

Accelerating Expertise Using Action Learning Activities

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Action Learning Activities (ALAs) are intended to help professional and business people systematically increase their domain-specific tacit knowledge. Expertise-oriented tasks that are superimposed onto routine work activity, ALAs allow professional and business people to squeeze more tacit knowledge out of personal and observed work experience. Types of ALAs include: Estimating, Experimenting, Extrapolating, Explaining, Examining, Exchanging, and Expert Coaching. Estimating involves predicting how much time, funds, or other resources will be required to accomplish job tasks. Experimenting tries out new ways of doing an old job. Extrapolating imagines circumstances that could have caused a failure in an otherwise routine work situation, tapping into the powerful learning that comes with near misses. Explaining reviews what did or didn't work as expected in a situation or activity. Examining uses predetermined foci in observing other people or situations. Expert coaching uses situation-based questions and observations to probe the tacit knowledge of an expert. Appropriate for on-the-job learning by new, middle, and senior-level performers, ALAs can be implemented by individuals or by informal groups of people in an organization.

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Our goal is to answer a professional or businessperson's simple question: "What can I do, in the course of my work, to become more expert more quickly?" The answer, as it is in the old joke about a lost musician asking how to get to Carnegie Hall, is "practice, practice, practice." The accumulation of practice—meaning specific activities, often under the direction of a coach, that are engaged in to improve component skills—over the course of many years is now widely accepted as the most important element of becoming an expert performer (Bloom, 1985; Ericsson, 2006).

Outside of music and sports, however, few domains of performance have a culture of practice that requires and rewards such focused practice beyond formal education or training programs. The last thing most working professional or business people have time for is practice; at least not practice in the traditional sense of activities that are distinct from job performance. Clearly, expertise-oriented knowledge and skills need to be "practiced" through learning activities that can be pursued during job performance. One established method that combines job performance with expertise-oriented learning activities is action learning, used primarily in

management and executive training. Working in small groups to solve authentic workplace problems (action) with peer-supported interrogation of participants' decision processes (learning) can be a highly effective approach (Cho & Egan, 2010). But action learning also soaks up too many resources to be applied widely, such as requiring participants to dedicate up to a full day per month to action learning meetings.

We propose a way to adapt principles of action learning in order to speed up expertise-oriented skill development during job performance. Action Learning Activities (ALAs) use routine workplace events as opportunities for professional and business people to be more aware and reflective, cultivating the domain-specific tacit knowledge that supports intuitive expertise (Salas, Rosen, & DiazGranados, 2010). ALAs enhance the experiential learning that occurs naturally in the workplace without adding substantial practice time.

Foundations of Action Learning Activities Tacit Knowledge

ALAs focus on tacit knowledge as an appropriate target for on-the-job learning. "Intuition is a process

of thinking,” says Betch. “The input of this process is mostly provided by knowledge stored in long-term memory that has been primarily acquired via associative learning” (Betch, 2008, quoted in Salas et al., 2010, p. 493). The question that drives our development of ALAs is whether and to what extent domain-specific tacit knowledge that underlies expertise-based intuition can be “stocked in” through a program of activities that help people interrogate and reflect on the outcomes and processes of the work they do.

Tacit knowledge in a particular professional or business domain can consist of contextual knowledge of customers, competitors, and company culture as well as internal awareness of one’s own biases and capabilities. Although it is highly personal, domain-specific tacit knowledge is more general than job or task-specific knowledge and skills and therefore is more transferable within the domain. While a professional or business performer may draw upon tacit knowledge to improve intuitive judgment and decision-making in his or her current job, the full value of accumulated tacit knowledge may not be realized until the performer is reassigned or promoted within the same performance domain. At that point a rich body of domain-specific tacit knowledge may allow a performer, after mastering the specific declarative knowledge and procedural skills of a new job, to more rapidly develop expertise-based intuition.

Tacit knowledge is naturally gained implicitly, with the result being that “we know more than we can tell” (Polanyi, 1966, p. 4). Rather than relying entirely on implicit learning, we believe that tacit knowledge can also be gained more deliberately by arranging conditions in the workplace so as to allow feedback and guide reflection. As Thorndike observed nearly a century ago, mere repetition of tasks does not necessarily lead to improved performance because, “We have too many other improvements to make, or do not know how to direct our practice, or do not really care enough about improving, or some mixture of these three conditions” (Thorndike, 1921, quoted in Ericsson, Krampe, & Tesch-Römer, 1993, p. 365).

Deliberate Practice

Deliberate practice involves activities that are specifically designed to improve skill, often under the guidance of a coach, and focused on improving identified performance deficiencies (Ericsson, 2006). Deliberate practice does not include undirected domain experience but rather emphasizes repetition and successive refinement of component skills.

Modern theories of expertise and expert performance emphasize the prominent role of massive amounts of deliberate practice in achieving expert levels of performance. Chase and Simon (1973) speculated that a minimum of ten years of experience was required to attain expert performance in chess. The “10-year rule” has been widely cited and was further elaborated as the “10,000-hour rule” in a study of music conservatory students (Ericsson et al., 1993). The top violin students in the study had--by age 18--already amassed around 7,400 hours of practice while lesser skilled students averaged around 5,300 hours of accumulated practice and the music teachers at the conservatory (skilled but not expert performers) had practiced for less than 4,000 hours when they were 18 years old.

The 10,000-hour rule (which can be thought of as 20 hours of practice a week for ten years) encapsulates the favoring of nurture over nature in modern theories of expertise and expert performance and has also been widely cited by popular authors as a key to developing expertise in professional and business domains (e.g., Colvin, 2008; Coyle, 2009; Gladwell, 2008). However, the concept of deliberate practice has limitations when applied to working professional and business people (Fadde & Klein, 2010). One limitation is that it has primarily been observed in the domains of performance, notably sports and music, where a “culture of practice” predominates so that even a world-class tennis player still hires a coach and maintains a regular practice schedule. While professional and business people typically participate in professional development, continuing education, and workshop-based training activities, few professions outside of sports and music have a culture of practice that demands and supports regular off line practice sessions that are distinct from on-the-job performance.

While deliberate practice offers an inviting path to expertise, it is simply impractical for the great majority of professional and business people to follow that path. As noted by Hoffman, Feltovich, Fiore, Klein, & Ziebell (2009), “The modes and means of training should engage real work practice - - the job’s challenges, contexts, and duties -- to the greatest extent possible” (p. 20). The question, then, is how to enhance learning during routine work events.

Action Learning, Action Reflection Learning, and ALAs

Strong theoretical and practical support for workplace-based learning has been developed in the form of Action Learning. The great attraction of action learning is its ability to simultaneously solve difficult challenges and develop people and organizations at minimal cost (Marquardt, 2004). Action learning was pioneered by Reginald Revans in Britain after World War II when he was asked by the National Coal Board to improve coal production (Revans, 1982). Over the years it has grown in popularity in Britain, Europe, and Australia, and, to a lesser extent in the United States, being used primarily for senior management training and executive development with “high potentials” for future leadership. Many versions of action learning have been implemented and reported, but, according to Cho and Egans (2010), the features of classic action learning (AL) that reference Revans’ original conception include:

- 4 to 8 diverse participants in an AL “set”. These are sometimes members of intact work teams in an organization but are optimally people from different departments.
- Regular meetings, often with an AL coach or facilitator, although Revans favored facilitation by the set participants. Meetings are typically scheduled once per month for a set time frame, can last from a half to a full day, and are optimally conducted off site.
- Meetings focused on a real workplace action. Participants are generally granted 40 to 60 minutes each to describe a workplace decision or action that they are planning and are then questioned by other members of the AL set. The focus is on interrogating each participant’s assumptions. The learning goal is to gain insights into personal decision

processes through insightful questions and careful listening.

- Participants execute discussed plans and report back at the next AL set meeting. The strongest research support for the effectiveness of AL is in producing high-quality actions within the organization. Permanent change in the expertise of set participants is sometimes observed by surveying participants, colleagues, and supervisors.

Variations on these “classic” AL features sometimes lower the stakes by using hypothetical problems or cases. For instance, the Presidential Management Fellows program has instituted action learning as a regular part of the internship experience of fellows in various federal agencies (U. S. Office of Personnel Management, 2004). Action learning meetings of the management interns feature discussion of hypothetical problems rather than real problems, a format that suggests the Problem-Centered Learning approaches more common to university-based professional education programs (Jonassen, 2006). Another variation, Decision Making Exercises (DMXs) as described by Klein (2003), have elements of action learning in that they are based upon authentic work scenarios and involve working professionals; but they are conducted in the context of time-bounded, facilitator-led training workshops.

Another version of AL increases emphasis on personal reflection and is termed Action Reflection Learning (ARL). ARL was developed in Sweden and is associated with management training (Rimanoczy & Turner, 2008). Among ten ARL principles, two guide our formulation of Action Learning Activities (ALAs):

- Principle of Tacit Knowledge: Knowledge exists within individuals in implicit, often unaware forms; it is frequently under or not fully utilized and can be accessed through guided introspection.
- Principle of Repetition and Reinforcement: Practice brings mastery and positive reinforcement increases the assimilation.

While there are shared features between AL and

ALAs, there are also substantial differences between AL and ALAs as well. One difference is in the scope and duration of the intervention. AL typically involves a bounded and formal training program with considerable organizational support and individual commitment. ALAs, on the other hand, can be pursued at any time by individual performers, although learning and “zeal for practice” (Thorndike, 1920/1914) are certainly enhanced by having a small, informal group of ALA participants. Table 1 compares AL and ALAs along several instructional dimensions that suggest when one or the other approach is more appropriate.

Table 1. Comparison of the Instructional Dimensions of AL and ALA.

Instructional Dimensions	Action Learning	Action Learning Activities
Setting	Workplace	Workplace
Feedback Source	Coach, Peers	Self, Peers, Situation
Risk	Moderate	Low - Moderate
Instructional Costs	Moderate	Low
Instructional control	Low	Moderate
Institutional Commitment	Moderate	Low
Job Performance Value	High	Moderate - High

In many cases, the strengths of the AL approach are also its limitations. For instance, most of the learning in an AL set is contextual and situational . . . by design. As such it enforces a trade off between general knowledge that lacks applicability to a particular situation and particular knowledge that works in that situation but which does not transfer to other situations or problems (Beaty, Lawson, Bourner, & O’Hara, 1997). Real problems and decisions can also take a long time to “prove out” and may require expert feedback, which can limit repetition and reinforcement.

Action learning is a highly regarded method of workplace learning and hundreds of implementations have been reported in practitioner and academic journals (Cho & Egan, 2010). AL also has limitations, as revealed in a series of articles in *Education + Training* that invited veteran action learning facilitators to “interrogate” their experiences, much as the AL methodology entails, in

order to identify conditions that are not conducive to successful action learning interventions (Bourner, Beaty, Lawson, & O’Hara, 1996):

- Requires considerable commitment from participants and their organizations and fails when the commitment flags.
- Requires trust and cooperation among participants who sometimes see other participants as competitors or who are reluctant to show any weaknesses to colleagues.
- Can degenerate into “support group” interactions with some participants.
- Can easily become overbalanced toward the solving of workplace problems (action) at the expense of the deeper, reflective learning that is the primary intent.
- Assumes that all members have the authority to act on decisions and plans.

These limitations help define the boundaries of action learning, and to position ALAs as an alternative or supplementary approach to workplace-based learning. ALAs address many of the boundary limitations of classic action learning.

Action Learning Activities (ALAs)

ALAs are a form of AL in that they are based on authentic workplace situations. However, ALAs are structured to facilitate self-guided interrogation of personal or observed workplace experiences rather than requiring a formal group process. ALAs should:

- Be based on everyday job performance,
- Not impinge upon performance of the actual job task,
- Offer varied repetitions with timely feedback, and
- Not require expert judgment for feedback.

We describe seven action learning activities that meet these criteria, some of which are already done by many performers but in less structured ways: Estimating, Experimenting, Extrapolating, Explaining, Examining, Exchanging, and Expert Coaching:

Estimating the time or other resources that it will take to complete tasks (by self and by others), as well as predicting the likelihood of positive or negative task outcomes, attunes performers to

environmental and human factors in the performance domain. The activity involves committing estimates to writing up front, then checking estimates against outcomes and reconciling differences. While estimating required time and resources is an important skill in many professional and business jobs, e.g., those that involve writing proposals and budgets, estimation activities also provide a way to improve awareness of the interrelated elements in a work environment.

The design of an estimating activity was illustrated in a workshop on intuitive decision-making conducted for the U. S. Marines (Klein, 2003). Rifle squad leaders at first claimed that they did not make decisions but only executed decisions made further up the chain of command. When prompted to make a list of routine logistic decisions, however, they came up with more than thirty. One was the need to estimate the length of time that it would take to move their squad, by foot, from one position to another.

Although a rule-of-thumb is available (2.5 kilometers per hour), the actual duration of troop movements clearly depends upon terrain, weather, presence of enemy forces, and a host of other factors. Thus the judgment was fairly difficult. Yet, despite its importance and difficulty, they never practiced making the judgment. And it was easy for them to practice. The Marine squad leaders simply needed to note an estimated duration for a planned troop movement and then compare it with the actual time after the maneuver (see Table 2). They could get immediate feedback and also engage in diagnosis to see what they had missed if their estimate was off. With enough repetitions, the Marine squad leaders could build their speed in moving a unit, and also their intuitive feel for time-distance relationships.

Table 2. Estimation ALA chart.

Instance	Focus	Estimate	Actual	Discrepancy
Non-combat, 20-man armor	Time	2.5 hrs	3.75 hrs	Road breaks slowed armor. Should have seen in aerials.

The troop movement estimation activity is a good example of an ALA because it builds tacit

knowledge, it is easily superimposed on routine job performance, and feedback is timely and unambiguous. Having the Marine squad leaders estimate the duration of other squad leaders' maneuvers at the same time as they estimate their own maneuvers can increase repetition and variety.

Experimenting with different strategies to improve performance of an already mastered task can lead to discovering internal and external resources. Schank (2009) maintains that experimenting is “probably the most important learning process we engage in.” Performers try a new way of doing something and, upon seeing the results, adopt the new way, reject it, or adapt it and try again. Schön (1983) describes experimenting as essential to developing reflection-in-action and describes three kinds of reflection-in-action experiments. “When action is undertaken only to see what follows, without accompanying predictions or expectations, I call it exploratory experiment . . . the probing, playful activity by which we get a feel for things” (p. 145).

Move-testing experiments involve a performer taking an action in order to produce an intended change. The move is affirmed or it is negated based on if it achieves the intended change and any unanticipated side-effect changes. A third kind of reflection-in-action experiment is hypothesis testing in which a performer tries out and compares competing hypotheses.

Extrapolating involves vicarious learning by applying cause-effect relations observed from previous incidents, perhaps with other people, to current challenges. It can consist of watching for “nervous” points during a routine job activity, for instance a sales presentation, and imagining how circumstances could have escalated to cause a total failure. Perhaps the customer showed displeasure at a slide criticizing a competitor’s product. What might have caused the reaction and what might lead to the customer abruptly ending the meeting? Extrapolating is a way to generate more of the surprises that lead to reflection, and the failures that lead to the most intense—and therefore most valuable—reflective learning experiences.

Some domains that feature high risk/low frequency incidents maintain databases of near-miss incidents

to instigate just such heightened learning. Air traffic controllers and airline pilots log thousands of incident-free hours but also experience near misses regularly and are encouraged to report them, anonymously to the Aviation Safety Reporting System (<http://asrs.arc.nasa.gov/>) database that “captures confidential reports, analyzes the resulting aviation safety data, and disseminates vital information to the aviation community.” Similarly, the National Firefighter Near-Miss Reporting System (<http://firefightersnearmiss.com>) collects and disseminates descriptions of incidents for the benefit of the community. The imagining aspect of extrapolating is somewhat similar to the pre-mortem exercise in which job teams, either in training or on the job, are tasked to imagine that a plan has failed completely then to consider how the failure happened (Klein, 2003). Again, the specter of failure—real or imagined—can heighten learning.

Explaining, as with after-action review, is a way to leverage today’s task for tomorrow’s performance—not of the same mission, but of similar missions. Professional and business people who want to improve their performance and tacit knowledge routinely pursue explaining activities. In a group context, conducting a post mortem analysis of a meeting or a sales presentation has clear value. It is (or should be) done naturally in the course of job performance and is intended to improve future performance on similar job tasks. Explaining activities can be engaged in whenever there has been an unexpected outcome in the workplace, either experienced directly or observed.

Examining is the fundamental act of observing using a predetermined lens. For example, an American business person who wants to conduct business in an unfamiliar culture—and being aware that Americans are sometimes thought of as abrupt or rude—might focus specifically on how business people in that culture transition from social small talk into business talk. This ALA challenges performers to figure out what to observe in order to model or imitate people who are more proficient.

Exchanging involves small groups of performers comparing notes, experiences, frustrations, and lessons learned from shared or similar experiences. Exchanging is a less formal version of the peer

interrogation that is central to action learning. Exchanging is clearly facilitated by Internet-based communications tools such as discussion forums and social networks; performers connecting with distributed colleagues in an organization or in a profession. Exchanging becomes an ALA when it is used to systematically cultivate tacit knowledge.

Expert coaching refers to the cultivation of a dialog between highly skilled performers and people who are new on the job or are still improving their skills. This dialog can reveal tacit knowledge that is often under-acknowledged in work-related communication. Expert coaching can be improved by using other ALAs to help structure communication between performers and coaches. For instance, Klein (2003) has described an incident in which an ambitious firefighter made it a practice to try to anticipate what his commander would decide. When he got it wrong, when the commander chose a different course of action, the firefighter would question the commander about his rationale after they returned to the fire station. He used the interstitial space of the post-operation period at the fire station to get expert coaching, to learn from an expert about a specific, context-bound decision. The young firefighter was able to unpack the expert’s tacit knowledge rather than the abstract response typically elicited by a general question.

Implementing an ALA Program

Our list of ALAs is by no means comprehensive as we expect that others can and should create ALAs, which don’t need to start with the letter *e*. They do need to illustrate the operational principles of action learning activities: Superimposing directed learning activities onto real work activities in order to develop domain-specific tacit knowledge, but without adding substantial training time.

Recommendations for Implementing ALAs

While we are not presenting a fully developed ALA program, we do have several observations to offer to individual professional and business performers who are interested in implementing ALAs. Although the approach is appropriate for senior-level performers, it is especially helpful for middle-level and new employees who may not have the authority to act but who do have the opportunity to “stock in”

domain-specific tacit knowledge that may help them gain intuitive expertise more quickly when re-assigned or promoted within the same domain.

While ALAs are designed to be implemented by individual performers, sustaining any self-improvement program is greatly enhanced by participating with others. Even if not in formal action learning groups, colleagues can share insights generated by ALAs--a process certainly facilitated by web-based communication and community building. The development of individual performers can also benefit an entire organization, as Senge (1990) notes in describing personal mastery as one of five features of a learning organization. Such a learning organization would be expected to allow and even facilitate ALA programs for performers at many levels and assignments in the organization

We recommend that individual performers start an ALA program by selecting or creating one or two ALAs that target an area of personal concern but have relatively low criticality, such as giving presentations at meetings. Organizations, companies, business domains, and academic disciplines often have particular "cultural" norms related to presentations that are completely tacit. A media-rich PowerPoint slide set may suggest professionalism in one domain but pretentiousness in another. In addition, presentation norms may change within a domain based on the status of the presenter.

Performers who want to increase their tacit knowledge related to presentations could start by examining other peoples' presentations using a predetermined lens, such as Guy Kawasaki's 10-20-30 rule (no more than 10 slides in no more than 20 minutes with no text smaller than 30-points). They can find out how many slides a presenter has prepared and then estimate, in writing, how far the presenter will progress through the slides before reaching the panic point and rushing through the remaining slides. When viewing a presentation by somebody else performers should become attuned to their own emotional responses, noting any places in a presentation where they feel "nervous" for the presenter and latter extrapolating from that moment to imagine a catastrophic failure such as audience members arguing out loud or leaving the room. When performers are themselves presenting familiar

content or slides they can use the opportunity for experimenting with adding humor or with putting the most important slide first (thereby assuring that it is not rushed through at the end) ... or even presenting with no slides at all!

While "death by PowerPoint" is a familiar and low stakes area to practice building tacit knowledge, the same ALAs can also be used to accelerate the acquisition of domain-specific tacit knowledge in much higher stakes settings such as military security patrols in civilian areas. Performers should carefully consider with experts and colleagues what intuitive decisions and judgments must be made, which should suggest the supporting tacit knowledge to be targeted for ALAs.

Challenges of Implementing an ALA Program

The primary challenge in starting and sustaining an ALA program is finding a place for ALAs within individual performers' jobs and organizational structures. An organization seeking to implement ALAs needs to start by identifying ALA opportunities that are likely to yield quick success. If performers are able to observe an increase in their own tacit knowledge after engaging in ALAs then they are more likely to persist. If others observe increased tacit knowledge in peers who engage in ALAs then they are more likely to try it themselves. If senior executives see an increase in individuals' tacit knowledge and intuitive decision-making then ALA programs can potentially proliferate in and between organizations.

In summary, we believe that ALAs represent a novel approach to amplifying the domain-specific tacit knowledge that working professional and business people can extract from their routine job situations. Whether in a current position or when reassigned or promoted within the same domain, a "stocked in" corpus of domain-specific tacit knowledge should help performers to accelerate their progression to intuitive expertise.

AUTHOR NOTES

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