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CONCEPTUALIZING INSIGHT FOR THE STUDY OF DOCTORAL STUDENT INFORMATION USE (Paper)

Abstract:

Insight is a cognitive and affective phenomenon characterized by a sudden realization and positive affect. While the phenomenon of insight is widely studied in psychology, few LIS scholars have taken this topic seriously. This presentation reports out on the author's exploratory study of insight experiences among doctoral students and details the challenges with operationalizing insight within this context. An argument will be made for the utility of Howard Gruber's work in providing practical guidance for the conceptualization of students' insight experiences.

1. A Study on Doctoral Student Information Use

In winter 2022-2023, eleven semi-structured, in-depth interviews were held with doctoral students in the social sciences. Study participants were asked to identify and discuss 3-5 sources in their bibliographies that represented key turning points in their research thinking. For each source, participants shared detailed accounts of how they discovered the source, the social networks involved with engaging with the source, as well as affective and cognitive experiences during engagement. While a variety of information behaviors were documented in these interviews, the guiding research questions led the presenter to focus primarily on information use as it related to knowledge construction (Kari, 2007, 2010). This approach drew on the metatheoretical orientation of cognitive constructivism (Talja et al., 2005) and put this study in the company of other LIS researchers interested in the cognition of individuals, and the ways information can lead to changes in knowledge structures (Cole, 1998; Todd, 1999; Todd, 2006).

A guiding research question of this study was: Can students' cognitive and affective experiences with sources that represented key turning points in their thinking be characterized as *insight experiences*? After collecting the interviews and analyzing the data, however, it became clear that the author's conception of *insight* was incomplete, and that operationalizing insight for qualitative data analysis was more complicated than previously assumed.

2. Psychological Approaches to Insight and the Work of Howard Gruber

To conceptualize insight, the author turned to the psychology literature. Beginning with the Gestalt psychologists of the early 20th century, cognitive psychologists have investigated insight within the realm of problem solving. Experimental studies in this field have utilized *insight problems* (nonroutine problems requiring a productive mode of thinking) and emphasized the moment when the insight problem is solved (Dominowski & Dallob, 1995; Mayer, 1995; Weisburg, 2015). A contrasting view of insight has come from the psychology of creativity. Psychologists of scientific creativity have drawn on famous accounts of insight experiences, such

as those from Archimedes, Kekulé, Freud, and Poincaré. The magnification of sudden insight within these accounts engendered a view that insight was the primary driver of creative work (Gruber, 1988, p. 42).

In the early 1970s, psychologist Howard Gruber conducted an intensive psychological analysis of Charles Darwin's research thinking during the years 1831-1836 when Darwin developed his theory of evolution (Gruber, 1974/1981). Gruber explained how, prior to his study, he had expected to encounter one glorious moment when Darwin's theory appeared to him, similar to other famous accounts of insight. This, however, was not the case (Gruber, 1976/2005, p. 194). Instead, Gruber (1976/2005) found that Darwin had frequent insights that ranged in magnitude and importance (p. 196). There was one key insight when, on September 28th, 1838, Darwin read Malthus's essay and the significance of natural selection became clear to him. While this was a turning point, Gruber (1981) showed that Darwin had the same, or similar, insight many times before (p. 43).

Gruber suggested that the problem-solving approach to insight had limited real-world application because discrete problem-solving was relatively rare in the life of a thinking person (Gruber, 1974/1981, pp. 4-5). Gruber (1988) was also skeptical of the famous accounts of sudden insight because they overlooked the fact that all insights occur within "protracted creative processes" (p. 44). Gruber (1981, 1994) questioned the "momentary flash" that was featured in famous accounts and opened the definition of "suddenness" to include hours, days, or even weeks—a timescale more appropriate for meaningful creative work.

Cognitively, what was interesting to Gruber about Darwin's Malthusian insight was "the way in which novel ideas can be forgotten until the structure of which they are to become a part is sufficiently complete to stabilize them" (Gruber, 1974/1981, p. 119). The prevalent cognitive experience of insight, then, was "a synthesis of something immediate and something remembered" (Gruber, 1974/1981, p. 120). Gruber also underscored the importance of affect and proposed that a key component of insight was being "affectively laden in a way that accentuates the experience" (Gruber, 1988, p. 45).

3. Gruber's Relevance for Doctoral Student Information Use

Despite Gruber's focus on case studies of eminent scientists, his findings can also be applied to students engaged with doctoral work. This is because doctoral work is a creative endeavor (Bargar & Duncan, 1982; Brodin & Frick, 2011; Ulibarri et al., 2019) driven by a "sense of purpose" in which the goal is for students to develop mastery of a topic. Gruber's study of Darwin is also of interest to IB because Darwin engaged regularly with information (Currier, 2007) with the goal of knowledge construction. In one sense, Darwin's reading of Malthus was an epic case of *information use.* Similarly, students in the presenter's study discussed how information sources affected their research thinking as they endeavored to construct knowledge.

We will now look at an excerpt from one student's interview. While we don't have a perfectly outlined definition of insight, we are on the lookout for the following components: 1) realization or shift in understanding 2) positive affective response 3) element of suddenness. Furthermore, drawing on Gruber, we are not merely interested in the insight experience itself, but we are just

as interested in the thought process that led up to it. In this way, we are concerned with how the insight might represent "a synthesis of something immediate and something remembered."

4. The Insight Experience of Nicole

Nicole, a dissertating doctoral student in the social sciences, discussed an article that ended up providing the theoretical framework for her dissertation. Nicole initially engaged with this article as a first-year doctoral student through an informal common read program coordinated by her research group. As a new doctoral student, she saw the article as "helpful" but did not fully appreciate its novelty or understand its contribution to the literature. It was later in her program, when she was taking a theory course, that she "re-encountered this piece in a different way that suddenly was illuminating things" she had seen in her literature review and brought things together in a way she had struggled to. Nicole explained:

> I do remember just kind of feeling like a bunch of puzzle pieces click together or like I had put on a new pair of glasses where disparate threads that I had been trying to bring together suddenly were fitting together, and for the first time feeling much more confident or clearer about where my dissertation might go. It felt like I just sort of had these disparate ideas and this was the thing that brought them together that felt really clarifying.

Nicole's excitement for this piece prompted her to email the article to everybody she knew who hadn't yet encountered it.

5. Examining Nicole's Insight Experience in the Context of Gruber

Cognition
Nicole experienced a shift in her research thinking that is indicated by her metaphoric language. Phrases such as "bunch of puzzle pieces click together," "new pair of glasses," bringing together "disparate threads" all point to both cognitive processes of consolidation and increased clarity. This shift in thinking is related to knowledge construction because it shows how Nicole was able to synthesize "disparate threads" in a way that "was illuminating" for her literature review, ultimately providing the theoretical framework of her dissertation.

When viewed in a developmental context, Nicole's cognitive experience of insight indicates a connection between the immediate (trying to connect disparate threads in the literature review) and something remembered (contents of the article). If we were to focus solely on the insight experience itself, we would completely miss the fact that she had originally engaged with this source through a reading group two years prior. Upon initial engagement, Nicole did not see this source as helpful or particularly interesting. It was only after Nicole had continued to learn about her topic, have discussions with faculty and peers, and articulate her thoughts through written papers that the power of this article became clear.

Affect
Nicole's cognitive shift in perspective was accompanied by a positive affective response. She explained how it "felt really clarifying," and how she was "feeling much more confident" about

the direction of her dissertation. Furthermore, Nicole's excitement was evident in the fact that she sent the article to everyone she knew. Nicole's positive affect accentuated the cognitive change and made the experience more meaningful and memorable.

Temporality
Lastly, Nicole describes how she "re-encountered this piece in a different way that suddenly was illuminating things." There is no indication that this *suddenness* was a momentary flash, rather Nicole's expression of "suddenly" likely refers to a longer process of engagement, thought, reflection, discussion, and writing. Further investigation would be needed to fully explore the timescale of this insight experience. Yet, because we are interested in insight in the real-world process of doctoral study, it is conceptually useful to open the timescale of suddenness in a way that is not beholden to a momentary flash.

6. Conclusion

Based on preliminary findings from this exploratory study, and drawing on the work of Gruber, the author suggests that it is important that we consider doctoral information use in a developmental lens. Furthermore, given the IB field's interest in the role of cognition, affect, and actions in meaning-making, the study of insight experiences during information use seem like a natural area for future study. Lastly, the strategy of documenting doctoral students' "story of sources" seems to be a viable approach for exploring knowledge construction because it elicits many aspects of IB, reveals research thinking over time, and lends itself to the study of joyous moments in research, such as those memorable occasions of *insight*.

References

Bargar, R. R., & Duncan, J. K. (1982). Cultivating creative endeavor in doctoral research. *The Journal of Higher Education, 53*(1), 1-31. https://doi.org/10.2307/1981536

Brodin, E. M., & Frick, L. (2011). Conceptualizing and encouraging critical creativity in doctoral education. *International Journal for Researcher Development*, *2*(2), 133–151. https://doi.org/10.1108/17597511111212727

Cole, C. (1998). Information acquisition in history PhD students: Inferencing and the formation of knowledge structures. *The Library Quarterly*, *68*(1), 33–54. https://doi.org/10.1086/602934

Currier, J. (2007). "Greedy for facts": Charles Darwin's information needs and behaviors [Doctoral dissertation, University of Pittsburgh]. University of Pittsburgh Institutional Repository. http://etd.library.pitt.edu/ETD/available/etd-05172007-170311/

Dominowski, R. L., & Dallob, P. (1995). Insight and problem solving. In R. J. Sternberg & J. E. Davidson (Eds.), *The nature of insight* (pp. 33–62). MIT Press.

Gruber, H. E. (1981). *Darwin on man: A psychological study of scientific creativity* (2nd ed.). University of Chicago Press. (Original work published 1974).

Gruber, H. E. (1981). On the relation between Aha experiences and the construction of ideas. *History of Science, 19*(1), 41–59. https://doi.org/10.1177/007327538101900104

Gruber, H. E. (1988). The evolving systems approach to creative work. *Creativity Research Journal*, *1*(1), 27–51. https://doi.org/10.1080/10400418809534285

Gruber, H. E. (1994). Insight and affect in the history of science. In R. J. Sternberg & J. E. Davidson (Eds.), *The nature of insight* (pp. 397-431). MIT Press.

Gruber, H. E. (2005). Creativity and the constructive function of repetition. In H. E. Gruber and

    K. Bödeker (Eds.), *Creativity, psychology and the history of science* (pp. 194-200).

    Springer. (Originally published in French as Gruber, Howard E. 1976. Créativité et fonction

    constructive de la répétition. Bulletin de Psychologie de la Sorbonne: Numéro spécial pour

    le 80e anniversaire de Jean Piaget: 235-239.)

Kari, J. (2007). Conceptualizing the personal outcomes of information. *Information Research*,

    12(2). https://informationr.net/ir/12-2/paper292.html

Kari, J. (2010). Diversity in the conceptions of information use. *Information Research, 15*(3).

    https://informationr.net/ir/15-3/colis7/colis709.html

Mayer, R. E. (1995). The search for insight: Grappling with Gestalt psychology's unanswered

    questions. In R. J. Sternberg & J. E. Davidson (Eds.), *The nature of insight* (pp. 3-32). MIT

    Press.

Talja, S., Tuominen, K., & Savolainen, R. (2005). "Isms" in information science: Constructivism,

    collectivism and constructionism. *Journal of Documentation, 61*(1), 79–101.

    https://doi.org/10.1108/00220410510578023

Todd, R. J. (1999). Utilization of heroin information by adolescent girls in Australia: A cognitive

    analysis. *Journal of the American Society for Information Science, 50*(1), 10–23.

    https://doi.org/10.1002/(SICI)1097-4571(1999)50:1<10::AID-ASI4>3.0.CO;2-B

Todd, R. J. (2006). From information to knowledge: Charting and measuring changes in students'

    knowledge of a curriculum topic. *Information Research Journal, 11*(4).

    https://files.eric.ed.gov/fulltext/EJ1104641.pdf

Ulibarri, N., Cravens, A. E., Nabergoj, A. S., Kernbach, S., & Royalty, A. (2019). *Creativity in research: Cultivate clarity, be innovative, and make progress in your research journey*. Cambridge University Press.

Weisberg, R. W. (2015). Toward an integrated theory of insight in problem solving. *Thinking & Reasoning*, *21*(1), 5–39. https://doi.org/10.1080/13546783.2014.886625