Elements of Connected Learning Environment

active
- create
- collaborate
- curate
- reflect
- inquire
- share
- rate/like

curriculum approaches
- socially situated
- personal relevance/experiential
- activity based
- systems based
- inquiry based
- project based

learning theories
- social constructivist
- connectivist

authentic
- situated
- real world
- interest-powered

personalised
- individualised learning
- customised learning
- differentiated learning
- self organised learning
- personal learning
- independent learning

collective
- crowd learning
- crowd sourcing
- collective intelligence
- participatory communities
- peer supported

networked
- networked learning
- networked knowledge
- distributed learning
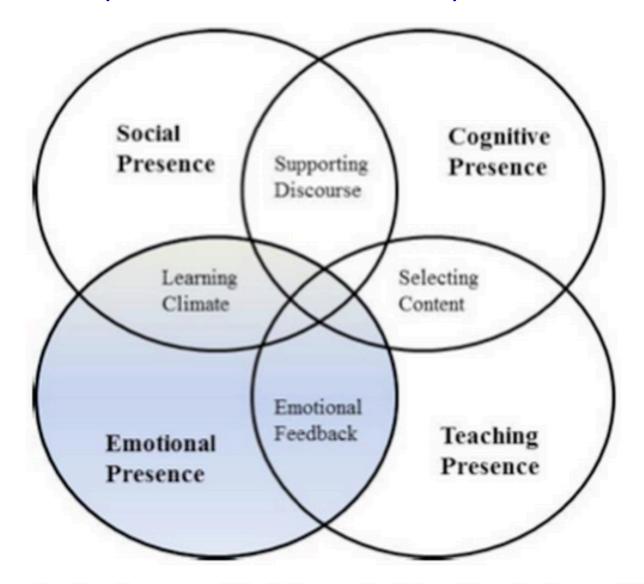- distributed cognition

Extended Community of Inquiry Framework (Rienties & Rivers 2014)

1: Community of Inquiry Framework for Online Learning (adapted from Stenbom et al. (2014)
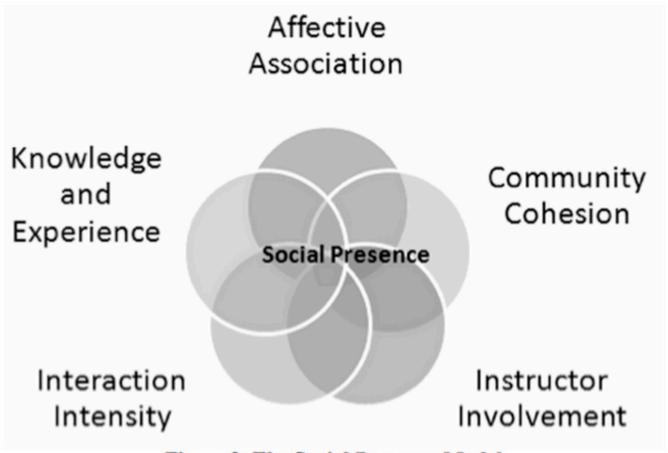
Whiteside's social presence model (2015)

Figure 3: The Social Presence Model
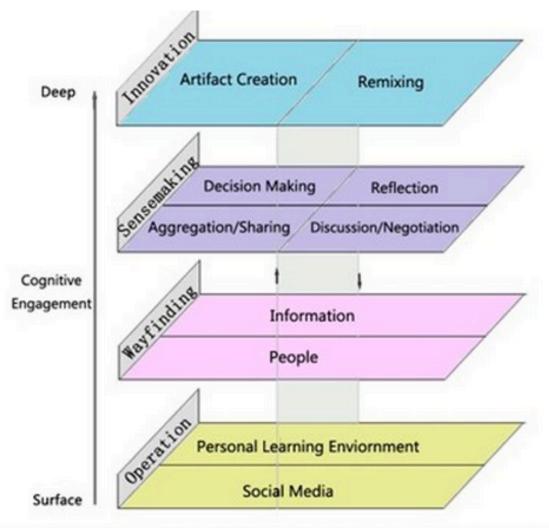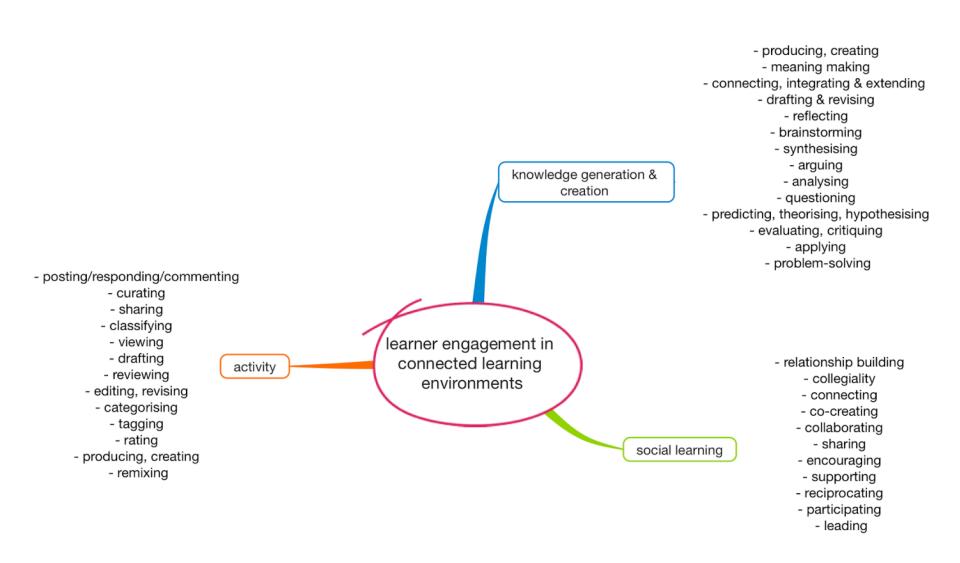
Wang, Chen & Anderson (2014)

Figure 4. Framework for interaction and cognitive engagement in connectivist learning.

knowledge generation & creation

- producing, creating
- meaning making
- connecting, integrating & extending
- drafting & revising
- reflecting
- brainstorming
- synthesising
- arguing
- analysing
- questioning
- predicting, theorising, hypothesising
- evaluating, critiquing
- applying
- problem-solving

learner engagement in connected learning environments

activity

- posting/responding/commenting
- curating
- sharing
- classifying
- viewing
- drafting
- reviewing
- editing, revising
- categorising
- tagging
- rating
- producing, creating
- remixing

social learning

- relationship building
- collegiality
- connecting
- co-creating
- collaborating
- sharing
- encouraging
- supporting
- reciprocating
- participating
- leading

Cognitive

Community of Inquiry (Garrison et al 2000)	Framework for interaction & cognitive engagement (Wang, Chen & Anderson 2014)
Triggering – recognising problem, puzzlement **Exploration** – divergence, suggestions, brainstorming, opinions **Integration** – convergence, connecting ideas/synthesis, creating solutions **Resolution** – application, defending solutions	**Operation** Personal learning environment Social media **Wayfinding** Information People **Sense making** Decision making Aggregation Sharing Reflection Discussion Negotiation **Innovation** Artifact creation Remixing

Problem presentation, Triggering phase

Relation to previous post, Triggering phase

Tagging participants

Shared resource, Triggering phase

Insight, Opinion, Triggering phase Exploration phase

Related video, Exploration phase

Reference to previous post, Integration phase

Related original content, Integration phase

Insight, opinion, Resolution phase

Social

Community of Inquiry – social presence (Garrison et al 2000)	Social presence model (Whiteside 2015)	Positive crowd learning (Milligan 2015)
Project personal characteristics, presenting as real people: Affective expression Self-disclosure Humour Continuing a thread/reply Quoting from others Tagging others, referring to others, addressing others by name, using inclusive pronouns (vocatives) Asking questions Complimenting, expressing appreciation Expressing agreement Salutations	**Affective association:** emotion, humour, self disclosure **Knowledge & experience:** sharing experience & expertise **Community cohesion:** Sharing additional resources & information, approachable group members, greetings, salutations, vocatives **Interaction intensity:** level of interaction including agreeing, disagreeing, compliments, questions, acknowledgments	Seeks knowledge & feedback Shares openly & courageously Engages proactively Values reciprocity Supports others Recognised by peers Inclusive

Emotional

(Cleveland et al 2012)
Positive personal affect
Appreciation, humour, joy, enthusiasm, happiness, desire, enjoyment, excitement, calmness, relief, pride, passion, delight, contentment, surprise, thankfulness, hope, yearning,

Positive social impact:
Supporting, encouraging, appreciating, complimenting, appreciating, celebrating

Use of emoticons, caps, exclamation marks

Negative personal affect
anxiety, dislike, disappointment, panic, anger, fear, stress, guilt, hopelessness, overwhelmed, frustration, boredom, confusion, tired, sick

Negative social impact:
Flaming, trolling, abusing, ridiculing, ignoring

Use of emoticons, caps, exclamation marks

Connectivist

Network analysis	Extending community	Creating
Number of connections Strength of connections	Moves beyond closed community Engages with external networks/communities Engages with external experts	Publishes/uploads/curates/shares to closed community Publishes/uploads/curates/shares to external community

Verbs

Actions	Digital (Churches, 2008)	Higher order cognitive (Bloom's)	Lower order cognitive (Blooms's)
(Kitto 2015) **CL Recipe:** Create Like Share Tag Rate **Collaborative Content Authoring:** Adding Content Editing Content Deleting Content Linking (Associating Content) Tagging Content Tagging Collections **Content Curation:** Create Collection Adding Media to Collection Tagging Media in a Collection Tagging Collection Sharing Collection Sharing Item in Collection	**Higher order** producing publishing directing constructing mindmapping graphing remixing/mash up moderating alpha & beta testing programming animating filming, editing **Lower order:** bookmarking linking favouriting searching categorising/classifying /tagging subscribing uploading sharing following executing procedures	producing creating meaning making connecting integrating extending drafting revising reflecting brainstorming synthesising arguing debating analysing questioning predicting theorising hypothesising evaluating critiquing experimenting applying problem-solving decision-making	listing describing reproducing explaining comprehending retrieving naming identifying recognising paraphrasing inferring

References

Churches, A (2008) *Bloom's digital taxonomy.* Available: http://burtonslifelearning.pbworks.com/f/BloomDigitalTaxonomy2001.pdf

Cleveland, Innes, M & Campbell, P (2012) Emotional presence, learning, and the online learning environment. *The International Review of Research in Open and Distance Learning*. 13(4): 269-292 Available: http://www.irrodl.org/index.php/irrodl/article/view/1234/2333

Garrison, R, Anderson, T, & Archer, W (2000) Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education* 2(2-3): 87-105

Kitto, K (2015) CLRecipe - Social Media Recipes for TinCan API Available: https://github.com/kirstykitto/CLRecipe

Krathwohl, D. (2002). A Revision of Bloom's Taxonomy: An Overview. *Theory into practice, 41*(4), 212-218.

Kreijns, K, Van Aker, F, Vermeulen, M & Van Buuren, H (2014) Community of inquiry: social presence revisited. *E-learning and Digital Media* 11(1)

Milligan, Sandra (2105) Crowd-Sourced Learning in MOOCs: Learning Analytics meets Measurement Theory. *Proceedings of the Fifth International Conference on Learning Analytics and Knowledge*, Poughkeepsie, NY 18-20 March

Rienties, B & Rivers, B (2014) Measuring and understanding learner emotions: evidence and prospects. *Learning Analytics Review 1*. Learning Analytics Community Exchange. Available: http://www.laceproject.eu/publications/learning-analytics-and-emotions.pdf

Wang, Zhijun, Chen, Li & Anderson, T (2014) A Framework for Interaction and Cognitive Engagement in Connectivist Learning Contexts. *The International Review of Research in Open and Distributed Learning.* Available: http://www.irrodl.org/index.php/irrodl/article/view/1709/2838

Whiteside, A (2015) Introducing the social presence model to explore online and blended learning experiences. *Online Learning* 19(2) Available: http://olj.onlinelearningconsortium.org/index.php/jaln/article/viewFile/453/137