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**Expertise entry**

*Encyclopedia of giftedness, creativity and talent*

Many North American theorists conceptualize expertise as a precondition for creativity, arguing that in order to be truly creative, one must master a field to make unique and remarkable contributions to advance it. This position reveals inherent assumptions about the nature of creativity, reflecting the themes of "eminence" and "unique in all the world" found in the literature.

**What is Expertise?**

Experts are individuals who have worked for a decade within a specific domain, and have achieved high levels of competence, irrespective of their novel contributions. It is assumed that after a decade, one has mastered the skills and knowledge needed to perform at the domain's highest levels.

Expertise involves the acquisition, storage, and utilization of two kinds of knowledge: declarative knowledge of the domain (facts, major ideas, principles, and formulae) and tacit knowledge of the field. Some characteristics of expert thinking are: the ability to perceive and reproduce large meaningful patterns in the expert's domain; rapid performance of procedures; extensive, rich, well-organized, interconnected, and easily accessible knowledge structures; superior short-term and long-term memory; and rich repertoires of strategies for problem solving. Experts are inclined to use data-driven reasoning when solving well-defined problems. With ill-defined problems, experts change their strategy to hypothesis-driven reasoning. Experts tend to represent problems at a deeper, semantic level. They are likely to work forward from given information to implement strategies for finding unknowns, while monitoring their

effectiveness. Experts spend a great deal of time analyzing problems qualitatively, tending to retrieve solution methods as part of their comprehension of the task. However, it is important to note that there is no inherent originality in expert performance. Gardner has suggested that expertise can best be understood as a kind of technical excellence.

### **Expertise and Creativity**

The strongest proponent of the position that creativity requires expertise is Csikszentmihalyi.

Within his systemic perspective, anyone who wants to make a creative contribution must first learn the rules and the content of the domain, and fully internalize its knowledge and conventions before changing or advancing some aspect of it. This creative contribution must then pass through the gatekeepers of the field, experts whose "job" is to decide whether a new idea or product should be included in the domain. Since the cognitive functions of experts operate smoothly and efficiently, they are assumed to have greater potential for creativity in their field and a greater likelihood to extend the domain. There is research to substantiate this view.

Expertise is associated with innovation and there is an interaction between an individual's knowledge of a domain and the ability to creatively solve problems.

Sternberg has suggested that experts are more likely to arrive at creative solutions because of their ability to see deeply into problems. This process of insight corresponds to abilities within his triarchic conception of expertise. An expert's ability to selectively encode allows an individual to differentiate information that is highly relevant to solving a problem from extraneous detail. Selective combination permits an expert to combine information in ways that are useful for solving problems, and can result in creative approaches based on novel combinations. An expert's ability to make selective comparisons facilitates the application of information acquired in one context to problems in another. In creating analogies between

problems, an expert can arrive at creative solutions that might never occur to a novice. However, as Gardner has pointed out, there is a tension between the concepts of creativity and expertise; one can be an expert without being creative.

Not all streams of research about creativity make such strong statements about expertise. A body of empirical work focusing on everyday creativity is growing. Anna Craft in the UK has argued that since all people, from early childhood onward, are capable of creativity, we need to accept a continuum of adaptive creative behaviors. Still, some level of expert thinking may come into play. Craft has described possibility thinking as a strategy to cultivate creativity. Possibility thinking involves posing questions that assist in the exploration of a problem space and cultivate an exploratory attitude, both dimensions reflecting an expert skill in problem representation. Possibility thinking involves seeking solutions with an outcome-focused approach. Solutions are posed, discussed, experimented with, and evaluated. This mirrors the expert's rich repertoire of strategies for problem solving along with mechanisms for assessing these strategies. Much like Sternberg's selective comparison, possibility thinking involves making comparisons.

### **Expertise and Giftedness**

Shore and his associates at McGill University have attempted to juxtapose the cognitive psychology and giftedness literature. In a series of studies spanning more than a decade, researchers examined the thinking patterns of children, ranging in age from preschool to college, who were labeled as high ability [those who would comply to giftedness criteria]. They found that gifted performance resembles expert performance especially in the areas of metacognition, strategy flexibility, strategy planning, use of hypotheses, and the organization of domain and procedural knowledge. High ability children used the expert thinking processes of perspective-taking and selective encoding. They frequently used solving strategies that resembled those of

expert adults [working with a plan] and took time to explore the problem space [problem-finding]. Differences were found in the extent to which strategies were invoked, the fluency, and speed with which they were used. Since expertise is situated, often specific to tasks within domains, Shore has suggested that the thinking patterns associated with expertise that are visible in the gifted may reflect domain-general habits of mind that support creativity and giftedness.

***See also:*** Cognitive Development, Thinking skills

### **Further Readings**

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*.

New York: Harper.

Shore, B. (2000). Metacognition and flexibility: Qualitative differences in how gifted children think. In R. Friedman & B. Shore (Eds.), *Talents unfolding: Cognition and development* (pp. 167-187). Washington, DC: American Psychological Association.

Sternberg, R., & Horvath, J. (1998). Cognitive conceptions of expertise and their relation to giftedness. In R. Friedman & K. Rogers (Eds.), *Talent in context: Historical and social perspectives on giftedness* (pp. 177-191). Washington, DC: American Psychological Association.