

Learning How to Learn: Improving the Performance of Learning

Daniel K. Apple¹ and Wade Ellis, Jr.²

Abstract

The act of learning is usually thought of as something done preparatory to a performance; a student learns and then can perform on the basis of what has been learned. This article frames the act of learning as a performance in its own right, allowing the Theory of Performance to be used as schema for naming and exploring the various dimensions of the learning performance that can be improved. This paper's exploration is conducted with the future improvement of the learning performance very much in mind — learning how to learn.

Introduction

Research on teaching focuses on how best to design, facilitate, and enhance the ability of experts to share knowledge with learners — teaching educators how to teach effectively. And while much research has focused on learning as the act of constructing knowledge, we don't typically think of learning as an act that is comparable to teaching; while we talk about teaching educators how to teach effectively, there is no talk about teaching learners how to learn effectively. But given the familiar model of learning, we cannot help but see that the act of learning itself can be the focus of learning. That is, just as one can learn to understand, use, and build working expertise with a complex mathematical formula, one can also learn how to learn better.

Individuals who consciously work to become better learners are striving to improve their performance as learners. The components of the Theory of Performance (Elger, 2007) can be used to identify what constitutes a performance of learning to learn. Just to keep things clear, meta-cognitively speaking, this is not a performance of learning focused on learning something in particular, like Spanish verbs, but a performance of learning focused on the act of learning itself. One who engages in this type of parallel processing has a *learning-to-learn mindset*. The Theory of Performance states that learning to learn is affected, both positively and negatively, by five different components of a learner's performance: Identity, Learning Skills, Level of Knowledge, Context (of Performance), and Personal Factors.

Table 1

<p>Identity (as a Learner)</p> <ol style="list-style-type: none"> 1. Learner Efficacy: Belief in oneself and one's capability 2. Learner Ownership and Responsibility: "I am responsible for my own learning."
<p>Knowledge</p> <ol style="list-style-type: none"> 3. Levels of Learner Knowledge: Elevating the level of learning 4. Learning Process Methodology (LPM): Building awareness of one's own learning process 5. Forms of Knowledge: Aligning best learning practices with each type of knowledge
<p>Learning Skills</p> <ol style="list-style-type: none"> 6. Cognitive: Elevating thinking skills for processing information, constructing meaning, and applying knowledge 7. Social: Building social skills for producing effective team learning 8. Affective: Increasing emotional maturity to take risks, accept failures, and persist through to success
<p>Context (of Performance)</p> <ol style="list-style-type: none"> 9. Immersion in a High-Quality Learning-to-Learn Experience (Learning-to-Learn Camp/Course) 10. Cooperative Learning: Adapting the best learning practices from team members 11. Active Learning: Publicly performing the act of learning
<p>Personal Factors</p> <ol style="list-style-type: none"> 12. Life Challenges: Transforming past problems into opportunities for growth 13. Making the Right Choices: Making a better future

¹ Pacific Crest

² Educational Consultant

In addition, we have successfully identified multiple aspects of each of these components, arriving at a superset of thirteen different aspects of learning to learn. Table 1 lists the components and their aspects, including the way in which each aspect influences learning performance.

- | | |
|-----------------|--------------|
| 1 Information | 4 Analysis |
| 2 Comprehension | 5 Evaluation |
| 3 Application | 6 Synthesis |

One essential aspect of critical thinking is the ability to process important information (Level 1) to produce meaning and understanding (Level 2). Applying new knowledge (Level 3) to solve simple problems in new situations requires this type of understanding beyond the simple memorization of information. The ability to solve complex problems (Level 4) is based upon the unprompted selective transfer of knowledge. Well-documented problem solutions and projects are evaluated and validated (Level 5) to determine whether the levels of quality meet standards. Creating new knowledge or original creative enterprises (Level 6) requires high levels of learning as well as a strong identity, well-developed learning skills, and an array of contextual experiences. As students consciously progress through these levels of knowledge in each successive learning performance, their ability to measure and control their learning process improves.

Learning Process Methodology: Building awareness of one's own learning process

The Learning Process Methodology (LPM) is an explicit modeling of the steps of the learning process that teachers and learners use to explore, analyze, understand, and apply knowledge to improve learning performance. Over the last 20 years, the LPM has helped to improve learning performance through the engagement of teaching and learning (Beyerlein, Ford, & Apple, 1993). The LPM informs faculty in their design of activities, preparation of facilitation plans, facilitation of learning experiences, and assessment of learning performance. Students use the LPM to construct knowledge, measure levels of learning, improve reading, incorporate critical thinking, control their own learning, and build metacognition of their own learning processes. Learning to learn aligns with the LPM and the levels of knowledge trajectory by activating prerequisite knowledge, producing knowledge that is understood, and contextualizing, generalizing, and integrating knowledge for use in solving problems.

Forms of Knowledge: Aligning best learning practices with each type of knowledge

There are different learning tools, techniques, and strategies for each of the five forms of knowledge: concepts, processes, tools, contexts, and ways of being (Quarless, 2007). Learners who understand the forms of knowledge can modify how they use

Identity

Learner Efficacy: "I believe I am an effective learner."

A learner's efficacy (belief in one's own capacity to meet difficult learning challenges) must improve significantly as he or she proceeds from high school into the more challenging collegiate environment. Learners' performances in constructing knowledge in different environments are impacted by their levels of self-image as learners (Amel, 2008). The more successes and accomplishments learners have in more challenging learning environments, the stronger their self-efficacy. The frequency of learners' successes and the number and diversity of others (educators, mentors, family, and friends) who give reasoned affirmation of these successes and accomplishments are both factors that will strongly influence the level of efficacy; conversely, the enabling behavior of relatives and friends can have a debilitating effect on learner efficacy. As the learners begin to measure their own accomplishments and assess their own abilities, they will strengthen their own efficacy and identity as learners.

Learner Ownership and Responsibility: "I accept ownership and responsibility for my own learning."

The construction of knowledge must be within the learner's control (Barell, 1995). It is the experience of most learners that educators try to present them with knowledge. But effectiveness in learning comes about when the learners want to learn, do the thinking, produce meaning, and contextualize and generalize knowledge for their own use (Farrington et al., 2012). The extent to which a learner takes on additional responsibility for his or her own learning influences the strength of his or her identity as an independent life-long learner (Kolb & Kolb, 2010).

Knowledge

Levels of Learner Knowledge: Elevating the level of learning

Bloom's taxonomy of the cognitive domain has six interdependent levels of knowledge (Krathwohl, 2002).

the LPM to learn more effectively (see Table 2). For example, in the LPM, the models (Step 9) chosen will vary depending upon the form of knowledge: a learning object or concept model to build conceptual knowledge, a methodology or procedural example to build process knowledge, a schematic, diagram, or quick reference card to construct a tool, a story to build contextual knowledge, and a professional profile to develop a way of being. The measurement of the level of learning takes on different prompts based upon the form of knowledge (Atherton, 2013).

Table 2

Knowledge Form	Model Type
Concept	Learning Object, Concept Model
Process	Methodology, Procedural Example
Tool	Schematic, Diagram, Reference Card
Context	Story
Way of Being	Professional Profile

Learning Skills

Cognitive Domain: Elevating thinking skills for processing information, constructing meaning, and applying knowledge

Learners who actively start integrating all levels of thinking skills (information processing, constructing meaning, applying knowledge, and problem solving) into the learning process will improve their learning performance in five stages (Davis, Beyerlein, Leise, & Apple, 2007).

- 1 The first stage in applying thinking to the learning process is actively thinking about what you already know, and transferring prior knowledge and different life experiences to the current learning challenge.
- 2 The second stage is processing the available information through effective reading using a very thoughtful and purposeful methodology.
- 3 The next stage is to clarify the learning goals and expectations so that a plan can be created for achieving these learning outcomes.
- 4 The crucial stage of the learning experience is thinking critically by using relevant information and prior knowledge to analyze and understand models and examples. Comprehension is enhanced by conversing with others and writing to learn.

- 5 The final stage is applying the thinking skills needed to contextualize and generalize this knowledge so that it can be transferred to new problem-solving situations.

Social Domain: Building social skills for producing effective team learning

Social learning skills are important in accessing the benefits of learning in teams and communities. Research shows that cooperative learning, collaborative learning, project-based learning, and learning communities contribute measurably to improving student learning performance. This research has also shown that pedagogical approaches in which learners engage with other learners also improve learners' social learning skills (Johnson & Johnson, 1990). These skill areas include communication, relating with others, cultural competence, and management/leadership. As the social skills increase so does learner success in more challenging learning environments like college (Brna, Baker, Stenning, & Tiberghien, 2002).

Affective Domain: Increasing emotional skills to take risks, accept failures, and persist through to success

Learner growth happens more quickly and significantly when individuals are outside their comfort zones; failures also occur more frequently. Strengthening affective skills such as risk-taking, coping, managing frustration, responding to failure, and self-challenging are all important in turning temporary failures into future successes. Additional affective skills such as managing time, persisting, maintaining self-confidence, and focusing are supportive of risk-taking and responding to failures (Vega & Terada, 2012).

Context

Immersion in a High-Quality Learning-to-Learn Experience: Attending a Learning-to-Learn Camp/Course

As members of learning communities and learning teams, participants in a Learning-to-Learn Camp will individually and collaboratively read more than 350 pages and write approximately 150 pages. They are required to complete background reading, and perform recording, journaling, and internet searches to construct understanding of information, produce reading logs, prepare for class reading quizzes, produce team reports, and engage in challenging classroom activities. They are required to think critically in order to compare and contrast different perspectives, accept and provide peer feedback, and ultimately contextualize new knowledge into their own lives in meaningful ways. Participants

take on more and more of the traditional roles of faculty: reading, explaining book content, working through problems, and assessing the work of other students. Students engage in 30 increasingly challenging learning activities that push them outside their comfort zones. This leads to significant failures and successes. The experience is finalized with their participation in six challenge contests: math, writing, art, problem solving, speech, and a talent show.

Cooperative Learning: Adapting the best learning practices from team members

Cooperative learning is a great tool for improving learners' performances. The team structure (optimally consisting of a captain, recorder, spokesperson, reflector, critical thinker, technology specialist, optimist, and spy; see Table 3) allows each team member to practice different aspects of being a self-directed learner (Smith, 2007).

Table 3

Role	Duties
Captain	Manages the learning
Recorder	Documents the learning
Spokesperson	Articulates the learning
Reflector	Assesses learning performance
Critical Thinker	Validates the learning
Technology Specialist	Uses technology to support the learning
Optimist	Keeps the process positive
Spy	Steals learning practices from other teams

The rotation of roles in each new learning experience propagates the sharing of learning practices among the team members. The learning challenges given to the team exceed the abilities of any team member and the validation of the learning of all members can be accomplished in less time than individuals can produce on their own (Goleman, 2014). These same cooperative practices can extend into learning communities and broaden the impact (Price, 2005).

Active Learning: Publicly performing the act of learning

In an active learning context, students are involved in a set of activities in which there are multiple agencies watching and assessing performance: the team mentor, facilitators, spies from other teams, student mentors, and even the reflector within the team.

Student teams must construct learning so that it can be shared publicly, either by the team spokesperson or by entering into competition with other teams for problem-solving challenges. During every activity the thinking processes and skills of students are consistently challenged. For example, team recorders are writing to learn, and that work is assessed for how effectively the understanding is articulated (Bonwell & Eison, 1991).

Personal Factors

Life Challenges: Transforming past problems into growth opportunities

The pressures and demands of everyday life in an increasingly more complex world make learning more challenging. To be successful in life as well as in college learners must produce strong learning performances even while meeting non-academic but top-priority challenges, such as being exhausted from hours of work, nursing a sick child, or caring for an aging grandparent. On top of this, when tragedies occur (a divorce, a layoff, an accident, or the death of a family member or friend) the recovery must be quick and effective. Thus, improving emotional skills of persisting, coping, responding to failures, and adapting to change is critical to building the resilience that is needed to overcome the difficulties that arise from personal factors (Smith, 2014). As facility with the other learning-to-learn components grows (e.g., higher levels of learning, improved learning skills, and identity as a learner), so does the proactive problem-solving capacity for addressing these personal factors.

Making the Right Choices: Making a better future

Early in life, most of our personal factors are the result of decisions made by parents, guardians, and extended family members. As individuals take ownership for the decisions that shape their lives, a critical shift begins to take place. They stop thinking of themselves as victims or the recipients of the consequences of others' choices and start assuming the responsibility and accountability for their own decisions and their lives. When we allow others to make important decisions for us, we signal to the world that we are not capable; that others should make excuses for us, and think and expect less of us. Once we take ownership of our decisions and their consequences, others will cease treating us as victims. As we learn to make better life decisions and reap the improved consequences that inevitably follow, the personal factors that interfere with a

positive and healthy life decrease. As these factors are reduced, life improves, as does learning performance (McDermott, 2014).

Synergy of the Components

These thirteen essential components of the five areas of a learning-to-learn performance are interrelated and interdependent. They are all based on the concept that *learning is a process and a performance that can be improved*. Moreover, improving one component of the learning performance will improve other components of the learning performance. Critical thinking can occur more effectively if there is a framework, such as a methodology, to prompt questions. Effective critical thinking requires that students have a strong identity as learners. Students who know the levels of learning and use the Learning Process Methodology are more effective in generalizing knowledge and solving problems. Knowing that there are different types of knowledge that require different learning approaches supports the development and use of different types of learning skills. Students who improve their learning skills are able to learn different forms of knowledge and solve a variety of problems more effectively. Learners who are mindful of these thirteen essential components of the five areas of a learning-to-learn performance will prosper in any learning environment and in life.

Future Research

The next step in the research on learning to learn is to measure and document the growth in learning performance in

Process Education experiences, such as Learning-to-Learn Camps or Courses. Available in Appendix A is the most recent version of an Engaged Learner Rubric that incorporates many of the 13 aspects mentioned in this paper. This rubric measures the following learning performance:

Engaged learners are highly motivated and take ownership of their own learning and success. They are well-prepared and actively participate and collaborate within and outside learning experiences by asking questions and sharing insights. They appreciate and embrace increasingly challenging learning opportunities through self-assessment. They effectively manage their time and resources. They are positive and intellectually curious, supporting others in their learning. They apply their learning in new contexts by using higher order thinking to contextualize and generalize their knowledge.

The 10 dimensions that make up the holistic measure in Appendix A are in Table 5.

An analysis of this measure will show that many of the 13 aspects of learning performance are embedded in it, but not all of them. This measure can be advanced to ensure that all thirteen aspects of learning performance are measured by it so that it truly captures all aspects of learning performance. The new measure would also clearly differentiate the aspects of learning performance from the aspects of self-growth performance, which requires a different measure.

Table 5 Engaged Learners Are...

Self-Esteemed , believing in their own ability as learners
Self-Starters , taking the initiative with each new experience to maximize their learning
Curious , constantly seeking new knowledge in multiple forms
Critical Thinkers , asking critical questions, analyzing information, and synthesizing meaning to elevate understanding
Active Listeners , assessing the perspective of the speaker, extracting the essence of the message, recording critical information, and checking perceptions to determine accuracy
Collaborative , partnering with others, performing their roles effectively, asking for help when it is needed, and assisting others
Prepared , understanding expectations, collecting and organizing resources, reading for meaning, and having a plan for learning
Resilient/Risk-Takers , seeking out challenging learning opportunities, responding positively to learning challenges from others, learning from failures, and continuing until projects are successfully completed
Contextualizers of Knowledge , applying understanding to immediate contexts, taking time to explore multiple contexts, applying knowledge from another's point of view, and generalizing knowledge to any context
Self-Assessors , parallel processing self-assessment while learning and ensuring that they truly possess each level of knowledge

References

- Amel, S. H. (2008). *Reflection on students' self-efficacy expectancies: Paving the path to better achievement outcomes in higher education*. OECD Programme on Institutional Management in Higher Education. Retrieved from <http://www.oecd.org/edu/imhe/43977414.pdf>
- Atherton, J. S. (2013). *Forms of knowledge*. Retrieved December 8, 2014 from <http://www.doceo.co.uk/tools/forms.htm>
- Barell, J. (1995). *Working toward student self-direction and personal efficacy as educational goals*. North Central Regional Laboratory. Retrieved from <http://www.ncrel.org/sdrs/areas/issues/students/learning/lr200.htm>
- Beyerlein, S. W., Ford, M., & Apple, D. K. (1993). *Using a learning process model to enhance learning with technology*. IEEE Frontiers in Education Conference. Retrieved from <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&number=405482>
- Bonwell, C., & Eison, J. (1991). *Active learning: Creating excitement in the classroom*. AEHE-ERIC Higher Education Report No. 1. Washington, D.C.: Jossey-Bass.
- Brna, P., Baker, M., Stenning, K., & Tiberghien, A. (Eds.) (2002). *The role of communication in learning to model*. Mahwah, N.J.: Lawrence Erlbaum Associates. Retrieved from <http://homepages.inf.ed.ac.uk/pbrna/communicatebook/contents.html>
- Davis, D., Beyerlein, S. W., Leise, C., & Apple, D. K., (2007). Cognitive domain. In S. W. Beyerlein, C. Holmes, & D. K. Apple, (Eds.), *Faculty guidebook: A comprehensive tool for improving faculty performance* (4th ed.). Lisle, IL: Pacific Crest.
- Elger, D. (2007). Theory of performance. In S. W. Beyerlein, C. Holmes, & D. K. Apple, (Eds.), *Faculty guidebook: A comprehensive tool for improving faculty performance* (4th ed.). Lisle, IL: Pacific Crest.
- Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). *Teaching adolescents to become learners. The role of noncognitive factors in shaping school performance: A critical literature review*. University of Chicago Consortium on Chicago School Research. Retrieved from <https://ccsr.uchicago.edu/sites/default/files/publications/Noncognitive%20Report.pdf>
- Goleman, D. (2014, Oct 20) *Emotional intelligence* [blog]. Retrieved from <http://www.danielgoleman.info/topics/emotional-intelligence/>
- Johnson, D. W., & Johnson, R. T. (1990, January). *Social skills for successful group work*. Retrieved from http://www.researchgate.net/publication/234590538_Social_Skills_for_Successful_Group_Work/file/60b7d5261b54ebe322.pdf.
- Kolb, A., & Kolb, D. (2010). *On becoming a learner: The concept of learning identity*. Retrieved from <http://learningfromexperience.com/media/2010/05/on-becoming-a-learner-the-concept-of-learning-identity.pdf>
- Krathwohl, D. (2002, Autumn). A revision of Bloom's taxonomy: An overview. *Theory into practice*, 41(4). Retrieved from http://www.unco.edu/cetl/sir/stating_outcome/documents/Krathwohl.pdf
- McDermott, D. (2014). Decision making confidence: The effects of bad decisions. Retrieved from <http://www.decision-making-confidence.com/effects-of-bad-decisions.html>
- Price, Derek V. (2005). *Learning communities and student success in postsecondary education: A background paper*. New York: MDRC. Retrieved from http://www.mdrc.org/sites/default/files/full_421.pdf
- Quarless, D. (2007). Forms of knowledge and knowledge tables. In S. W. Beyerlein, C. Holmes, & D. K. Apple, (Eds.), *Faculty guidebook: A comprehensive tool for improving faculty performance* (4th ed.). Lisle, IL: Pacific Crest.
- Smith, P. (2007). Designing teams and assigning roles. In S. W. Beyerlein, C. Holmes, & D. K. Apple, (Eds.), *Faculty guidebook: A comprehensive tool for improving faculty performance* (4th ed.). Lisle, IL: Pacific Crest.
- Smith, T. (2014). Does teaching kids to get 'gritty' help them get ahead? National Public Radio. Retrieved from <http://www.npr.org/blogs/ed/2014/03/17/290089998/does-teaching-kids-to-get-gritty-help-them-get-ahead>
- Vega, V., & Terada, Y. (2012). Research supports collaborative learning. *Edutopia*. Retrieved from <http://www.edutopia.org/stw-collaborat.ive-learning-research#graph0>

Appendix A

Holistic Rubric for Engaged Learners

Level 5: Pioneer Learners

- a. Have strong beliefs in themselves and take every opportunity to expand their knowledge and effective use of knowledge.
- b. Want to know everything about everything (including the unknown) and use all forms of thinking to produce high levels of understanding.
- c. Constantly know what others are saying, and use this understanding to elevate the performances of themselves and others.
- d. Always know what is required to produce peak performance and are unafraid to create or take on any learning challenge.
- e. Readily transfer new knowledge into a variety of contexts through ongoing self-assessment to elevate performance in all aspects of life.

Level 4: Professional Learners

- a. Are motivated to stay on top of their discipline and/or daily responsibilities by exploring new concepts and tools.
- b. Want to know everything about areas in which they interact and continue thinking until they know that they know.
- c. Use others to gain critical information and through timely interactions produce learning that is valued by everyone.
- d. Are aware of what is needed for each performance and look for opportunities to advance by taking on significant challenges.
- e. Make sure that they know how to transfer knowledge by generalizing and seek to improve learning performance.

Level 3: Contained Learners

- a. Believe in what they can do and what they currently know and initiate activities and learning in familiar areas.
- b. Seek out new information and do the inquiry, analysis, and synthesis to put meaning to this new information.
- c. Actively understand what is said by those around them and will work with them effectively to improve everyone's learning and performances.
- d. Prepare themselves and take risks in ways that seem realistic for their environments.
- e. Effectively use their knowledge in their current context and self-assess in some regular fashion to improve learning.

Level 2: Needs-Based Learners

- a. Believe that they can do the basics and will initiate something if it will achieve something important for them.
- b. Can find the information critical to immediate concerns by using more fundamental thinking skills.
- c. Will listen to individuals who can help in the current context and will interact when the result will be valuable.
- d. Will do some preparation, especially when it is clearly beneficial, and take on very calculated learning challenges.
- e. Reserve the use of knowledge to its basic situations and assess only when challenged by others.

Level 1: Survival Learners

- a. Have a minimal level of belief in themselves and their knowledge and rarely initiate their own learning.
- b. Seek out and use information to protect what they have and gain new information for immediate use.
- c. Normally hear only what they want to hear and only work with people they really trust.
- d. Ready themselves only right before crisis situations and limit risk taking to situations in which they either cannot avoid taking risks or know that they will succeed.
- e. Expand current knowledge for immediate use and occasionally reflect when it is essential.

