Effectively Leveraging Multidisciplinary Teams to Enhance I-O Interventions With Technology

Computers and information technology are becoming an essential aspect of the workplace, making it highly unlikely that there will ever be a return to traditional methods of conducting business (Mayhew, 2007). Technology that supports industrial-organizational (I-O) psychology research and interventions is continuously changing by the day. I-O clients not only want the research rigor built in these systems but advanced technology to administer or enhance the user (e.g., trainee or applicant) experience. For example, gone are the days of building a selection assessment with just an I-O psychologist who conducts a job analysis, writes the items, and gathers validity evidence. Technology solutions are becoming a necessary component of selection practices making it critical for other experts to be involved. These include mathematical modelers to develop the algorithms that drive the technology tool or system, a designer to build the user interface (i.e., the place where the person and the machine interact), and system engineers to build the software. Given these demands, it is becoming even more critical for I-O psychologists to communicate with individuals from technology and engineering disciplines in order to develop solutions that meet the client’s needs. Thus, I-O psychologists must learn to work with a variety of domain experts to develop and implement technology-driven solutions.

However, these multidisciplinary teams come with a set of challenges and barriers that must be met in order to be effective. Although both of us have had personal experiences working on multidisciplinary teams and encountered many said challenges, we know we
are not the only ones. I-O practitioners continue to bring the challenges of communicating with those in the technology field to the forefront of discussion at the annual SIOP conference (e.g., Illingworth, 2013; Locklear, 2012; Stehura, Dawson, Glass, Licht, & Ostber, 2012; Stehura, Otsberg, Killian, & Zimmer, 2013; Such, Kane, Klein, Owens & Stephens, 2012).

The fact is if we as I-O psychologists want our research applied appropriately within advanced technologies, then we must all learn to communicate effectively and work with others from very diverse disciplines. If we do, we can and will continue to improve the impact of I-O research and practice by leveraging others’ backgrounds and specialties to meet the needs of our organizations and customers. The goal of this quarter’s article is to provide an overview of the best practices for working in multidisciplinary teams (MDTs) in order to effectively apply I-O principles using human-centered technology. For this issue, we interviewed three experts who shared barriers that hinder MDT performance and their successes with effectively working in MDTs to achieve our field’s goals.

**Multidisciplinary Teams:**
**Benefits, Challenges, and Barriers**

Multidisciplinary teams come in all shapes and sizes. Practicing I-O psychologists are likely to work with many diverse experts from a range of fields including software developers, computer programmers, and human factors engineers. This is just a very short list of possible disciplines that are involved in technology development and those who can help incorporate our various I-O psychology research and initiatives within today’s technology solutions.

We interviewed Tara Kilcullen, director of Training Products at Raydon, who has been working on MDTs for over 12 years, to hear about her experiences. In her current role, she interacts with multiple teams that are building training simulators for military teams that include scenarios of varying levels of difficulty and performance measurement tracking systems that determine which of the scenarios will be presented to the trainee. When she is developing training technologies, she works with I-O psychologists to determine the best performance data to collect within the system and software engineers to develop the best method of streaming the data. By incorporating technology into the training process, organizations can quickly adapt the training to each specific trainee, something that is much more time consuming to do without technology.

Although there are many benefits of MDTs, there are also a number of barri-
ers that exist. For instance, every expert we spoke to mentioned that **miscommunication is extremely common** in MDTs and can lead to frustrations, conflict, and even poor performance. This is typically due to every discipline having its own language and approaches to technology development. Another common barrier we heard about is that team members tend to **lack a common vision for the project**. Often this can result from having team members who think about and approach problems differently based on the perspectives from their fields. Finally, **task and relationship conflicts** are even more typical on MDTs due to the lack of common languages and frequent misunderstandings. Conflict, if not managed correctly, can lead to less than average products and disrupted team performance.

**Tips to Work Effectively on MDT Teams**

Although we recognize these barriers can happen at any point, we have collected a number of suggestions and approaches for preventing them from happening. Below are tips we gathered from the literature, interviews with the experts, as well as our own experiences.

1. **Come Prepared by Doing Research**

Think about the time your senior leaders or boss scheduled a meeting to discuss a topic that you knew nothing about. You probably did your homework before the meeting, right? Well the same should be true of work teams. The fact is, when one begins working with an expert from a different domain, it always helps to **come prepared with an understanding of their background** and how he or she may approach the task. For example, you can read some mainstream journals or articles from their field to get a sense of the language and assumptions being made as well as their approach to framing questions. By taking the time up front to prepare for the discussion and bringing the right questions to the conversation, you can ensure that all team members are on the same page and less time is spent deconflicting terminology.

David Dworin, owner and managing consultant of **Dworin Consulting**, was another expert we interviewed. He has a master’s of science in Information with a specialization in Information Economics, Management, and Policy; a program that focuses on combining various disciplines such as information systems, statistics, computer programming, and management. He explains “many developers will work within the context of development frameworks and programming methodologies. Understanding those frameworks, the steps involved, and what the key questions are will help you to collaborate effectively and may also remove some of the uncertainty that comes with a MDT.”
Luckily, for us I-O psychologists, the field has developed a wealth of expertise and research on team effectiveness to rely on when participating in MDTs. Be sure to brush up on the team literature also to get a comprehensive understanding of what makes an effective team.

Our third expert we interviewed was Sae Schatz, chief scientist at MESH Solutions, LLC-A DSCI Company. She has a PhD in Modeling and Simulation (M&S) and teaches Human-Systems Integration (HSI). In her current role, she spends her days working with MDTs to translate research into products and develop training and education materials for government organizations. Schatz suggests that those working on MDT teams involving I-O psychology and technology should spend time reading the HSI literature. Schatz says that “HSI is a philosophy and set of processes that focus on systems-level human performance concerns throughout research, development, and implementation. Good HSI practice promotes several core principles, which can also aid MDTs. The four primary principles are (a) emphasize human performance issues early in the design process; (b) emphasize system-level outcomes (optimizing macro-level outcomes); (c) focus on life-cycle (not just immediate) costs and benefits; and (d) realistically facilitate multidisciplinary design processes. By leveraging these principles, Schatz has seen first-hand the benefits associated for MDTs (Nicholson & Schatz, 2012).

2. Get to Know Team Members on Both a Professional and Personal Level

It is important to constantly explain and inform those around you what your role is on the team. When team members understand each others’ roles it can help to improve the dynamic processes of teamwork on MDTs. Misunderstandings between team members are even more frequent on MDTs and lead to many frustrations. Team members need to talk to each other and understand what their coworkers expect from them.

Although it is important for all teams to build relationships, it is even more important for multi-disciplinary teams. Schatz says “once team members have established genuine rapport and trust with one another, then they can make real technical progress. Without that relationship building first, though, teams may encounter any number of issues, such as mistrust, poor communication, or misalignment of efforts.” Dworin states that one of the ways he has experienced success on a multidisciplinary team is to have “an in-person meeting early, with some time for business and some time that's purely social. This gives everyone a chance to get to know each other on a personal level, which makes it easier to work through the inevitable hiccups that come up during a project.”
Develop Explicit Norms, Shared Mental Models, and Agreements

Developing agreements and understandings from the beginning will make things a lot easier for everyone. When teams come together, they should establish structure and norms for how things should be done in the group, and it is important for all members to be a part of this process in order to move towards achieving their common goal and avoid conflict (Kozlowski & Bell, 2003).

In addition, Schatz highlights how important it is to ensure teams have a shared vision for success. In one of her recent efforts, she describes her approach to creating a shared vision. “We kicked-off the project by ‘painting a picture,’ through scenario-based descriptions and graphic sketches, of what the final system would look like. Once we developed that ‘story,’ we were able to individually contribute to its successful execution without widely deviating from each other. To help maintain the team-wide shared mental model, we also established periodic milestones that require collaborative inputs. For instance, team members might author a (multidisciplinary) paper or create a summary graphic. These activities might seem like a distraction from the immediate technical work, but they save time, long-term, by forcing team members to make their assumptions explicit and create interpretable, cross-disciplinary descriptions of project components.”

As we mentioned earlier, conflict on MDTs is very common, and task conflict can indeed lead to enhanced performance, but individuals on the team must believe that it is a safe place for interpersonal risk taking before the MDT team can benefit from this conflict (Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012). Members of MDTs must understand that others will not embarrass them or make fun of them if they don’t understand something. It has to be understood that it is ok to speak up and let a team member know when he or she is using technical jargon and is not understood.

“The most important thing is to always give people the benefit of the doubt. On an MDT, people are approaching the problem from different perspectives and may have fierce disagreements. If you get frustrated, take every comment in the best possible light and assume that people are trying to be helpful, not insult you personally. Each person on the team adds value and reflects a different discipline that may have research or practices that support the task at hand,” says Dworin.

Teams are dynamic and they form, change, mature, and evolve throughout their life cycle (Kozlowski & Bell, 2003). People leave and join teams at various times, thus it is important to consistently revisit these norms and shared expectations for behaviors within the team.
4. Clear Communication Is Key!

As we have learned over the years, all disciplines tend to speak their own language. Yes, that even includes us I-O psychologists! Being able to transcend language barriers is critical to MDT success; therefore, we all need to avoid using jargon.

Dworin says, “Jargon leads to people thinking they know what a word means because they’ve looked it up, or had it explained, but they’re missing the nuance practitioners ascribe to it. And even if some people on the team know what the word means and others don’t, you’ve just created an insider—outsider dynamic within the team that you want to avoid.” He suggests that team members should explain their ideas and thoughts as if they were telling it to their mother or to a high school student—someone with reasonable intelligence but who simply lacks the domain knowledge. Dworin says “When working with MDTs, it’s even more important to explain the thinking behind how you came to a decision, not just the decision itself. Things that are self-evident to insiders may require more context for outsiders.”

Kilcullen has found that one of the most successful strategies of working on MDTs is to continuously ask questions. She says, “It can be intimidating to come onto a new team, especially one with several different disciplines that you may not be familiar with. Don’t be afraid to ask questions. Understanding the project, how it’s being run, and who does what—these are extremely helpful in being able to assimilate yourself. You’ll be surrounded with many different disciplines that all have their own language. It's important to understand what the various terms mean so you can follow and contribute to discussions better. It also shows that you are truly interested in being a member of the team who is appreciated.”

Finally, don’t forget, we as I-O psychologists can also help be the leaders and encourage effective communication practices because there is one thing we know well and that is people! Schatz explains, “Within interdisciplinary projects...I-O psychologists can help monitor and resolve communication gaps within the project team.”

5. Always Learn From Your Mistakes and Successes

At the end of every effort, there is always room for improvement. Be sure that you take the time to gather feedback from all team members and see what could be different in your next project. Kilcullen highlights that she and her team include a postproject review so they can understand what went right, what went wrong, and what they can do to get better next time.
Conclusion

The fact remains, if we as I-O psychologists want our practices and recommendations to be heard, we need to be able to communicate effectively with a diverse range of experts and individuals from different disciplines—especially those in technology-related fields. In addition, if we want to incorporate good measurement practices, and research findings into new technology solutions, we need to be able to translate why these findings are critical.

Working within MDTs comes with its own set of challenges but what we need to remember is all team members come to the table with knowledge, skills, and talents that can enhance the final product or deliverable or even research for that matter. Be sure you take the time to listen and learn from others as well as assist with the communication barriers to get those most out of every team.

What about your experiences? We want to hear from you! What are successful ways you have worked with multidisciplinary teams? What challenges have you faced? Tweet your thoughts to @themodernapp or post your comments on my.SIOP! Be sure to join The Modern App Group and tell us what you think!

References


