Physics Students' Social Media Learning Behaviours and Connectedness

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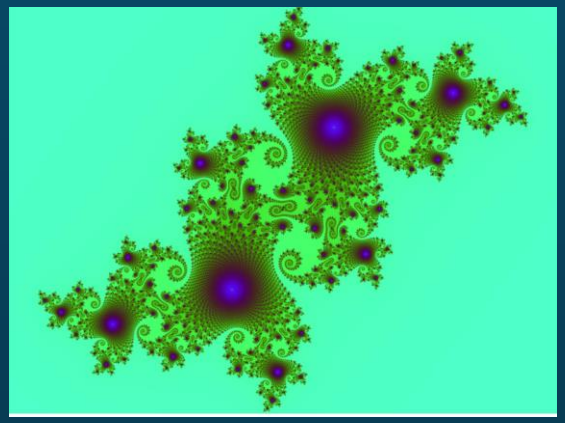
Social Media

so•cial me•di•a *(sō 'shəl mē'dē-ə)* ➡ ***n.***

software and web-based technologies that facilitate interactive dialogues and connectivity using the capabilities of Web 2.0 technology that allow for the creation and exchange of user generated content (Kaplan & Haenlein, 2010)



Connectedness

(OECD, 2012)

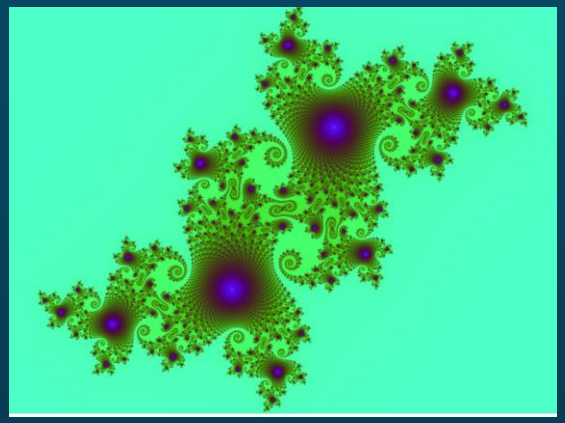
- New Millennium Learners project
- Distinguishes between *connectivity* and *connectedness.*

Connectedness is the ability to benefit from being connected.

Background Literature

- Student participation in social media is high (Pew, 2015)…but there is little support for Prensky's (2001) famous 'digital native' claim (Bennett et al., 2008)

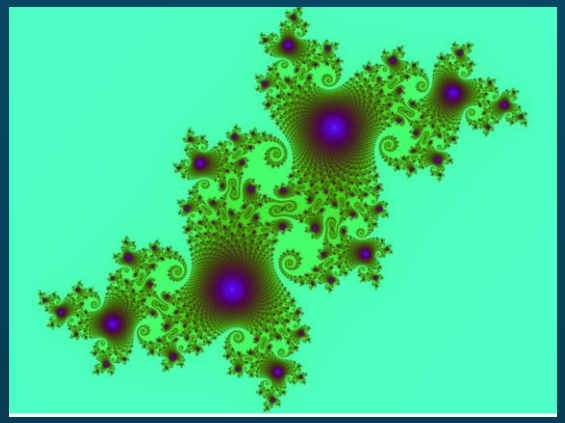
- "contextualized rooted discussions of the potential of Web 2.0 in teaching are rare" (Brown, 2012)



Theoretical Perspective: Complexity Thinking

(Davis & Sumara, 2006)

- Draws on characteristics and qualities of complex systems
- Transdisciplinary perspective in education research



Theoretical Perspective: Complexity Thinking

(Davis & Sumara, 2006)

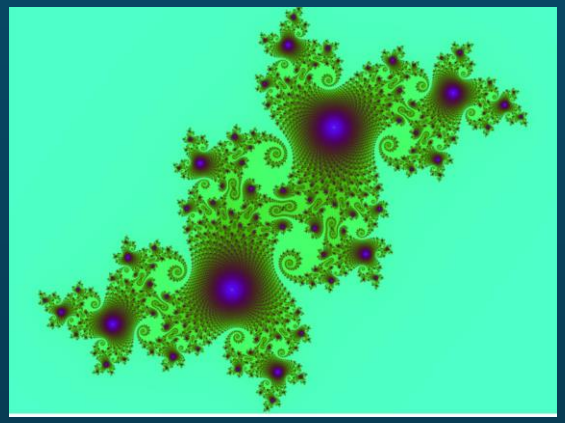
Complex systems arise in the interactions of many autonomous agents/elements, which collectively manifest properties not exhibited by the agents/elements independently…

…are learning systems.

Theoretical Perspectives on Social Media and Learning

“it is important to understand that although social networked systems might be emergent and self regulating, some forms of coordination or orchestration is usually required to support the sort of meaning making that corresponds to learning”

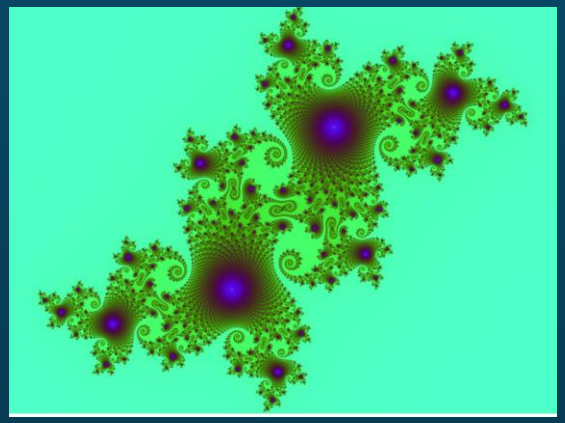
(Ravenscroft, 2011)



Theoretical Perspective: Complexity Thinking

(Davis & Sumara, 2006)

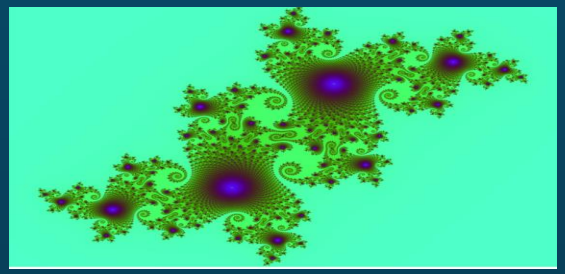
- Learning is a process of adaptations
- Teaching is about creating conditions for emergence to occur



Analytical Framework: Conditions of Emergence

(Davis & Sumara, 2006)

- Internal Diversity
- Internal Redundancy
- Neighbour Interactions
- Decentralized Control



Learning Potentials of Technologies

Tools and Devices	**Learning Potentials (Clark et al., 2009)**	**Learning Potential for promoting connectedness**
Send messages, send emails, transfer files, upload photos, downloading	Resource management; synchronous and asynchronous communication; file sharing, collaborative and cooperative learning	These modes of communication are not likely to produce the density (*diversity*) of idea sharing necessary to promote emergence. **LIMITED**
Use chat rooms, use forums, get help with homework, multi-task	Learning support forums; collaborative discussion; peer feedback and support	If forums are open to a large group of students (*diversity, neighbour interactions)*, and have a *decentralized* structure ideas can self-organize. **HIGH**

Research Questions

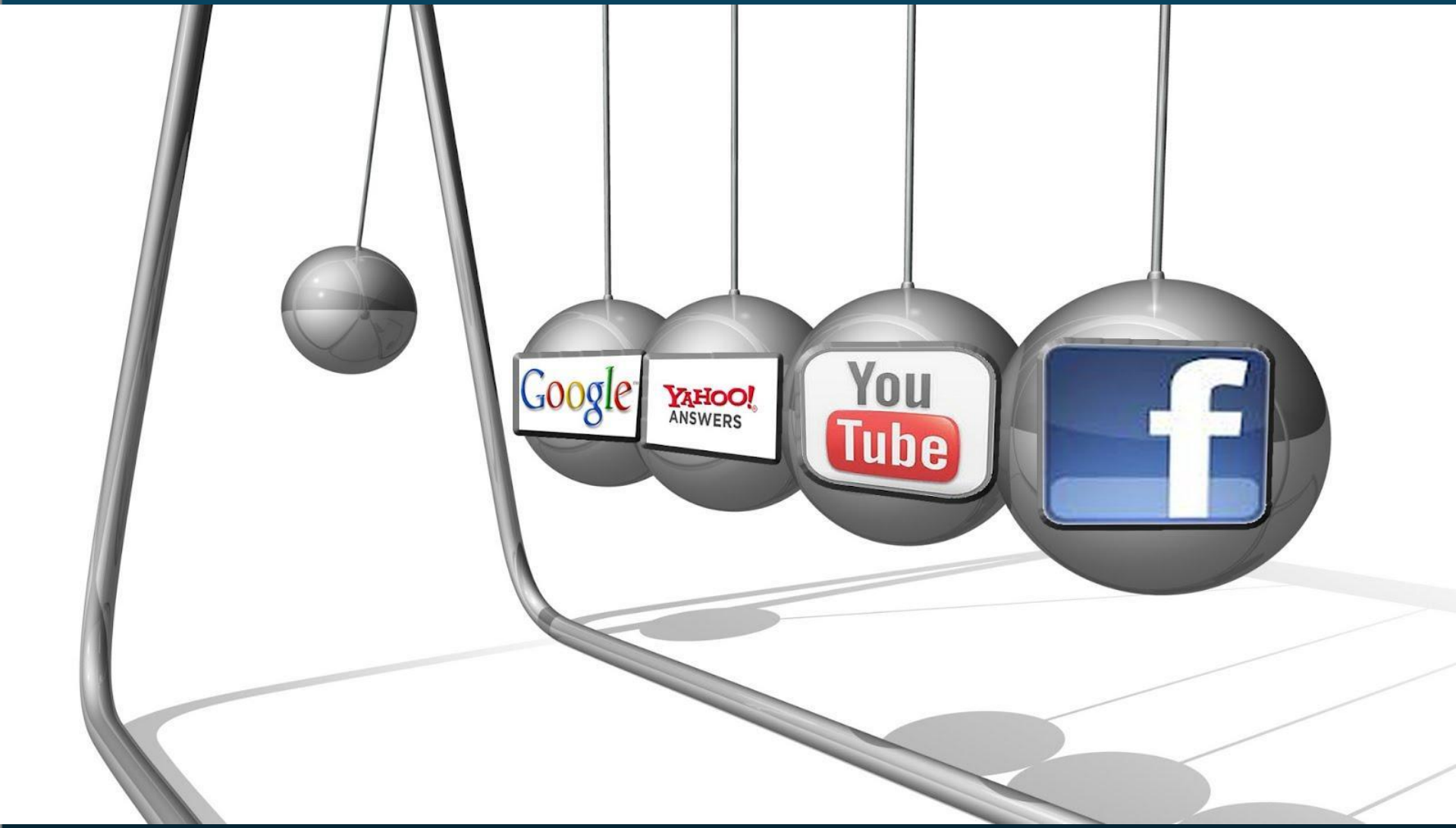
What social media learning behaviours do secondary and post-secondary students engage in as they learn physics and how do the two groups differ?

How can social media learning behaviours be characterized using complexity thinking and what are their potentials for connectedness?

Physics Focus Groups

- Secondary students (groups=5; n=24)
- First year post-secondary students (groups=2; n=7)
- Upper year post-secondary students (groups=1; n=3)

Phase 1: Exploring Student Social Media Use



Results

Social Media Learning Behaviours:

- Connecting with peers: Homework chatting on Facebook
- Accessing a diversity of explanations: Online videos
- Looking for the right answer: Online forums and Google

Facebook

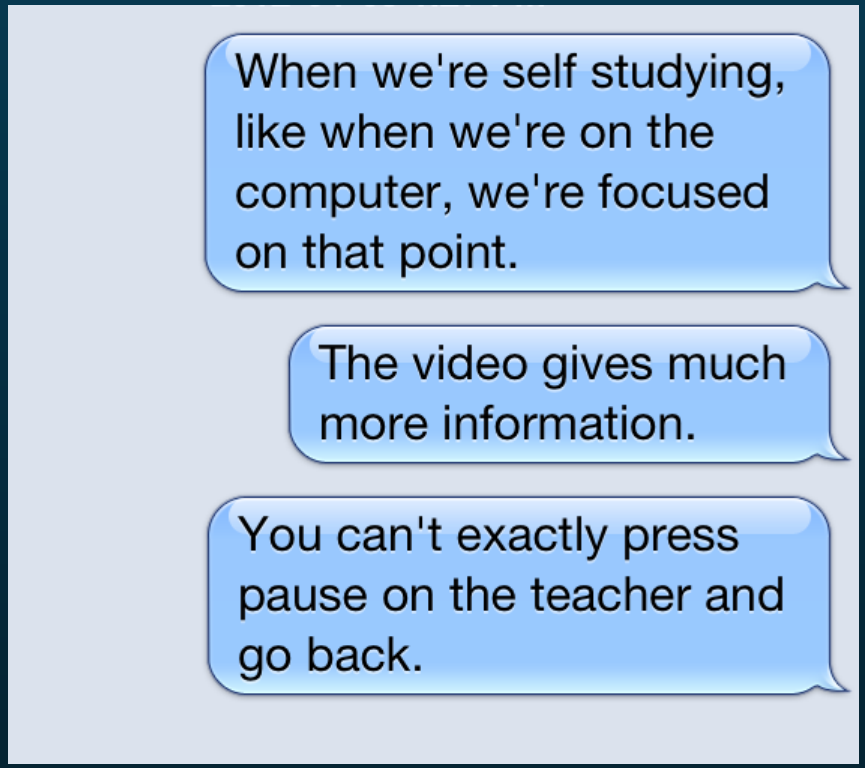
Students used Facebook, text, and online chat clients more than email. 71% of students used Facebook chat to when they are ‘stuck on a HW question’.

I still have to check it [my email] sometimes because my teachers like using it. [HS student]

When I get a message on Facebook...I feel like I have a responsibility [to respond]. It's almost like when I'm talking to someone at a party. [upper year post-secondary]

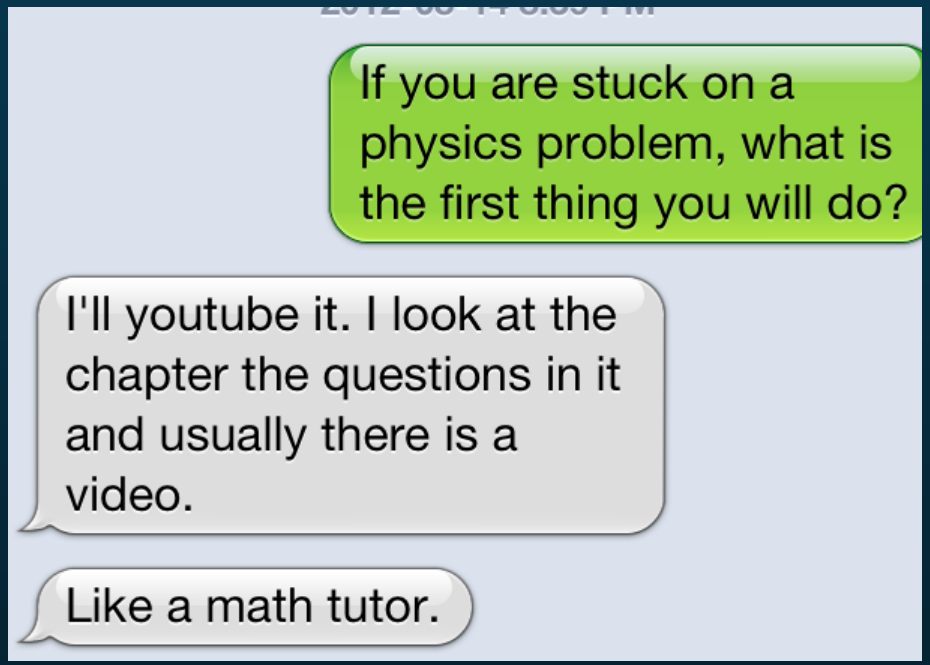
Online Videos

Videos were a heavily accessed social media resource.

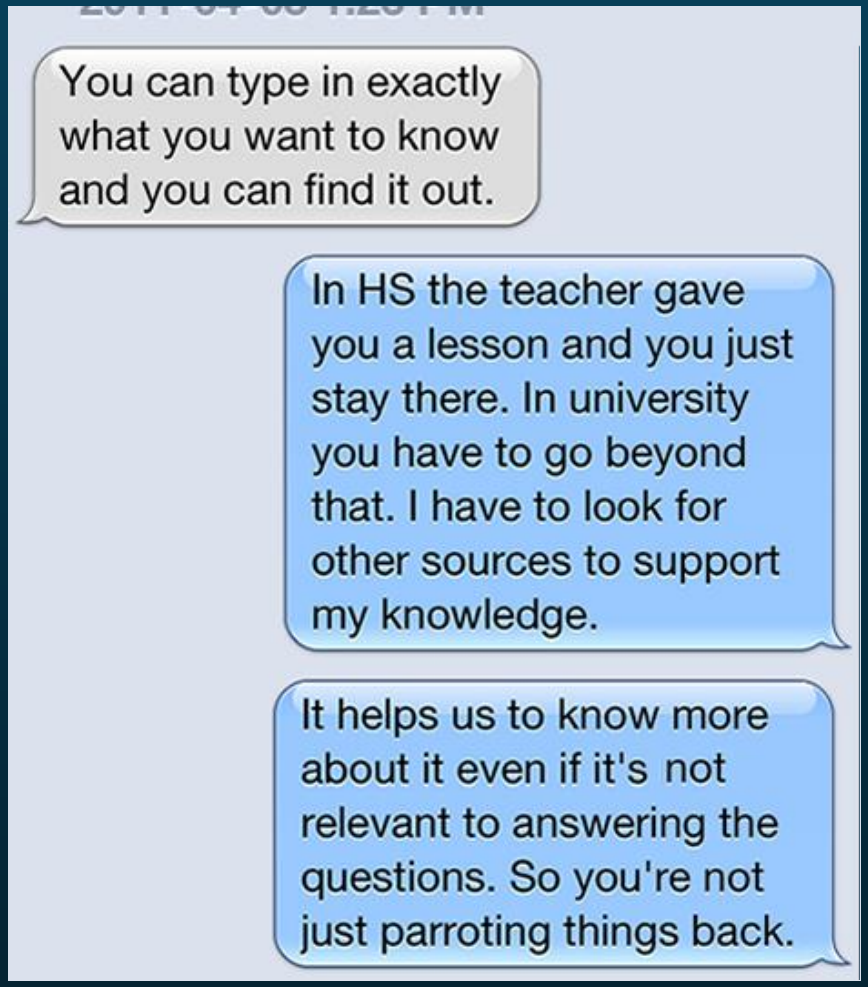


Online Videos

The most prevalent use for videos was to help find the solution to a problem (54% of secondary students).



Online Forums



Students used online discussion forums--but in different ways.

Personalized Physics Learning

Students used a diversity of social media tools to personalize learning for their context.

> It [the Internet] makes the topic more interesting. If I were to be going off of the Physics I learned from HS, I probably wouldn't do physics at all [at university]. But the university stuff [and] the Internet is much more interesting.

Conclusions

- Use of social media was wide ranging and ubiquitous; connectedness was limited
- Social media were used differently by secondary and post secondary students
- Social media have the potential to lead to connectedness and personalized learning
- Teachers & learners require support for using social media for learning

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Thank you for your attention.

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