Research Brief: Creating for Innovation

Beck Johnson

"Overall, the inexorable shift from simple digitization (the Third Industrial Revolution) to innovation based on combinations of technologies (the Fourth Industrial Revolution) is forcing companies to reexamine the way they do business. The bottom line, however, is the same: business leaders and senior executives need to understand their changing environment, challenge the assumptions of their operating teams, and relentlessly and continuously innovate."

– Klaus Schwab, World Economic Forum 2016

What do you need to "relentlessly and continuously" innovate? New ideas. And, coming up with new ideas is a creative process. Unfortunately, many oversimplified myths surround creativity: it's right-brained, only people with certain personalities can be creative, creative ideas somehow emerge mysteriously, etc. Abiding by these myths makes it more difficult to innovate. The reality is that individual creativity and organizational innovation are complex, cyclical processes. However, the more we understand these processes, the better we'll be at fostering both. Neuroscience over the past decade, lucky for us, is revealing more about how creative ideas come about so we can foster employees' creative insights that lead to innovation.

What's the Difference Between Creativity and Innovation?

People commonly use creativity and innovation interchangeably. However, it's best to understand them as separate concepts that work together. When studied, creativity and innovation are defined by novelty and usefulness,[1] which involves a new idea that is valued by others in a social system. Within a system, creativity is considered the new and useful idea, and innovation is making that idea a reality in the system (the market) that values it.[2] So, innovation starts with the discovery of creative ideas that then moves toward production or use in order to economically satisfy a specific need. In sum:

1. A person uses what they know to generate new ideas.
2. Those ideas are shared with others.
3. Others determine if those new ideas are in fact "new" and also useful to other people.
4. If they are, together, they make those ideas a reality as new physical products or new ways of doing things.

Lastly, sharing new ideas, products, and ways of doing things – including lessons learned from failures – adds to knowledge; and, the process comes full circle.[3] If we want to optimize the front end of this process, we need to understand how new ideas come about, are shared, and are accepted.



1 (Benedek et al. 2014; Jung et al. 2010; Hennessey and Amabile 2010)
2 (Anderson, Potočnik, and Zhou 2014)
3 (Csikszentmihalyi 2014; Sawyer 2012)

Fostering Individual Creativity

All creative processes that individuals experience seem to involve cycling through four types of "sense-making." How fast we cycle through them can vary greatly depending on the task and the person, but all people are creative in one way or another.

Four Types of Creative Sense-Making

- **Preparation – gathering information or learning something new. Working toward mastery of a topic is essential.**
- **Incubation – allowing information to be integrated and organized with what we already know, at times making connections across very different concepts,**
- **Insight – recognizing a new way that information can be related/understood; this is the "ah-ha" moment.**
- **Verification – evaluating and elaborating on the creative idea until it reaches its final form. That final form could be a fully fleshed out idea, product, or as lessons learned from its "failure," all of which become part of the knowledge that is essential for preparation activities.[4]**

Also, mounting evidence in neuroscientific studies of these processes reveals that creativity isn't just "right-brained." Rather, we use our whole brains[5] to engage in these different types of sense-making activities. And, some involve higher amounts of focus (preparation and verification) than others (incubation and insight).[6] These creative sense-making activities look different, ranging from highly concentrated "heads-down" work to what may appear to be "day-dreaming,"[7] and all are necessary for creativity.

Fostering Knowledge Sharing

We know involving others is quite important to move creative ideas toward innovation.[8] We need others to test out our own creative ideas and build upon their creative ideas. Encouraging people to welcome and seek input from outside sources fosters creativity and innovation because they expand their knowledge and refine their ideas. The content and depth of what is shared depends highly on one's willingness to take risks and manage uncertainty as well as the trust that exists between individuals. How will others receive our ideas if, when shared, they're not great ideas? Is failure a good thing or bad thing for the organization? Thus, in addition to creating time and space for knowledge sharing, creating a social norm of psychological safety within a group[9] fosters creative activities by reducing the risk of sharing ideas.[10] It does very little good for others and ourselves if we don't share our ideas. It's easier to share if even "failed" ideas are considered productive and useful.

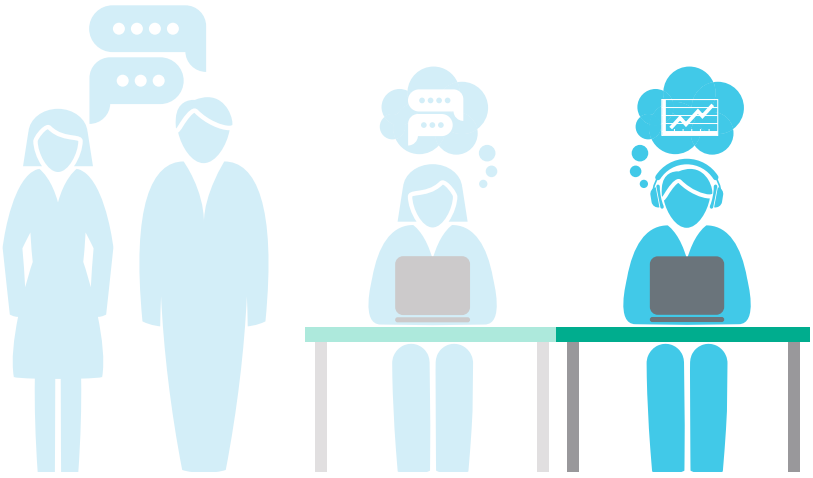
4 (Sawyer 2012)
5 (Beaty et al. 2014; Beaty et al. 2015)
6 (Benedek et al. 2014)
7 (Smallwood and Schooler 2015)
8 (Hennessey and Amabile 2010)
9 (Edmondson 2004)
10 (Edmondson 2016)

Fostering Group Creativity: Collaborative Efforts

Individual creativity requires preparation, incubation, insight, and verification while engaging in a variety of activities – some of which may look non-productive, such as when people are lost in (deep) thought or engaged in recharging activities.[11] Likewise, group needs are similar to individual needs. Some well-known group processes mirror these needs: organizational learning[12] (individual and group preparation), brain writing[13] (individualized incubation and insight), and brainstorming[14] (group insight and verification).

Groups need opportunity for all the different types of creative sense-making activities. They need to experience periods of preparation or group learning requiring concentration and focus, "down time" for incubation leading to moments of insight, and periods of safely sharing and vetting the veracity of those insights for verification and problem solving – all within an environment that values and encourages such activities. And, these processes work best when group members' knowledge overlaps a bit, but not too much, and they're all at the same relative level of mastery of that knowledge.[15]

One current challenge to group creativity is an over-emphasis of being together in constant collaboration. Creative groups do not need to work in proximity or interact with each other all of the time. This expectation doesn't allow for the needed time and space to effectively engage in individual preparation and incubation. Likewise, if groups never interact with each other in the same space – including externalizing shared knowledge and embedding it in the environment, the group processes needed for group creativity can't get a foothold. Thus, tools for externalizing knowledge and plan configurations that create patterns and encourage movement among group members[16] and across others outside of the group[17] contribute to the whole creative process.



11 (Nagy et al. 2016)
12 (Sailer 2014)
13 (wiruchnipawan 2015)
14 (Sawyer 2012)
15 (Sawyer 2012)
16 (Knight and Baer 2014)
17 (Sailer 2014)

Fostering the Transition from Creativity to Innovation

While the degree of creativity and innovation may vary within and across organizations, all organizations need to innovate. Organizational innovation is a result of creative ideas from groups. These group members need to have time and space to think and work alone balanced with time and space for collaborative efforts with others, both within and outside of their group and the organization. Lastly, the organization and its built environment needs to reflect the value it places on these activities inherent in individual and group creativity[18] so employees feel free to work in these ways. Providing workplace affordances to organizational groups and autonomy in their work processes to cycle through the activities optimal for creative performance is crucial to innovation.

Alone or together, more focused or less focused, employees need to have access to a variety of appropriate workspace features, time for varied activities, and tools for individual and collaborative work within a built environment that mirrors these values. These building blocks set the stage for people to engage in sense-making and knowledge sharing activities foundational for the creative thought that leads to innovation.

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18 (Hartnell, Ou, and Kinicki 2011)