ADVANCING THE LEARNING AGENDA IN JEWISH EDUCATION





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Edited by JON A. LEVISOHN and JEFFREY S. KRESS

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Introduction: What the "Learning Agenda" Is and Why It Matters

Jon A. Levisohn and Jeffrey S. Kress

The title of this volume declares its aspiration: to advance the learning agenda in Jewish education. What does that mean? Why does something called "the learning agenda" need to be advanced? And how might that happen?

Over the past thirty years, we have seen the growth of familiar forms of Jewish education and the development of new ones. In the former category, we can name day schools, camps, academic Jewish studies, and Israel trips, as well as innovative new forms of supplementary Jewish education and renewed interest in early childhood education. In the latter, we can point to Jewish service learning, Jewish environmental and food programming, Jewish heritage tourism to other countries, online Jewish learning and Jewish gaming, and more. In every sector, talented and creative educators are developing new materials and new pedagogies.

Yet, amid the creativity and growth, we believe that contemporary American Jewish education is not as strong as it could be. And we believe that at least part of the reason for this is that American Jewish education suffers from a lack of clarity about our desired learning outcomes, inconsistent focus on and assessment of those outcomes, and insufficient understanding of the experiences of learners. For example, supplementary school educators have been known to say that their programs should be more like camp. This is undoubtedly an important development, but their focus tends to be on the atmosphere and activities, the things that make camp "fun" rather than clarifying appropriate learning outcomes or documenting impact. The field of Israel education, according to several studies, bounces between uncritical celebrations of Israel

and narrowly focused advocacy activities, lacking a coherent framework that describes what can reasonably be called "learning outcomes" in the domain of Israel education. And in higher education, academics in the field of Jewish studies tend to invest their time and energy in crafting the excellent lecture or presentation, or assembling the most important materials into a syllabus, but invest far less time in exploring their students' understanding.

It is a truism in teacher education that novice teachers must overcome a natural tendency to focus on themselves—on saying and doing the right thing in the classroom—in order to focus on the students in front of them. In her work on novices, Sharon Feiman-Nemser calls this the "transition to pedagogical thinking." We can also describe it as a move from thinking about *teaching*, primarily, to thinking about *learning*. At the risk of hyperbole, we believe that this is a move that the field of Jewish education, as a whole, needs to make. The point is not to reach consensus or unanimity about what those desired learning outcomes are. That is unlikely to happen, and our efforts here should certainly not be understood as endorsing one particular set of learning outcomes over others. But we do believe that educational leaders in the various settings in which Jewish education takes place need to focus more attention on learning.

Thus, the "learning agenda" is shorthand for encouraging increased focus on conceptualizing learning outcomes in sophisticated ways, more sustained attention to how learning actually happens and how it sometimes fails to happen, and deeper curiosity about the experience of learners themselves in educational environments. "Advancing the learning agenda" means promoting these ideas among practitioners and researchers alike. We want educators and educational policy makers to be asking more and better questions about what kinds of learning ought to be happening, and what kinds of evidence we might have that they are.

Why? We are scholars, but our interest in advancing the learning agenda is not only a scholarly one. Our interest is also a practical one. We believe that the more we understand about what we want students to learn and how that learning comes about (or does not come about), the more directed and more effective our educational efforts will become. In other words, advancing the learning agenda in the ways we have described is a strategic intervention into the system. We believe that the best way to improve pedagogic practice is by helping educators, of all kinds, to be more reflective about their desired

Sharon Feiman-Nemser and Margret Buchmann, The First Year of Teacher Preparation: Transition to Pedagogical Thinking? (East Lansing, MI: The Institute for Research on Teaching, Michigan State University, 1985), microfilm.

outcomes, more self-critical about the effectiveness of their teaching, and more curious about the learning of their students.

An example may be useful to illustrate what this can look like. Recently, as part of another project, we have had the opportunity to share the results of a pilot study of recent graduates of Jewish day schools—specifically, a study of their thinking about and understanding of rabbinic literature. Setting aside the specific findings of that study, what is relevant here is the reaction of educators when they learn about the findings, or even when they encounter the interview transcripts. In this case, we watched as they responded with energetic and intense curiosity. They eagerly pulled apart the data, interpreting nuances in the students' formulations and raising endless questions about their significance. Unprompted, they turned their analyses back on their own teaching, challenging their prior assumptions, and they expressed excitement about asking similar questions of their own students or even designing their own studies.

We cannot claim that all educators will react in similar ways, of course, nor do we know precisely how these reactions will translate into classroom practices. But we consider these experiences as corroborations of our hypothesis. Professionals in the field of Jewish education have precious few opportunities to dive into the learning of their students, and few structures to support doing so. The cultures of Jewish educational programs and institutions do not emphasize this kind of attention to learning. However, when given the opportunity to do so, educators seize hold of it with enthusiasm. This is what it can look like to advance the learning agenda in Jewish education.

For the most part, the chapters of this book do not present specific empirical studies of learners and learning (although almost all are based on empirical work by the authors or others). Instead, these chapters and this book strive to advance the learning agenda in different ways—by promoting nuanced ideas about what learning means in Jewish education and by drawing on work outside of Jewish education to propose new models and frameworks. In several instances, authors took the opportunity to think out loud, as it were, about how we might think differently about learning in Jewish education.

The first section of the book, "Learning from the Learning Sciences," does this most explicitly. Two chapters, one by Rena Dorph and Christian Schunn and one by Janet Kolodner, build upon extensive research in science education, the most well-developed area of the learning sciences. Researchers in that field have long understood that they cannot be satisfied with rote learning, that the

desired outcomes are more subtle and nuanced (and harder to assess) than that. In Kolodner's chapter, she describes her work in developing a series of science education programs that explicitly focus on cultivating a kind of scientist- or engineer-identity, and draws implications from that work for Jewish education. Dorph and Schunn, on the other hand, delineate an outcome that they call "science learning activation," that is, a set of dispositions, practices, and knowledge that enable success in proximal learning experiences. They propose, in other words, that the goal of science education is to enable further (richer, deeper) science learning, which is enabled by "science learning activation." The analogy to Jewish education, while imperfect, is generative: they propose that in Jewish education, too, the goal is to enable further (richer, deeper) Jewish learning—and not just learning but also living.

In the third chapter in this section, Ari Kelman starts by broadening our purview; he wants us not to focus on learning specific Jewish content, primarily, but rather to think about "learning Jewish," i.e., how people learn the numerous practices, formal and informal, that comprise Jewishness. He then roams widely over the literature on learning in general education in order to chart a number of promising avenues for investigating learning in Jewish education, avenues that are attuned to the situated and social nature of learning in ways that Jewish education rarely is.

Finally, in the last chapter of this section, co-authors Lauren Resnick and Daniel Resnick call our attention to the dramatic shift in the scholarship on general education from didactic pedagogy to dialogic pedagogy—pedagogy that creates an environment for substantive conversation around a text. This paradigm emphasizes inquiry over information transmission. Notably, this kind of dialogic pedagogy has begun to take hold in fields such as science and math, and also, unsurprisingly, in the humanities. The Resnicks celebrate the tradition of text study within Judaism, but call for renewal of that tradition, especially in liberal Jewish settings.

The second section of the book, "Learning from Jewish Education," includes three chapters that focus on specific Jewish educational settings. The authors are each experienced researchers of those settings, but in these chapters, their task is not merely descriptive. Instead, they attend to those settings in order to draw out ideas or implications for learning more generally.

It is commonplace, in the study of contemporary Jews, to separate the orthodox and especially the haredim, or ultra-orthodox. Their lives are different, with ritual and cultural practices that seem oriented around an entirely distinct set of norms. It is a culture that, at least for men in yeshivas, is intensely focused

on *lernen*—a Yiddish term which is typically Anglicized to "learning" but which, unlike the standard usage of the word "learning" as an achievement term, actually signifies the process of reading and discussing classical texts. Baruch Schwarz believes, however, that we have a lot to learn from how *haredim* engage in *lernen* in *yeshivas*, especially in terms of the positive valuation of argumentation and the cultural conditions that support high levels of self-motivation for study.

The contemporary liberal Jewish summer camp is about as far from the traditional *haredi yeshiva* as one can imagine. But just as Schwarz brings the perspective of the learning sciences to bear on the latter, Joseph Reimer brings that perspective to bear on the former. And what he sees, when he does so, is an educational opportunity that is not fully realized—in part because it is not well conceptualized. His particular focus is on Shabbat at camp. Kids learn to do Shabbat, which is unlike anything they know from home, over time, through a process that looks a lot like Jean Lave and Etienne Wenger's "legitimate peripheral participation." But then their learning trajectory flattens out. Reimer argues that David Perkins' concept of "whole game learning" provides a more compelling framework, not just for understanding what *does* happen when kids learn to do Shabbat at camp, but for imagining about what *could* happen if we were to think about this process more ambitiously.

The last chapter in this section turns to Holocaust education as a location for thinking about learning. Simone Schweber begins by admitting that we may be averse to trying to learn from an extreme case like Holocaust education, but persists in her inquiry nonetheless. She avoids the standard approach, which is to emphasize the moral lessons of the Holocaust. Instead, she finds other important lessons about learning—about appreciating the "messiness" of real lives and real moral quandaries, about the ways in which contexts shape our thinking, and most generally, about a desired outcome of Jewish education that she calls "reasonable Jews."

The third and final section of the book, "Conceptualizing Learning Outcomes," includes four chapters that tackle the question of learning outcomes directly. Of course, this distinction is somewhat artificial, because other chapters also propose ways of thinking about what we want students or participants to learn. Dorph and Schunn, for example, proposed "Jewish learning activation" as an outcome. Kolodner focused on fostering a self-conception of

² Jean Lave and Etienne Wenger, Situated Learning: Legitimate Peripheral Participation (Cambridge: Cambridge University Press, 1991).

³ David N. Perkins, Making Learning Whole: How Seven Principles of Teaching Can Transform Education. 1st ed. (San Francisco: Jossey-Bass, 2009).

oneself as capable within the domain of Jewishness. Schweber, we just noted, identified "reasonable Jews" as her desired outcome. But the three chapters in this section take up the question of outcomes directly, not just identifying them but exploring them and also problematizing them.

For those familiar with Sam Wineburg's research on historical thinking, it should come as no surprise that he is impatient with hagiography or mythologizing. But in his chapter here, he tries to move beyond the poles of uncritical memory and critical history, noting that there is a role that the past does and perhaps should play that is not quite encompassed by—and in fact stands in tension with—the bounds of academic, critical history. "Can there be a course," he asks, "that steers between dogmatic belief and absolutist disbelief?" Lurking beneath the question is a fundamental challenge to our assumptions about why study history, especially Jewish history, at all.

When we ask the question about how Jewish education differs from other kinds of education, we might be tempted to argue that Jewish education is a form of religious education. But it turns out that we're not quite so clear on what that means. Eli Gottlieb has been thinking about and studying the religiosity of religious education for a long time, or more specifically, has been studying how children and others think about God and theology and how they might be encouraged to do so differently. His chapter here surveys what he's learned from this process; perhaps most intriguing is his suggestion that, among our desired Jewish educational outcomes, is the capacity to engage in the kind of "epistemic switching" that he documents among a set of sophisticated Jewish adults.

The third chapter of this section argues for greater attention to socialemotional learning outcomes in Jewish education—and not just greater attention but in fact more rigorous assessment as well. The Resnicks advocated for learning texts. Reimer focused on learning Shabbat. Wineburg explored the learning of history. But for Gil Noam and Jeffrey Kress, all of these subject-specific outcomes are overly narrow, and secondary to our primary desired outcome in Jewish education as in other arenas, namely, the cultivation of healthy, welladjusted, mature individuals, with all the inter- and intra-personal qualities that those adjectives entail. This is not an add-on to the core educational endeavor, conceived of as learning "content." This is the core educational endeavor.

Thus, Noam and Kress, in expanding beyond the cognitive, build on aspects of earlier chapters. Kolodner, for example, emphasized the cultivation of a certain kind of identity. Kelman explored the myriad ways that people learn to be Jewish. Schweber's conception of "reasonable Jews" goes far beyond what those Jews know to a stance they take toward the tradition, the community, and

the world in general. Indeed, all of the scholars in this volume would endorse the idea that advancing the learning agenda means, among other things, attending not just to what students know, and not even what they can do or how they feel, but rather, to the kinds of people that they learn to become.

Finally, the last chapter of the section and the book—co-authored by the editors—frames a debate between two different ways of thinking about the desired outcomes of Jewish education. The first way, argued by "Abraham" in the chapter, focuses on the development of the student, the Jewish individual. The second way, argued by "Sarah," focuses on achievement within specific domains. Neither position is entirely satisfactory on its own. But in pursuing the debate, we believe that we can offer some helpful ideas to the field, to think in deeper, more nuanced, and more critical ways about learning in Jewish education. This, in the end, is the "learning agenda" that we want to advance.

This volume is a product of a research project at the Jack, Joseph and Morton Mandel Center for Studies in Jewish Education at Brandeis University. The authors presented their ideas initially at a conference in March 2015. We are grateful to the other participants in that conference for their critical and collegial input. We are also grateful to the staff of the Mandel Center for their contributions that have enabled our scholarly activity, including Elizabeth Dinolfo, Pamella Endo, Rebecca Neville, and Susanne Shavelson. Finally, we are grateful to the Jack, Joseph and Morton Mandel Foundation, for their ongoing support of scholarship on Jewish education, in the service of a thriving Jewish future.

LEARNING FROM THE LEARNING SCIENCES

Activating Jewish Learners: Positioning Youth for Persistent Success in Jewish Learning and Living

Rena Dorph and Christian D. Schunn

What can Jewish education learn from science education? In this chapter, the first of two chapters by learning scientists who focus on science education, Rena Dorph and Christian Schunn draw on their theory of "science learning activation" to make the case for a parallel theory of "Jewish learning activation." According to this theory, successful learning happens when one particular learning experience enables and motivates the learner to undertake and succeed in the next learning experience. What they mean by "science learning activation" is the combination of dispositions, skills, and knowledge that enable learners to be successful in subsequent science learning experiences. It can serve as a goal for Jewish learning experiences over and above the specific knowledge or skills that a participant might acquire.

Introduction

A striking feature of the body of research on the impact of Jewish education is that much of it employs behavioral indicators in adulthood (rather than cognitive or affective indicators) as the outcome measures by which the effectiveness of Jewish learning experiences that occur during youth are judged. For example, Steven Cohen¹ notes that attending day school has a positive

^{*} Special thanks to our colleagues Kevin Crowley (The Learning Research and Development

(albeit quite modest) correlation with four indicators that he examined (inmarriage, observance, affiliation, and a feeling of belonging). The same study also notes that some dosages of supplementary school (in particular the once-aweek format) may actually have a negative impact on these indicators. Cohen's most promising finding: participation in three informal educational experiences (including camp, youth group, and visiting Israel) during one's teen years actually surpasses even the impact of day school.

The assumption underlying these claims is that learning experiences influence youth in a way which would manifest in behaviors when they are adults, related to marriage, observance, synagogue affiliation, and belonging. However, there is no clear theory or chain of evidence to help us understand why that assumption is appropriate or what the mechanisms are that connect early learning experiences with complex adult behaviors. While these and other sociological studies' findings offer interesting fodder for consideration, they may have received more attention than they ought to and have been misinterpreted to mean more than they should because there is a paucity of alternatives.

What is missing? The field of Jewish education lacks a body of research that allows us to systematically and empirically examine the causality and underlying mechanisms of relationships between learning experiences, proximal learning outcomes, and more distal impacts. More specifically, the field lacks a learning theory that provides a conceptual framework for describing how Jewish content knowledge, skill sets, and ritual practices are learned through both intentionally designed and naturally occurring experiences; theoretically grounded notions of what "success" looks like and the standards that would embody that vision; agreement on what counts as evidence of learning; rigorous, scalable assessments that can cut across learning experiences; and a research agenda that would enable us to develop the frameworks, tools, and studies that would provide us with anything better.

In the face of the correlational and behaviorally focused existing findings and absent a body of research to help us understand the reasons we found them, this chapter addresses some critical questions:

Center, University of Pittsburgh) and Matthew Cannady (The Lawrence Hall of Science, University of California, Berkeley) who work with us in the Science Learning Activation Lab; they are our co-authors on writing related to this in science. We credit them as co-authors of the aspects of this chapter that relate to science learning activation.

¹ Steven M. Cohen, A Tale of Two Jewries: The "Inconvenient Truth" for American Jews (Jewish Life Network/ Steinhardt Foundation, 2006).

- 1. How does/could/should the field of Jewish education conceptualize consequential outcomes for Jewish learning experiences?
 - a. What do we mean by persistent engagement Jewish living and learning or positive Jewish identity?
 - b. How can we think about the learning that students do and the effects that that learning has on them, on their self-understandings, on their lives?
- 2. What set of Jewish learning outcomes—dispositions, practices, and knowledge—positions, empowers, and enables young people to engage in Jewish learning and living more frequently, in more settings, and with greater success across their lives?
 - a. What enables persistent engagement in Jewish learning and living in the twenty-first century?
 - b. What experiences support youth to develop positive Jewish identities?

This chapter responds to these questions by offering a theoretical framework for the substance and function of an outcome construct called *Jewish learning activation* that extrapolates from the work that we have done related to science learning. Analogies and inferences drawn from them are necessarily inductive rather than deductive; however, analogies are often a productive source of inspiration in all areas of academia. First, we provide a brief synopsis of the work-to-date related to *science learning activation*. Next, we consider the *Jewish learning activation* analog and the implications of this framework for designing and evaluating Jewish learning experiences. We conclude the chapter by discussing implications for a Jewish learning research agenda that is grounded in this framework.

The Analogy of Jewish Learning to Science Learning

How is Jewish learning like science learning? Before we delve into the specifics of the construct of Jewish learning activation and its implications, it may be helpful to consider the reasons, possibilities, and limits of the analogy.

The enterprises themselves: Both Jewish tradition and science seek to provide explanations for natural and physical phenomena through a process of examining evidence, argumentation, and meaning making. They both seek to understand the origins and place of human beings in the world. Although the exact phenomena being examined, the typical sources and

- types of evidence, and the rules of discourse have differences, there are many parallels across the enterprises.
- The learning process: Both Jewish learning and science learning have curiosity, questioning, inquiry, social support, and texts as critical drivers and processes of the overall learning experience.
- The learning outcomes: The short-term outcomes we seek to achieve have many parallels and overlaps. That is, we believe that both Jewish and science education seek to develop a combination of dispositions, practices, and knowledge within the learner that drive toward proximal successes. This hypothesis is the crux of the discussion of the remainder of this chapter.
- The role of identity: Both science educators/funders and Jewish educators/funders, believe that the development of a (science/Jewish) identity or an identification with a (scientific/Jewish) community is a critical aspect of one's self-concept on the path toward positive and lifelong engagement with the subject.
- The desired long-term impact: On the one hand, both the scientific and Jewish communities want to create educational opportunities that enable some individuals to become professionals in the field—professional scientists (science researchers, science teachers) and Jewish leaders (scholars of Jewish studies, teachers of Jewish studies, lay or professional leaders of Jewish institutions). On the other hand, the majority of efforts of both science education and Jewish education is about supporting the development of a (scientifically/Jewishly) literate society or community. Literacy in this context means that every citizen will appreciate that ways of thinking, reasoning, and values of the disciplinary (science/ Jewish) community and apply them to their daily lives and communal/ societal participation.

The Case of Science Learning Activation

The Science Learning Activation Lab (the Lab) is a multi-institutional research collaborative² dedicated to understanding the malleable factors associated with persistent success in science learning and pursuit of STEM³

² The Lawrence Hall of Science at the University of California, Berkeley; The Learning Research and Development Center at the University of Pittsburgh, and SRI.

³ STEM is the acronym for science, technology, engineering, and mathematics.

careers and, in turn, supporting learning experience design. ⁴ The work of the Lab responds to the need to build a theory that explains both short- and longterm effects in science learning. Expanding on recent advances in science education, cognitive and social psychology, and socio-cultural studies, Lab researchers propose a construct called science learning activation and a theoretical framework that describes the characteristics, function, and impact of this construct. We hypothesize that a new construct called *science learning* activation⁵ is one such critical factor. We define science learning activation as the combination of dispositions, practices, and knowledge that enables success in proximal science learning experiences and are in turn influenced by this success (i.e., participate in a positive feedback loop over time). We refer to the elements of this combination of dispositions, practices, and knowledge as dimensions of activation.

Our conceptualization of science learning activation focuses on what the learner consistently carries from one experience to the next (dispositions, practices, and knowledge) as opposed to what is less consistently carried from one experience to the next (e.g., particular physical resources, personal relationships). Dispositions refer to attitudes and beliefs about the self vis-à-vis various aspects of learning science content and engaging in science practices. Practices refer to skills and abilities that an individual draws upon as resources to solve science-related problems and scenarios in productive ways. Knowledge refers to the (explicit, declarative) understanding of science phenomena, concepts, theories, processes, and social resources that are used together with scientific practices to engage in scientific sense making and solve science-related problems and scenarios in productive ways. Further, this conceptualization focuses on proximal science learning experiences, that is, the most temporally proximate learning experience an individual has (e.g., their next science class, next visit

⁴ The Science Learning Activation Lab engages in multiple, concurrent lines of research. More information about design and methodology associated of these various studies can be found on the Lab's website, www.activationlab.org.

⁵ Rena Dorph et al., "How Science Learning Activation Enables Success for Youth in Science Learning," Electronic Journal of Science Education 20, no. 8 (2016): 49-85; Rena Dorph et al., "Crumpled Molecules and Edible Plastic: Science Learning Activation in Out-of-School Time," Afterschool Matters 25 (Spring 2017): 18-28; Rena Dorph et al., "Science Learning Activation: Positioning Youth for Persistent Success in Science Learning, Literacy, and Careers" (presentation, American Education Research Association Annual Meeting, San Francisco, CA, 2013); Rena Dorph et al., "Activating Young Science Learners: Igniting Persistent Engagement in Science and Inquiry" (structured poster session, American Education Research Association Annual Meeting, Vancouver, BC, Canada, 2012).

to a science center, next time they do a science activity at home, next time they participate in an afterschool science club) as opposed to the current or long-distance experiences.

Extensive literature reviews and empirical research have revealed four dimensions (or aspects) of science learning activation each of which constitutes useful set of personal resources that an individual carries from one learning experience to the next:

- 1. Fascination with natural and physical phenomenon (emotional and cognitive attachment/obsession with science topics and tasks);
- 2. Valuing of science (understands various intersections of self with science knowledge and skills and places value on those interactions within their social context);
- Competency beliefs about self in science (perceives one's self as capable of successfully engaging in science activities and practices); and
- Scientific sensemaking (engages with science-related content as a 4. sensemaking activity using methods generally aligned with the practices of science).

These resources impact the chance that an individual will have a successful learning experience. We operationalize "success" as four elements that designers of science learning experiences hope to impact through their interventions and that function as we describe further below. These elements of success include: (1) choosing to participate in science learning opportunities; (2) experiencing positive engagement (affective, behavioral, and cognitive) during science learning experiences; (3) perceiving oneself as successful during science learning experiences; and (4) meeting science learning goals during these experiences.

A successful learning experience supports the individual to develop higher levels of the dimensions of science learning activation, which, in turn, will increase the chances of success the next time a learner bumps into a potential science learning experience. This positive feedback loop—from science learning activation to success to science learning activation—is the heart of our framework. Learning experiences that are more likely to lead to positive changes in science learning activation can resonate forward and make it more likely that youth follow pathways to science. Conversely, poor experiences can lead to declines in science learning activation that undermine future success and thus make it more difficult to follow a science pathway.

In order to test the hypotheses embedded in this theory, we have developed measures of each dimension and each success element and then empirically investigated whether the hypothesized dimensions of activation indeed both predict successes and further increase as the result of successes. Thus far, our empirical studies of youth have demonstrated the relationship among the four dimensions of science learning activation and success in science learning experiences.⁶ The studies, using complex statistical models that are carefully controlled for learner demographics and prior achievement, found positive connections between each dimension and one or more of the forms of success.

The studies also found that the success variables were also predictive of increases in levels of the dimensions of science learning activation. For example, fascination is strongly correlated with choice preferences while scientific sensemaking is correlated with content learning. These findings help illuminate the mechanism by which science learning activation could have both short and long term predictive power. By supporting success (choice, engagement, and learning) in proximal learning experiences, science learning activation provides momentum—a ramping up effect—that supports persistent engagement and success in science learning over time. It also offers an explanation for the opposite effect of decreased momentum, lack of persistence, and decreased success in science learning over time.

The Jewish Learning Analog

So, what is the analog for Jewish learning? What set of dispositions, practices, and knowledge position a young person for success in Jewish learning and living? What does "success" mean in a Jewish learning framework? Clearly some aspects must be different. While the science learning activation framework we described was built on a wealth of prior empirical studies, researcher insight, and practitioner input, the ideas here are constructed based on our extrapolation of that work to the Jewish learning context. Accordingly, the ideas we present for what must be adapted are a hypothesis rather than a tested theory. Much effort would be required

⁶ Dorph et al., "How Science Learning Activation Enables," 49–85; Dorph et al., "Crumpled Molecules and Edible Plastic," 18–28; Dorph et al., "Science Learning Activation"; Dorph et al., "Activating Young Science Learners."

⁷ Dorph et al., "How Science Learning Activation Enables," 49–85.