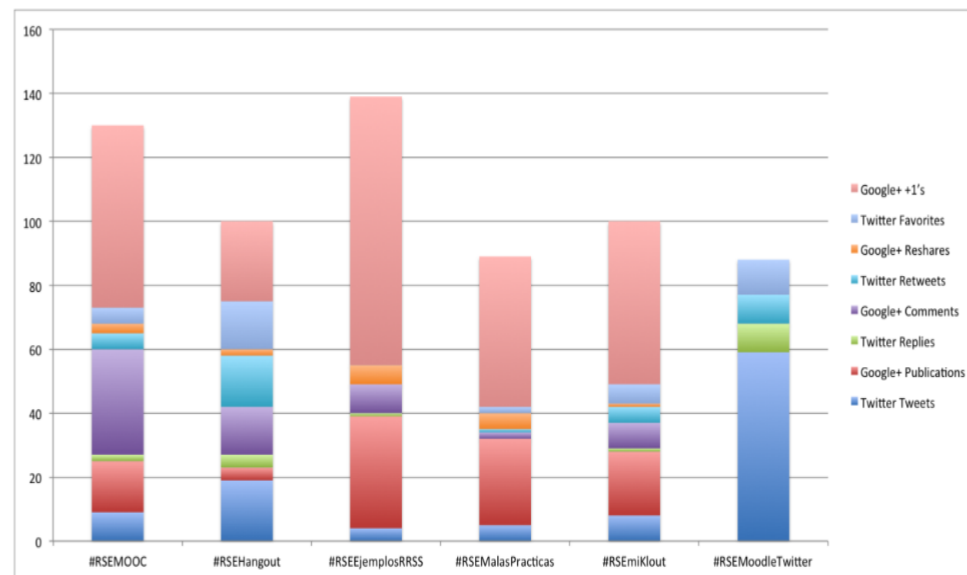


Fig. 2. Distribution of interactions in each proposed *official hashtag* in the social networks

Results



Table 3. Unofficial *hashtags* most used by the students within the MOOC course (related to informal Learning) in Google+

	#facebookeducacionarse	#twitter	#educación	#facebook	#aprendizaje	#infografía	#aula
Number of publications	26	12	10	9	7	6	4
Comments	7	18	14	7	4	13	0
Reshares	5	21	20	6	8	7	0
+1's	61	94	65	54	55	35	4
Total Interactions / Hashtags	99	145	109	76	74	61	8

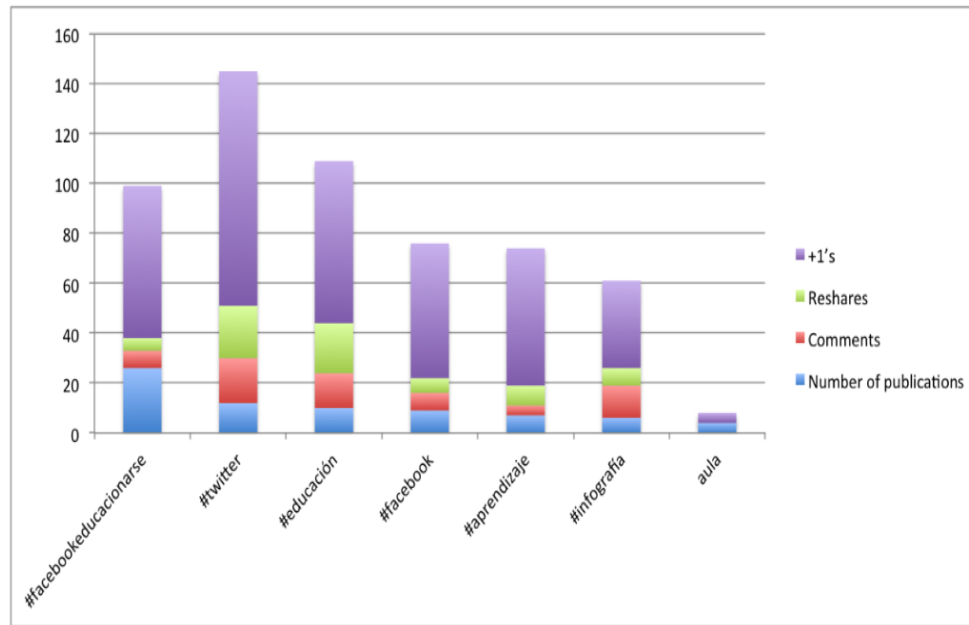


Fig. 3. Distribution of interaction with unofficial most used *hashtags* proposed by students in Google+

Discussion

- It is possible to establish relationships between the use of official hashtags with non-formal learning?
- It is possible to establish relationships between the use of unofficial hashtags and informal learning?
- It is possible to determine learning features from analyzing the conversation between iMOOC users in social networks?

Official hashtags and non-formal learning

- A MOOC course like those offers iMOOC cannot be considered as a formal course that provide a formal learning path to students
- Can be considered non-formal learning
- The activities proposed and guided by teachers in this context (even by having conversations in a social network by using hashtags) can be considered as a kind of non-formal learning

Unofficial hashtags and informal learning

- The resources, links and concepts shared by students by their own desire can be classified under informal learning
- This sharing through social networks using their own hashtags can be considered as a kind of informal learning derived from the contents and context of the iMOOC course
- The users enhance their learning process by their own interests and helping other students to reach the new contents they discover.

Conversations in social networks and learning type identification



- Regarding the results retrieved from analyzing Twitter and Google+ can be discriminated the conversations of iMOOC students and the hashtags they use
- These hashtags can be classified in official and unofficial based on the hashtags proposed by teachers
- Based on this classification the conversation can be discriminated by the use of hashtags, and if the student is learning, can be determined the type of learning is occurring

Conclusions

- This research work tries to identify non-formal and informal learning | MOOC users based on their activity in social networks like Twitter and Google+
- It explain how is possible to identify the non-formal or informal features in a conversation through these social networks
- Also, it shows how can be determined the type of learning is occurring when users utilize these social networks as support of their learning process
- Based on these results, the MOOCs can enhance their learning paths and performance using the analysis of social networks (empowering or assessing the informal learning in the MOOC grades of a students, etc.)

References

- Mackness, J., Mak, S., Williams, R.: The ideals and reality of participating in a MOOC. 7th International Conference on Networked Learning, pp. 266-275 (2010)
- McAuley, A., Stewart, B., Siemens, G., Cormier, D.: The MOOC model for digital practice. SSHRC Knowledge Synthesis Grant on the Digital Economy (2010)
- Vanbaelen, R., Harrison, J., van Dongen, G.: Lifelong learning in a Fourth World setting. Professional Communication Conference (IPCC), 2014 IEEE International, pp. 1-9 (2014)
- García-Peñalvo, F.J., Johnson, M., Ribeiro Alves, G., Minovic, M., Conde-González, M.Á.: Informal learning recognition through a cloud ecosystem. Future Generation Computer Systems 32, 282-294 (2014)
- Aramo-Immonen, H., Jussila, J., Huhtamäki, J.: Visualizing informal learning behavior from conference participants Twitter data. Proceedings of the Second International Conference on Technological Ecosystems for Enhancing Multiculturality, pp. 603-610. ACM, Salamanca, Spain (2014)
- Siemens, G.: Connectivism: A learning theory for the digital age. International journal of instructional technology and distance learning 2, 3-10 (2005)
- Zapata-Ros, M.: Teorías y modelos sobre el aprendizaje en entornos conectados y ubicuos. Education in the Knowledge Society 16, (2015)
- Evans, C.: Twitter for teaching: Can social media be used to enhance the process of learning? British Journal of Educational Technology 45, 902-915 (2014)
- Marsick, V.J., Watkins, K.E.: Informal and Incidental Learning. New Directions for Adult and Continuing Education 2001, 25-34 (2001)
- García-Peñalvo, F.J., García-Holgado, A., Cruz-Benito, J.: Formal and informal learning experiences in multicultural scopes. Proceedings of the First International Conference on Technological Ecosystem for Enhancing Multiculturality, pp. 523-527. ACM, Salamanca, Spain (2013)
- Bjornavold, J., Training, E.C.f.t.D.o.V.: Validation of non-formal and informal learning in Europe: a snapshot 2007. Office for Official Publications of the European Communities, Luxembourg (2008)
- García-Peñalvo, F.J., Colomo-Palacios, R., Lytras, M.D.: Informal learning in work environments: training with the Social Web in the workplace. Behaviour & Information Technology 31, 753-755 (2012)
- Ghenname, M., Abik, M., Ajhoun, R., Subercaze, J., Gravier, C., Laforest, F.: Personalized Recommendation Based Hashtags on E-learning Systems. ISKO-Maghreb'2013 Concepts and Tools for Knowledge Management (KM), pp. NA, Tunisia (2013)
- Twitter Inc., <https://support.twitter.com/articles/49309>
- West, J.: Recognition of non-formal and informal learning: the Case Against. Study prepared for the meeting of the OECD Group of Experts. (2007)

References

- Vosecky, J., Jiang, D., Leung, K.W.-T., Xing, K., Ng, W.: Integrating Social and Auxiliary Semantics for Multifaceted Topic Modeling in Twitter. *ACM Trans. Internet Technol.* 14, 1-24 (2014)
- Fidalgo-Blanco, Á., Sein-Echaluce, M.L., García-Peñalvo, F.J., Esteban Escaño, J.: Improving the MOOC learning outcomes throughout informal learning activities. *Proceedings of the Second International Conference on Technological Ecosystems for Enhancing Multiculturality*, pp. 611-617. ACM, Salamanca, Spain (2014)
- Alario-Hoyos, C., Pérez-Sanagustín, M., Delgado-Kloos, C., Parada G, H., Muñoz-Organero, M., Rodríguez-de-las-Heras, A.: Analysing the Impact of Built-In and External Social Tools in a MOOC on Educational Technologies. In: Hernández-Leo, D., Ley, T., Klamma, R., Harrer, A. (eds.) *Scaling up Learning for Sustained Impact*, vol. 8095, pp. 5-18. Springer Berlin Heidelberg (2013)
- Fidalgo, Á., Sein-Echaluce Lacleta, M.L., García-Peñalvo, F.J.: MOOC cooperativo. Una integración entre cMOOC y xMOOC. In: Fidalgo Blanco, Á., Sein-Echaluce Lacleta, M.L. (eds.) *Actas del II Congreso Internacional sobre Aprendizaje, Innovación y Competitividad, CINAIC 2013* (Madrid, 6-8 de noviembre de 2013), pp. 481-486. Fundación General de la Universidad Politécnica de Madrid, Madrid, España (2013)
- Borrás Gené, O., Martínez Núñez, M., Fidalgo Blanco, Á.: Gamification in MOOC: challenges, opportunities and proposals for advancing MOOC model. *Proceedings of the Second International Conference on Technological Ecosystems for Enhancing Multiculturality*, pp. 215-220. ACM, Salamanca, Spain (2014)
- Technical University of Madrid (Spain), University of Zaragoza (Spain), <http://gridlab.upm.es/imooc/course/view.php?id=2>
- Fidalgo Blanco, Á., Sein-Echaluce Lacleta, M.L., García-Peñalvo, F.J.: Methodological Approach and Technological Framework to break the current limitations of MOOC model. *Journal of Universal Computer Science*, 21, 712-734 (2015)
- Fidalgo Blanco, Á., García-Peñalvo, F.J., Sein-Echaluce Lacleta, M.L.: A methodology proposal for developing adaptive cMOOC. In: García-Peñalvo, F.J. (ed.) *Proceedings of the First International Conference on Technological Ecosystem for Enhancing Multiculturality (TEEM'13)*, pp. 553-558. ACM, New York, NY, USA (2013)
- Karaoglan, B., Candemir, C., Haytaoglu, E., Algin, G.B., Demirci, S.: Using Twitter as a diagnostic teaching and learning assessment tool. *EAEIE (EAEIE)*, 2014 25th Annual Conference, pp. 73-76 (2014)

Citation

- This paper may be cited as

García-Peñalvo, F. J., Cruz-Benito, J., Borrás-Gené, O., & Fidalgo Blanco, Á. (2015). Evolution of the Conversation and Knowledge Acquisition in Social Networks related to a MOOC Course. In P. Zaphiris & I. Ioannou (Eds.), *Learning and Collaboration Technologies. Second International Conference, LCT 2015, Held as Part of HCI International 2015, Los Angeles, CA, USA, August 2-7, 2015, Proceedings* (pp. 470-481). Switzerland: Springer International Publishing



Evolution of the Conversation and Knowledge Acquisition in Social Networks related to a MOOC Course

Francisco J. García-Peñalvo, Juan Cruz-Benito
Oriol Borrás-Gené, Ángel Fidalgo Blanco

HCI International 2015

Los Angeles, CA, USA, August 2-7