Collective Intelligence as an effective tool for teaching and learning

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A key focus of this study is the development of tools, methods and approaches to support the design of innovative learning activities.

The aim is to look at the concept of CI as tool to make teaching better for students, by using social media to build professional learning networks.

A ‘creative and brave’ approach is needed to educate the next generation of students, to encourage them to think outside the box.

CI encourages opening up of thoughts and ideas; and fosters creative thinking, making public administration education a rewarding and enriching experience.
“It’s not the strongest who survive, but those most responsive to change” (Charles Darwin)

Old models of how people interact and collaborate has been radically transformed in recent times. People are using blogs, wikis and collaborative planning tools to work together.

Using CI we can react more effectively to changes.
Aristotle view on CI

“For the many, of whom each individual is an ordinary person, when they meet together may be better than the few good, if regarded not individually but collectively, just as a feast to which many contribute is better than a dinner provided out of a single person. Each individual has a share of virtue and prudence, and when they meet together, they become in a manner one man, who has many feet, hands and senses.” (Aristotele, 350, B.C)

Collective intelligence is an age-old phenomenon.

Bees and ant colonies are examples of groups of insects doing things like finding food sources that seem intelligent.

But what makes it highly relevant are the recent changes in technology.

Google, Wikipedia, etc. uses the collective knowledge created by millions of people to answer the questions we type in.
Various names of CI

Public intelligence, collaborative interpreter, collaborative innovation networks, collective actions, global brain, crowdsourcing, the wisdom of crowds, hundredth monkey effect, human based computation, knowledge ecosystem, system intelligence, bees algorithm, cybernetics, group mind, open space meeting, recommendation system, collective consciousness, superorganism, recommendation system, etc. (Buecheler, 2012)
Defining collective intelligence

There is a rich and diverse field of study and practice which concerns itself with collective intelligence

“Two heads are smarter than one“ (Levy)

➢ “No one knows everything, everyone knows something“ (Surowiecki)

➢ "....great ideas emerge more from ideas exchanged between people than from solitary introspection".(Vera Jhon-Steiner, 2000)

"Many hands make light work" (Atlee)
Definitions of collective intelligence by different authors

- **Pierre Levy**: “the capacity of human communities to cooperate intellectually in creation, innovation and invention”.
- The idea is that you will work for you and at the same time you will be working for the others sharing with them, so others can benefit from what you do, and you can benefit from what others are doing.

- **Tom Atlee**: “the capacity of an organization, or a community, to ask questions and seek answers together”
James Surowiecki: “under the right circumstances, groups are remarkably intelligent, and are often smarter than the smartest people in them”

Thomas W. Malone: “a group of individuals acting collectively in ways that seem intelligent”
Collective intelligence is an emergent phenomenon that has long existed.

- Collective intelligence offers a potential to design cognition in ways analogous to a functioning brain, drawing upon many neurons.
The influence of individuals

An action of any individual can become the norm for the community.

- The Hundredth Monkey, (Ken Keyes)
- Observation of a group of monkeys on the isolated Japanese island of Koshima

When a group of individuals collaborate or compete with each other, behavior that otherwise didn't exist suddenly emerges.
How to bring students into the process, and how to use media tools to help students to better collaborate?

- Facebook, Twitter, Wiki, Blogs is the answer.

- To learn it is not just to deal with information but to learn is to discuss, to challenge, to share and to create connections, and not to learn only what it is but also how it relates to comment, to compare to contrast concepts and ideas.

- Using Facebook to give updates about upcoming tests or events, to see the latest articles, and also students can see exactly what other students have contributed, there are many interesting things on Facebook, you see something interesting, you read it, you like it, you comment it and reflect about them.

- On Twitter students can tweet with each other to guide conversation, to guide conversation regarding the session topic.
CI as a tool for teaching and learning

Blogs, wikis and social networking sites such as Facebook, Twitter, are the most commonly used examples for fostering communication and sites for sharing contents such as Flicker, YouToube and Slideshare, are offering a rich set of tools to support new forms of communication, sharing and networking.
THE ROLE OF COLLECTIVE INTELLIGENCE

Collective Intelligence (Students)

Intelligent Classroom

Collaboration Knowledge Sharing
Knowledge Management (Teacher)

Information Technologies
Benefits from using CI

- Produce truly new ideas that could only have emerged through the collective knowledge of the members
- Brings discovery and new approaches to tasks
- Increase creativity and innovation
- Develop people’s autonomy
- Move people’s thinking forward
- Reduce decision error
How to promote Cooperation?

- The answer we can find in Robert Axelrod's book, 'The Evolution of Cooperation'.

- How this cooperation can be promoted comes in three categories:

  - Making future more relative to the present, (to enlarge the shadow of the future).

  - Change the payoff.

  - To teach people values, facts and skills that will promote cooperation.
How to promote Cooperation?
Axelord's Ideas on Cooperation

1. Cooperation can be stable if the future is sufficiently important relative to the present. If the shadow of the future is not so great, the interaction will end soon.

To enlarge the shadow of the future there are two basic ways of doing this:
- Making the interaction more durable and
- By making interactions more frequent, it will keep participants encouraged to cooperate and it helps get cooperation going.

2. Change payoff is some kind of punishment for those who defect. This prospect makes the choice of defection less attractive.

*In our case as a reward for students who cooperate it can be that they can gain some extra percent in their final grade construction.*

3. To teach people values, facts and skills that will promote cooperation.
"Do unto others as you would have them do unto you". (Axelord, 1984)

We should always cooperate, since cooperation is what we want from others.
Thank You for attention!