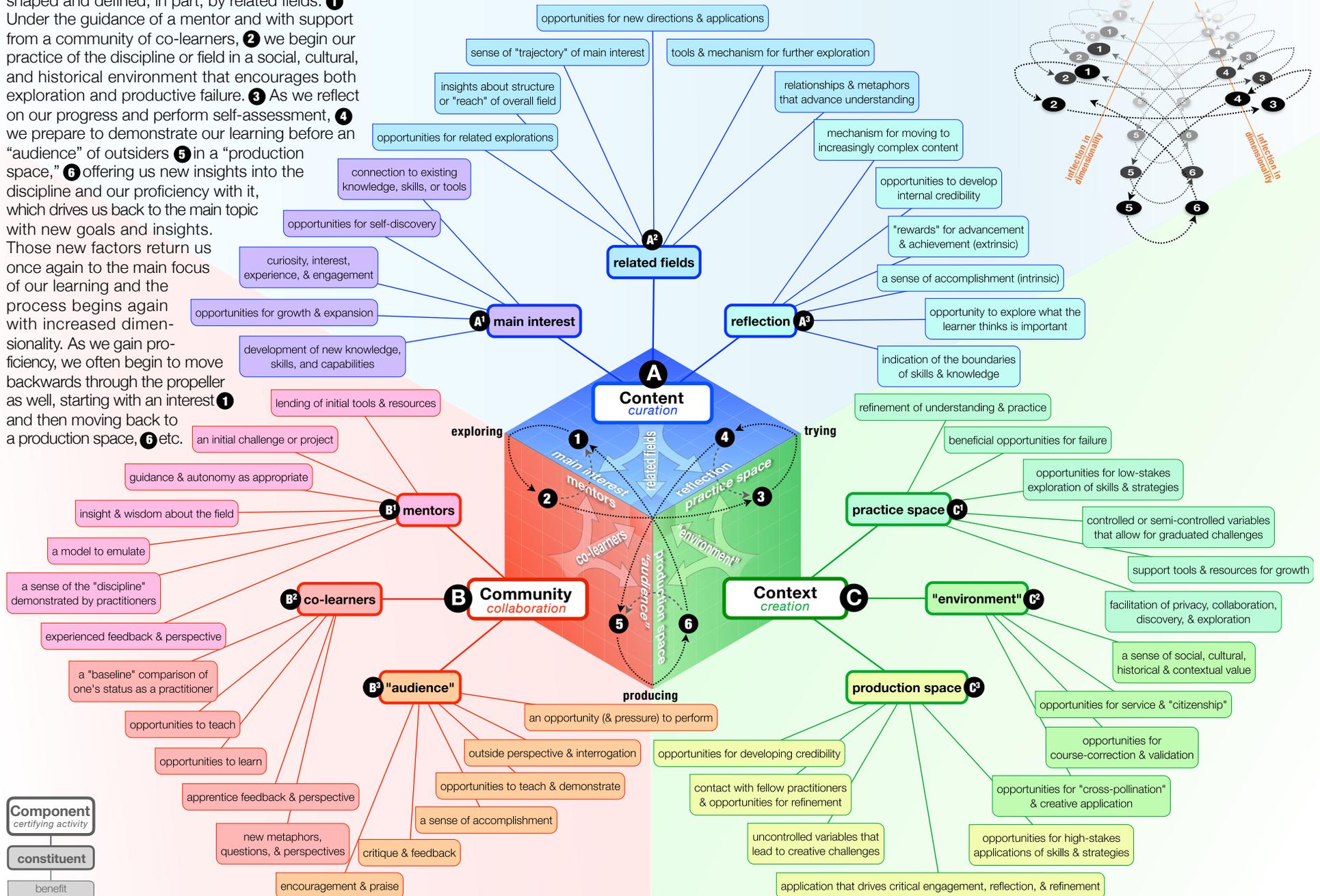


Dimensions of Productive Formal Learning

The “learning propeller”: we start with a main topic shaped and defined, in part, by related fields. **1** Under the guidance of a mentor and with support from a community of co-learners, **2** we begin our practice of the discipline or field in a social, cultural, and historical environment that encourages both exploration and productive failure. **3** As we reflect on our progress and perform self-assessment, **4** we prepare to demonstrate our learning before an “audience” of outsiders **5** in a “production space,” **6** offering us new insights into the discipline and our proficiency with it, which drives us back to the main topic with new goals and insights. Those new factors return us once again to the main focus of our learning and the process begins again with increased dimensionality. As we gain proficiency, we often begin to move backwards through the propeller as well, starting with an interest **1** and then moving back to a production space, **6** etc.



Our formal learning matrix is typically comprised of three major components: content (the material we're learning about), community (the people — either real or via media — with and from whom we learn, and context (the tangible and intangible spaces in which we learn). However, these should not be seen as separate elements, nor are they always easy to extricate one from another. Rather, they're the facets of a multi-dimensional structure, each working to enhance and facilitate learning. Each of these components, in turn, is comprised of smaller constituents that offer particular benefits and resources, undergirding and strengthening our learning processes.

A Content may be thought of broadly as the information, skills, processes and tools that are the focus of our learning. It is not just comprised of media, as we often conceptualize it, but rather the whole amalgamation of materials, procedures, knowledge, and skills that comprise an area of focus or study. This broad definition allows us to link “information” with the efforts we make to assess — and then to refine — our proficiency with that information. While we typically see such reflection as separate from “content,” this ignores the role that assessment, and especially self-assessment, plays in the iterative process of learning. “Am I understanding all of this?,” “Am I using this properly?,” “How do I feel about this?,” and “What’s missing?” are all part of the system of checks we deploy throughout our learning journey. Splitting off or ignoring the importance of this kind of self-assessment (and discounting its symmetry with external assessments) weakens our recognition of assessment’s central role: helping us map where we are in our exploration of content and where we need to head next in our learning journey. The **main interest A¹** is the topic central to our exploration (for example, “physics” or “cooking”). **Related fields A²** are those topics “around” the main interest that give shape to it and that, while indirectly related, are nonetheless essential for proficiency or complete understanding (for example, physics requires mathematical tools like calculus and an understanding of other sciences like chemistry; cooking benefits from an understanding of chemistry, too — from the ways that binding agents work to the ways that altitude can affect boiling — as well as an understanding of the cultural and historical factors that affect what different foods “mean” to us). **Reflection A³** offers us a chance to assess where we stand on the learning journey and to recognize and pursue next steps and graduated challenges as we progress. Each exerts on the others a kind of dialectical tension, requiring us to iterate our explorations and understanding.

B Community consists of the people — both those with whom we interact directly and those with whom we interact via media (text, video, audio, and image). Theorists have long argued that learning is an inherently social process, and even for those who prefer a more isolated or individualistic learning model, the influence of others (even if abstracted through media), is

an essential feature. So, too, are the complex webs of various forms of identity — personal characteristics and experiences; social, cultural, historical, and economic resources and values; and connection to *zeitgeist* — that the learner brings to every learning encounter. The notion of the teacher as “full” and the learner as “empty” thus ignores the complex series of human factors demonstrated when we learn. Learners, indeed, may reach out to mentors in order to acquire content (as we have defined it broadly above), but they also have the ability — some would suggest the requirement — to sharpen, refine, and develop with fellow learners and to share with others outside of the learning process to whom they can demonstrate their growth. The constituent parts of Community are thus complexly interrelated and consist of the following: **mentors B¹** provide us with access to “content,” broadly defined, and also to the tools, challenges, models of disciplinary praxis, and support necessary for our own development as practitioners. **Co-learners B²** serve as essential learning partners, filling in gaps in our abilities or understandings and participating dialectically with us to discover and share resources, knowledge, and expertise. **“Audience” B³** comprises people often not directly tied to the learning process to whom we can demonstrate our learning. In return, they offer “admiration”: they become witnesses of our growth (eg, Mitra’s “granny cloud”), and performance in their presence gives us feedback necessary to extend our learning.

C Context is made up broadly of the “spaces” (both tangible and intangible) in which we learn. Learning designers are increasingly aware of the role architecture plays in our learning and of the ways that particular pedagogical approaches have shaped our learning architectures (cf recent research by Gensler). Yet just as powerful are the intangible spaces — the social, cultural, historical, civic, political, economic and authoritative environments — that surround learning. Some of these are the result of particular locations and moments we inhabit; others are the product of intentional design. In terms of the former, **“environment” C¹** influences our learning in ways large and small, often without our full awareness. Environmental factors (cf “affinity spaces”) can drive us to pursue a topic “just because” or lead us to connect disciplines in unique ways. **Practice space C²** is one of two main forms of the latter, supplying learners with the support structures and resources they need, as well as opportunities for safe and productive failure that leads to exploratory and experimental freedom. **Production space C³** offers us a “stage” for demonstrating our growing proficiency, but it also gives us a necessary venue for iteration and reflection, furthering our process.

Because all of these components are facets of the same learning structure, their interrelationships drive a kind of self-generating and iterative “motion” that leads to knowledge and expertise. Like light refracting and reflecting among a gem’s facets, “illumination” derives from this “learning propeller,” a network of affinities and tensions integral to this model.