Business Horizons (2019) 62, 741—750

Available online at www.sciencedirect.com

ScienceDirect

KELLEY SCHOOL OF BUSINESS
INDIANA UNIVERSITY
www.journals.elsevier.com/business-horizons

Team challenges: Is artificial intelligence the solution?

Sheila Simsarian Webber [a,*], Jodi Detjen [a], Tammy L. MacLean [a], Dominic Thomas [b]

[a] Sawyer Business School, Suffolk University, 73 Tremont Street, Boston, MA 02108, U.S.A.
[b] Kennesaw State University, Kennesaw, GA 30144, U.S.A.

KEYWORDS
4-D teams;
Effective teams;
Team-building tools;
Teaming;
Artificial intelligence;
Team performance

Abstract Artificial intelligence (AI) is emerging as a potential growth area for facilitating the improvement and development of teams in the workplace. AI, as used in the team context, is currently underdeveloped and limited, thus reducing the wide-scale adoption and implementation of AI to improve team effectiveness. The use of AI to provide team diagnostics and improvements represents a significant shift in the approach organizations currently use to facilitate and strengthen effective teamwork. We describe the challenges involved in developing team effectiveness in organizations and the potential application of AI to improve teamwork. Further, we report on our experiences using AI in business school student project teams, the important advantages and disadvantages that emerged from this, and insights for future consideration when adopting and implementing AI in the workplace. Based on our use of AI and our experience training high-performing teams, we propose a multistep process for analyzing and improving teams in organizations.

1. Increasing the effectiveness of teams

The concept of teamwork is growing at a rapid pace, facilitating the improvement of organizations as it offers the primary means for achieving innovative, complex change efforts. Highlighted by major teamwork research efforts in organizations such as Google and Mayo Clinic, tools and techniques for improving and developing teams are increasingly important (Berry & Beckham, 2014; Duhigg, 2016). Organizations are encountering tighter deadlines and increased turbulence in their markets, driving them to form more teams with complex challenges for improving teamwork such as distributed membership, shorter spans of working together, or including members from multiple organizations with no prior history of collaboration. Expertise specialization and increasingly complex problems (Gardner, 2017) are

* Corresponding author
E-mail addresses: swebber@suffolk.edu (S.S. Webber), jdetjen@suffolk.edu (J. Detjen), tmaclean@suffolk.edu (T.L. MacLean), dthom310@kennesaw.edu (D. Thomas)

https://doi.org/10.1016/j.bushor.2019.07.007
0007-6813/

driving the need for teams and collaboration; globalization and advanced communication technologies are changing the context in which these teams function. While traditional teams involve a relatively unchanging set of members working interdependently toward a common purpose, contextual pressures catalyzed an evolution of how teams work. As opposed to the traditional team model, today's teams are known as 4-D teams: diverse, digital, dispersed, and dynamic (Haas & Mortensen, 2016). Rather than team as a noun, organizations are using the verb *teaming* (Edmondson, 2012) to describe teams with fluid membership that changes as project specs change and the resource needs of the team change. However, despite the expansion in the use of teams across industries and contexts, organizations are utilizing only limited strategies for increasing the effectiveness of teams and developing team processes for optimal performance.

Artificial intelligence (AI) enables computer systems to learn and make recommendations based on complex knowledge bases. AI is emerging as a potential growth area for facilitating the improvement and development of teams in the workplace, particularly for those teams that stress the stable boundaries of traditional teams—those with dynamic and geographically dispersed members, shifting priorities, and challenging timelines. These nontraditional teams require particular attention in the build and launch—and even relaunch—phases for high performance. AI can provide a foundation for gathering important team information, identifying areas of strength and weakness within the team, and providing diagnostic tools to help leverage both. However, researchers and practitioners have limited experience using AI in the team context, in part because of concerns regarding the required time and investment. In short, wide-scale adoption of AI to improve team effectiveness has been slow.

We describe emerging teamwork challenges in organizations and discuss the potential of AI to address these challenges based on our use of AI in student project teams. During this study, we applied an AI-enabled tool with undergraduate and graduate students in an attempt to facilitate effective teamwork. We found important advantages and disadvantages for future consideration as AI is adopted and implemented in the workplace.

2. Team success factors: Build and launch

The changing nature of the business environment—including the increased use of teams that are virtual, global, and involve continuous membership changes—is a constant in organizations. This evolution in how teams operate created an imperative for team leaders to focus on two crucial moments in the team's life when their choices and decisions have a significant impact: building the team and launching the team for a new project initiative (Webber & Webber, 2015). Often referred to as the conditions that create effective teams, Richard Hackman consistently referenced a variety of factors that, when present during building and launching, have important implications for the team's success and have demonstrated a general and positive impact on the team. Four of these conditions include (Hackman, 2012, p. 436):

- The team has a compelling direction or purpose;
- The team has clear norms of member conduct;
- The organizational context supports rather than impedes teamwork; and
- The team has access to competent team-focused coaching.

Building and designing the team—including the what, who, when, and how of the team (Bernstein, 2013)—received extensive attention in practice and research due to the critical impact on long-term success. Attending to team composition elements such as personality, values similarities and differences, and team diversity has significant implications for team success (Humphrey, Hollenbeck, Mayer, & Ilgen, 2007; Randall, Resick, & DeChurch, 2011; Fisher, Bell, Dierdorff, & Belohlav, 2012). In addition, the use of a high-quality team charter to define team roles and responsibilities as well as behavioral norms positively impact team performance (Mathieu & Rapp, 2009). Surprisingly, easy to use tools that enable team leaders and team members to understand their team composition and use this information for an effective team launch remain limited. Typically, teams rely on large human resource offices to provide this material or are unaware of these options that drive team effectiveness.

Team launch (i.e., how the team kicks off its project) should accomplish the following important results: a common understanding of the team's purpose, clarity around resources and deliverables, and a shared vision for how the team will work together (Webber & Webber, 2015). Team launch provides the foundation for a swift team takeoff and reduces the opportunity for

constraints to emerge that have traditionally affected team effectiveness. How leaders and team members conduct the launch remains an important question for many organizations. Teams typically have few resources or background knowledge in team dynamics to determine effective launch strategies. In fact, many organizational teams we worked with lack fundamental knowledge and skills to achieve a successful launch. In some cases, they fail to implement any launch approach; in other cases, they fail to plan effectively for a launch meeting. Yet, the early stages of teams remain critical for longer-term success (Mathieu, Hollenbeck, van Knippenberg, & Ilgen, 2017).

After building and launching, a second opportunity for team development emerges during teamwork when leaders shift roles from team architects to team coaches (Bernstein, 2013) and can conduct improvement interventions (Gersick, 1988). Marks and colleagues defined team processes as "members' interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals" (Marks, Mathieu, & Zaccaro, 2001, p. 357). These team processes include transitional, interpersonal, and action-oriented elements of teamwork that help define how the team communicates, makes decisions, navigates conflict, and exercises influence. Teams that have better processes are more effective and demonstrate stronger team performance. Focusing on after-action reviews, analyzing previous performance, and developing strategies for the future improve team processes and subsequent performance (Thomas & Bostrom, 2010; Villado & Arthur, 2013; Mathieu et al., 2017).

Surprisingly, many team leaders and team members are ill-equipped to implement team performance reviews and improvement interventions to enhance team performance. Leaders are too consumed by the project goals, lack the training and tools, or lack the organizational imperative to spend time on team improvement. In these cases, ineffective team processes are repeated, teams fail to improve, and team members' dissatisfaction grows. Across a series of interviews with human resource professionals and talent managers across industries ranging from banks to global high technology firms, the lack of a systematic team effectiveness process is prevalent. In one large medical organization, the human resources department is reactive, helping teams that already are struggling by using assessment tools to diagnose problems and coaching teams to initiate improvements. Two additional organizations also use a reactive approach to helping failing teams by applying the five dysfunctions of a team diagnostic and team improvement process (Lencioni, 2002) as a one-time intervention, yet lack a systematic implementation of this teamwork tool. Our interviews show that larger human resource groups may intervene to coach struggling teams if they are aware of needs. Rarely have we seen team effectiveness evaluated or managed systematically. Without effective diagnostic tools, leaders and team members often infer conclusions about team issues and challenges and provide generic strategies for team improvement.

3. Team improvement interventions

Team building is the most common intervention in organizations focused on enhancing team processes and impacting team outcomes (Klein et al., 2009). Reviews on the effectiveness of team building demonstrate that the goal-setting and role-clarification components of team building are effective for improving teams and that team building positively affects both team processes and effectiveness. Organizations have used team building and team training opportunities as a primary tool for enhancing team communication and coordination. Ineffective team-building initiatives often are driven by the one-time nature of team-building activities and the lack of transfer back to the work team environment (Mathieu et al., 2017). One human resource manager we interviewed discussed the use of a one-day workshop for assessing and developing teamwork skills but also cited the lack of a systematic proactive approach to implementing effective teamwork development at her organization.

Solutions such as feedback meetings for team improvement are important for the improvement of self-managed groups and for team member attitudes but are often difficult to implement (Druskat & Wolff, 1999). Marks and colleagues demonstrated that training team members to interact effectively in a team environment positively impacted shared mental models and team performance (Marks et al., 2001). However, team leaders and members often lack objective and regular team feedback information to identify specific areas for improvement and instead focus on areas that emerge across multiple teams using a

general team-training model. In a few cases, we worked with organizations that facilitated team feedback and coaching workshops as well as leveraging the use of internal employee engagement surveys to understand communication, collaboration, and trust for struggling teams. Team training interventions would be more effective if they were systematized across the organization and targeted at specific team processes known to be critical for improvement by the team members. Tools and techniques for targeting specific team interventions remain difficult to implement and achieve success. Managers considering the use of team building should evaluate the areas that are critical components for development and target team building to these specific areas (Klein et al., 2009).

4. Artificial intelligence and teams

Workplace AI has to date focused on standardized and routine decisions; however, the future of AI is expected to influence human leadership decision making (Parry, Cohen, & Bhattacharya, 2016; Kaplan & Haenlein, 2019). Current research and analysis of the use of AI have largely ignored the possible benefits and risks of its use in contexts that require the integration of empirical facts with subjective analysis and reflection. In fact, only limited research was uncovered in the research management journals addressing the use of AI in the leadership decision-making domain; therefore, the use of AI in the context of improving teams remains in its infancy (Parry et al., 2016). AI has the potential to enhance team leaders' and members' ability to effectively develop and improve teamwork, yet its applicability may be limited due to the unique nature of team dynamics and the varied contexts in which teams perform.

4.1. AI for teams: A practical application

We experimented with an AI tool designed to improve teamwork in both the build and launch as well as during the team process phases. The tool works by asking team members to complete a brief survey using a mobile-enabled bot. The bot uses AI to provide suggestions for targeted team improvement based on individual and team answers. We used this tool with MBA and undergraduate senior-level student project teams during their semester-long team projects. Our selection of the AI tool was based on the perceived usefulness of the information and the ease of use consistent with the technology acceptance model (Venkatesh & Davis, 2000). This AI tool intervened in two phases. In the first phase, the bot asked easy-to-complete questions designed to engage team members early in the life of the team with diagnostic questions about their own values and personality. This information was then summarized and pushed to team members through an interactive interface that the team could easily access with minimal support from the professor. All team members had equal access to the summary material and could view this information during team meetings or outside of the team meeting process. We encouraged teams to review their own values and personality as well as the team values and personality and to engage in a discussion of the results as part of their team launch.

The second phase of the AI tool intervention occurred at the halfway point for the life of the team. The AI bot asked team members to complete a team diagnostic survey (i.e., a set of questions about their teamwork up until that point). After 75% of the team members completed the questionnaire through the bot interface on a smartphone or computer, team members received a customized and interactive summary of their team along different dimensions of effective teamwork such as how well they were managing conflict and making decisions. Clicks on each of the dimensions provided additional details on the strengths and areas for improvement for the team. In addition, the bot provided team members with computer links to recommended tools for team development based on the diagnostics performed on the team's unique responses to the survey on teamwork. We experimented with various proactive and structured approaches to integrating the AI tool effectively. For example, in the MBA teams across multiple course sections, we utilized a proactively structured approach. We encouraged teams to integrate a discussion of the team diagnostic into their team meeting following receipt of the report and to select and use one of the team-building tools recommended by the bot to develop the area it identified as needing improvement. In the senior-level undergraduate student project teams, we provided coaches from a local university volunteer coach development program. The coaches were provided with the team diagnostic reports and facilitated the use of team-building tools from the AI tool for each team. Next, we

discuss our experience guiding teams in the use of the AI tool and both their and our reactions to using the AI tool for improving teamwork.

4.2. Benefits of using artificial intelligence for team effectiveness

Our goal was to utilize AI to improve teamwork by first focusing on the launch phase of the team experience as a critical area of focus for achieving improved teamwork. We understood and expected that an effective AI system could simplify and automate the needed accuracy and appropriate timing of launch phase team development. In addition, we specifically attempted to intervene with team processes during the middle or midpoint of the team's work with a focused approach that provided specific feedback to the team on strengths and areas for improvement. Our approach provided (1) unique feedback to each team on their specific and unique areas for improvement and (2) tailored tools for each team to make improvements in that specific area. By contrast, existing works and solutions for team interventions and team building often offer a one-size-fits-all approach for improving teamwork due to the high costs of customization. Even our own consulting work typically focuses on general process improvement training to fit all teams without considering a specific diagnostic targeting a focus area for development. Our expectation was that this customized approach afforded by the AI tool allowing each team to gain unique and specific feedback tailored to their own team dynamics would be more beneficial than a one-size-fits-all set of recommendations. Based on our use of AI with teams, we found the following key areas as benefits of using the AI-enabled tool to improve teams:

- User-friendly AI tools are easy for team members to complete immediately and get results directly on their mobile devices. The immediate nature of the results is consistent with how users, particularly millennials, prefer to obtain information.

- AI tools appeal to the younger generation of employees dominating the workplace and populating teams across organizations. As this next generation enters the workplace, this offers an emerging opportunity for use with teams across organizations.

- When easy to use, teams find the AI tools fun. This fun factor facilitates team discussions that otherwise may feel awkward, stilted, or uncomfortable. For example, in one of our classes, when the senior level undergraduate student teams formulated their norms using the personality and values assessments as a basis, the volume of discussion went up, laughter increased, and the students did not want to leave when the class ended. It enabled the teams to start working together positively while establishing clear working norms.

- AI tools allow team members and leaders to target specific areas for improvement that can have an immediate impact. The AI tool provides anonymous summary results based on the team overall, allowing team members to provide candid information for the focus areas of the team. For example, one team experienced a misalignment on the value of achievement. The AI assessment pointed out this area of potential conflict so that the team could discuss and define what members meant by achievement and decide how to overcome the mismatch.

- AI tools offer the opportunity to create tailored and specific interventions that enable teams to address their challenge area directly. Our AI tool provided specific exercises for the area in which a team was struggling. We utilized different approaches to implementing these midpoint suggestions. For example, in our undergraduate teams, the coach/facilitator helped walk the team through their specific area for development and implemented the exercise to facilitate team improvement. Access to a tailored, specific recommendation and follow-up options enabled this opportunity for teams to work to improve their teamwork quickly and accurately.

- AI tools more efficiently leverage team leaders and/or instructor facilitators. It is difficult for team leaders and/or instructor facilitators to find the time to help teams manage their conflicts and miscommunications. With the AI tool we used, instructor facilitators could work across teams trusting the accuracy of the analysis rather than with only one team at a time. Team leaders can foster more team empowerment such that the team can start to work on its challenges before engaging the team leader. In addition, the AI tool can effectively gather feedback about team performance and give the team leaders/instructor facilitators the appropriate exercises to use. AI enables instructor

facilitators to have sufficient information and data to work efficiently with multiple teams.

4.3. Challenges of using artificial intelligence for team effectiveness

Using AI at multiple points during the life of the team appears to provide a key benefit and an important approach to facilitating improvements for teams throughout their work. AI can offer a customized, tailored set of materials for a team to analyze itself, exclusively focused on their own unique team dynamic and processes. With the tool we employed, this information was available for all team members through the AI tool and offered detailed analysis for different components of team dynamics. Given that team members often express concern and even complain about how their team is working together and how other team members' behaviors are negatively impacting project outcomes, we expected the AI tool to be beneficial to teams and to improve their teaming experience. However, using the AI tool generated its own unique challenges for team members consistent with the technology acceptance model regarding ease of use, the usefulness of the information for the teams, and the facilitation of the AI tool in the team context. Next, we discuss our observations of the somewhat surprising issues teams encountered and expressed using the AI tool, as well as some direct feedback from team members regarding the use of the AI tool for improving their teamwork:

- Team members expected the AI tool quality to be similar to or better than the video games and other interactive technology they utilize in other aspects of their lives. The expectation of users regarding the quality, ease of use, and output was extremely high. When using the AI tool was even slightly challenging, team members expressed frustration and demonstrated very little patience with the tool. As soon as they ran into a single problem, such as a login error or the need to make two or three clicks, many gave up rather than persist, persevere, and problem solve. Expectations for the quality of the technological interaction were extremely high, with very little wiggle room and patience for figuring it out.

- The ability to see micro details in team diagnostics had limited appeal for team members focused on getting their project completed, and may even be a distraction. The AI tool we adopted provided extensive details that were often irrelevant and reduced the impact of the information. The ability of the technology to generate extensive detail and analysis actually reduced the interest of team members in the use of AI to improve their teamwork. Although we experienced this within the classroom environment, our experience working with and training teams suggests that teams in the workplace are similarly distracted by deadlines; as such, it is necessary to focus the results on specific aspects that are known to be levers for improvement. Providing excessive detail and analysis not directly related to the team project creates more team problems than it solves.

- Users expected the targeted interventions suggested by the AI tool to be explicitly and directly tailored to their team's experience. When they received an intervention that felt somewhat generic or could be applied to any team, their desire to try out the intervention was greatly reduced. Generic team exercises that could be applied in any setting and to any team were perceived as not having value and not helpful to the team. Thus, having many exercises from the AI tool actually reduced their value and was viewed by teams as additional work rather than an improvement intervention.

- Teams typically want to resolve conflicts and strengthen performance. A few graduate-level student teams encountered major conflict and trust issues during their teamwork. The midpoint diagnostic showed these issues but was not helpful in providing teams the necessary tools to reach a resolution. Each required an experienced coaching intervention. AI will not likely replace this type of intervention because the level of honest and open communication and development of trust required to resolve conflict is innately human.

4.4. Looking forward: Using existing tools or artificial intelligence to improve teams

Technological advances through AI are opening new avenues for facilitating the improvement of team functioning and performance. Our experience suggests that an AI tool can empower team leaders and team members to engage in team analysis and identification of areas for improvement. Further, AI tools can provide teams with customized interactive results, the necessary resources for interpretation, and tools for development based on input from the team. However,

current AI tools largely are focused on chatbots and enabling automated answers to basic questions using company data sources. In addition, many people remain resistant to using technology in cases that may provide concrete information on weaknesses and challenges, particularly in organizational cultures that drive perfection and high performance.

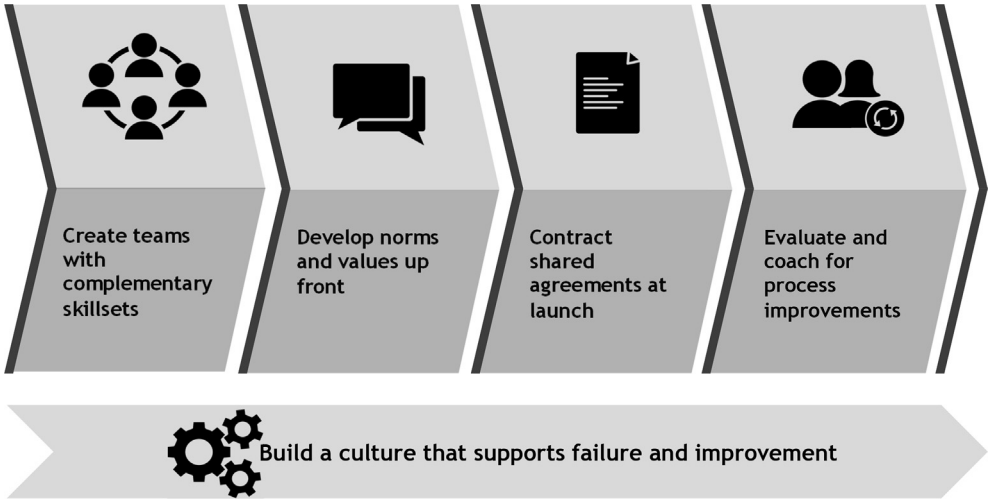
AI is still in its infancy in the areas of leadership and teams. Our experience does not induce that AI currently improves team performance beyond non-AI easily available tools. For example, teams using the AI tool did not perform more effectively than teams not required to use the tool. AI assists but does not yet solve the challenge of team members' resistance to spending time focusing on team development versus time spent being productive and working toward team goals and deliverables. Until artificial intelligence for team improvement develops to the point of addressing the challenges and resistance we encountered, we recommend that organizations experiment with emerging AI options, but continue to leverage existing, non-AI team improvement approaches. Next, we have outlined a step-by-step process for improving teams based on research as well as our work with organizational and student teams (Figure 1):

1. Create teams with complementary skillsets to ensure that the team has the required available capabilities. Simple online survey tools provide information on team members based on categories such as big-picture thinking, detailed thinking, and commitment. These tools then form the team based on a ranking of the criteria determined by the leader. Existing and established tools such as this enable an easy technological approach to building the most effective team.

2. At the start of a team, team members are typically positive, motivated, and excited. Therefore, a simple diagnostic tool that provides specific details about team member preferences for team norms and values enables team-forming discussions that are specific and helpful in establishing team expectations, purpose, and culture. For example, the exercise can be set up like this: (1) individually list the values that you have about teamwork; (2) go around the team and share the values, noting similarities and differences; (3) create group consensus around values necessary for this team and discuss what these look like in practice; and (4) identify areas of potential conflict and discuss how these might be addressed. Utilizing this step becomes increasingly important for teams that are virtual, crossfunctional, multicultural, multigenerational, temporary, or otherwise complex.

3. At the launch of the team, use a team contract approach (see Appendix) to enable the team to have a conversation about how decisions are made, roles and responsibilities, and conflict management. These types of conversations can

Figure 1. Five-step model for improving team effectiveness



be systematized more easily with a standard team contract and do not require extensive facilitation.

4. Making team improvements during the life of the team typically requires a high level of skill and facilitation to focus the team and help team members understand the improvement areas. There are multiple tools and guidelines available that can provide information and direction for teams to have these conversations. We recommend selecting an existing diagnostic tool and conducting a midterm evaluation that team members use to assess their team processes and performance. Leaders can then share the results with the team and engage in a meaningful conversation regarding areas of strength and areas for improvement. Coaches or experienced managers play a critical role in facilitating team interventions for improvements. Team leaders often do not have the necessary skills to achieve success with these types of team interventions. Providing team leaders with coaching skills, training future leaders, and providing skilled facilitators to implement team diagnostics and feedback improvement meetings are crucial for improving and sustaining team effectiveness in organizations.

5. Build an organizational culture that supports failure and process improvements. Encourage teams to welcome challenges and obstacles to their team performance. The culture of the organization provides the framework for leaders to take action and offer recognition for improvement initiatives. The first step in team improvement is building and sustaining a wider organizational culture that welcomes risk, failure, and improvement. Developing team policies and incentives to support team leaders ultimately increases the use of team improvement tools.

AI does not solve team performance issues. Over time, we believe AI-enabled team development tools will become more accurate and effective as they learn to target analysis and advice more effectively. The AI tool we employed in its current state may be useful for gathering information and fostering conversations about the diagnostic instruments. However, the multiple non-AI tools available for team diagnostics are equally effective. Leadership training and team training are needed to build an organizational culture and environment that foster a process for teamwork and continuous improvement. Using existing and established tools that are easy to implement and analyze can provide a more effective approach to improving team performance.

5. AI is not a replacement for human facilitation

AI is in its infancy in the area of leadership and teams and will continue to expand and improve, potentially offering a significant opportunity for the future of teamwork. Currently, AI in the team context is limited and underdeveloped, reducing its ability to have a substantive impact and thus reducing the likelihood of wide-scale adoption for improving team effectiveness. Our work with AI in a team context provides insights into the typical challenges facing teams using AI as well as the possible benefits. Humans adopting AI in the workplace are increasingly demanding of the technology and the need for immediate and sophisticated results. Lack of tolerance for technical issues and interest in learning new technological tools such as AI is hindering the desire and need for AI to be effective for team development. Further, based on our experience using AI in business school student project teams, we believe that already available non-AI tools and diagnostic instruments can be used to achieve the same goals as AI. Before organizations expend resources and training to learn AI platforms for improving teamwork, we recommend investing in important leadership training to improve the coaching and facilitation skills of team leaders and managers. Tools and diagnostic instruments provide a framework and data for conversations; however, the important work for teams occurs in the dialogue and exchange of ideas between team members, team leaders, managers, and coaches within the team environment. Trained coaches are necessary to engage team members in constructive dialogue and chart strategies to address and improve teamwork challenges. AI tools are not a replacement for the human facilitation and coaching necessary to solve teamwork challenges and improve the functioning of teams across organizational settings.

Appendix: Team contract

Team Goal: *What does the team hope to accomplish? What's your compelling direction? Where are you going together?*

What: Strengths, Goals, Resources

Name	*Strengths/Skills*[1]	*Personal Goals*

Resources: *Who or what else do we need to accomplish our goals?*

How: Tasks, Cooperation

Tasks: *How will we allocate tasks? How will we ensure everyone contributes equally? How will we collaborate?*

Team cooperation: *How will we foster cooperation within the team? What level of team interaction do we need? How will we meet (e.g., F2F, virtual)?*

Performance Norms and Ground Rules

Communication: *How will we communicate? How often? In what format? How will you ensure all voices are heard and no one dominates the conversation?*

Ground rules:*Meeting schedule, attendance, punctuality, meeting of deadlines, keeping team on track.*

Decision making: *How will we make decisions? How will we make sure we do not assume that people who do not speak up agree with our decisions?*

Quality of work: *What quality of work do you expect from each other? Excellent work? Average work? Define these terms.*

Conflict Management

Conflict: *How will we manage issues/conflicts that arise among members? What kind of conflicts have we faced on previous teams? How can we avoid or resolve these problems?*

At what point in a conflict do we agree we need to bring in a facilitator to help the team?

[1] Need to save space? Typical team skills/strengths/roles include: Project Manager (PM), Quality Controller (QC), Creative Thinker (CT), Big Picture Thinker (BPT), Detailed Thinker (DT), Problem Solver (PS), Innovator (I), Conflict Resolver (CR), Presenter (P), Writer (W), Client Relations Liaison (CRL), Technical Specialist (TS, related to core goal)

References

Bernstein, E. (2013, September). *Leadership and teaming (Background Note 414-033)*. Brighton, MA: Harvard Business School Publishing.

Berry, L., & Beckham, D. (2014). Team-based care at Mayo Clinic: A model for ACOs. *Journal of Healthcare Management, 59*(1), 9—13.

Druskat, V. U., & Wolff, S. B. (1999). Effects of timing of developmental peer appraisals in self-managing work groups. *Journal of Applied Psychology, 84*(1), 58—74.

Duhigg, C. (2016, February 25). What Google learned from its quest to build the perfect team. *New York Times Magazine*. Available at: https://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html

Edmondson, A. (2012). *Teaming: How organizations learn, innovate, and compete in the knowledge economy*. San Francisco, CA: Jossey-Bass.

Fisher, D. M., Bell, S. T., Dierdorff, E. C., & Belohlav, J. A. (2012). Facet personality and surface-level diversity as team mental model antecedents: Implications for implicit coordination. *Journal of Applied Psychology, 97*(4), 825—841.

Gardner, H. (2017). *Smart collaboration: How professionals and their firms succeed by breaking down silos*. Brighton, MA: Harvard Business School Press.

Gersick, C. J. G. (1988). Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal, 31*(1), 9—41.

Haas, M., & Mortensen, M. (2016). The secrets of great teamwork. *Harvard Business Review, 94*(6), 70—76.

Hackman, R. J. (2012). From causes to conditions in group research. *Journal of Organizational Behavior, 33*(3), 428—444.

Humphrey, S. E., Hollenbeck, J. R., Mayer, C. J., & Ilgen, D. R. (2007). Trait configurations in self-managed teams: A conceptual examination of the use of seeding for maximizing and minimizing trait variance in teams. *Journal of Applied Psychology, 92*(3), 885—892.

Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons, 62*(1), 15—25.

Klein, C., DiazGranados, D., Salas, E., Le, H., Burke, C. S., Lyons, R., & Goodwin, G. F. (2009). Does team building work? *Small Group Research, 40*(2), 181—222.

Lencioni, P. (2002). *The five dysfunctions of a team: A leadership fable*. San Francisco, CA: Jossey-Bass.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review, 26*(3), 356—376.

Mathieu, J. E., Hollenbeck, J. R., van Knippenberg, D., & Ilgen, D. R. (2017). A century of work teams in the *Journal of Applied Psychology*. *Journal of Applied Psychology, 102*(3), 452—467.

Mathieu, J. E., & Rapp, T. L. (2009). Laying the foundation for successful team performance trajectories: The roles of team charters and performance strategies. *Journal of Applied Psychology, 94*(1), 90—103.

Parry, K., Cohen, M., & Bhattacharya, S. (2016). Rise of the machines: A critical consideration of automated leadership decision making in organizations. *Group & Organization Management, 41*(5), 571—594.

Randall, K. R., Resick, C. J., & DeChurch, L. A. (2011). Building team adaptive capacity: The roles of sensegiving and team composition. *Journal of Applied Psychology, 96*(3), 525—540.

Thomas, D., & Bostrom, R. (2010). Vital signs for virtual teams: An empirically developed trigger model for technology adaptation interventions. *MIS Quarterly, 34*(1), 115—142.

Venkatesh, V., & Davis, F. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*(2), 186—204.

Villado, A. J., & Arthur, W., Jr. (2013). The comparative effect of subjective and objective after-action reviews on team performance on a complex task. *Journal of Applied Psychology, 98*(3), 514—528.

Webber, S. S., & Webber, D. S. (2015). Launching and leading intense teams. *Business Horizons, 58*(4), 449—457.