Enhancing Service Learning: Including assessment of team experience and coaching student teams to develop leadership and membership skills

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ABSTRACT

Since the introduction of High Impact Practices in 2008, recent research has shown that service learning has significant impact in student satisfaction, development, retention and being work ready upon graduation. Service learning in management are designed as action learning projects. Most such courses are designed to involve teams working on real life corporate or community projects but do not have a good team learning and development aspect in place as part of its design to help students develop teamwork skills. In this paper, we focus on improving the process of teamwork for these teams by capturing data on team interaction and engaging in team coaching. In our case study, we had nine action learning teams in a management school at a Midwestern university. Our results show that the action learning teams in management had at least a 10% improvement in three of the four major dimensions of team interaction. We believe that although our sample size is small, our findings have implications for educators considering service learning as a high impact practice with the added intent to improve teamwork skills for students.

Keywords:
Academic Assessment, High Impact Practices, Service Learning, Teamwork Skills, Team Development
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**INTRODUCTION**

It is now common knowledge that in today’s organizational environment, more employees are becoming part of multiple teams (e.g., functional teams, ad hoc teams, project teams, and cross-functional teams). With the proliferation of teams in organizations, training programs focused on the development of team-related skills including that of team leadership and team membership are becoming a vital part of organizational life. In order to meet the growing need for team-related skills, business/management schools are realizing the importance of having robust team-focused courses (particularly action learning type courses involving student teams) interacting and working with corporations or communities as part of undergraduate or graduate programs. Action learning courses are very much aligned with service learning as one of the six High Impact Practices identified by the Association of American Colleges & Universities (AACU).

High Impact Practices (HIPs) have become a significant aspect of college education since they were identified and introduced in 2008. Although HIPs predict student retention (Provencher & Kassel, 2017), recent research indicates that of the six HIPs, service learning has significant impact on education, learning, development and practical competence (Finley, 2011) and predicting student engagement (Sweat, Jones, Han, & Wolfgram, 2013). Service learning also has the strongest relationship with deep learning and student satisfaction (Tukibayeva & Gonyea, 2014), ranked highest in perceived attribution toward personal and professional success (Ryan & Grotarian-Ryan, 2016), and one of the high impact practices that positively associated with a students’ likelihood of having a job when graduation (Miller, Rocconi, & Dumford, 2017).
Service learning as defined by the Association of American Colleges & Universities (AACU) is when a course:

“field-based “experiential learning” with community partners ... [is] often a required part of the course. The idea is to give students direct experience with issues they are studying in the curriculum and with ongoing efforts to analyze and solve problems in the community. A key element in these programs is the opportunity students have to both apply what they are learning in real-world settings and reflect in a classroom setting on their service experiences. These programs model the idea that giving something back to the community is an important college outcome, and that working with community partners is good preparation for citizenship, work, and life.” (Retrieved from https://www.aacu.org/leap/hips on January 1, 2018)

Action learning courses in management education aligns with this definition and is the rationale for us to use an action learning course in this paper as a case study to showcase the impact of focusing on helping student of a High Impact Practice. Gatekeepers such as the Association to Advance Collegiate Schools of Business (AACSB) and other publications that rank educational programs such as the Wall Street Journal and Business News and World Reports are showing that team focused programs are becoming critical for educational success. The 2017 Graduate Management Admissions Council’s Corporate Recruitment Survey Report also indicates that teamwork skills is one of the top skills employers seek or require of management graduates. As far back as 2006, a survey conducted by our business school show that the most significant lack (at p<.01) in their MBA graduates is that of team related skills. Courses that focus on both relevancy and applicability in teaching should therefore not only focus on knowledge or individual development but also team learning and development.

SERVICE LEARNING AND THE LIVED EXPERIENCE OF TEAMWORK

As faculty members teaching undergraduate and graduate students in management schools, we are exposed to our future managers and leaders in organizations. In class sessions or during meetings with them individually or in teams, most students mention that faculty members
simply “throw” them in a team and expect to be able to function well and produce results. One of the main issues they experience is not having the skills to work with others in a team setting. When we ask teams to evaluate or describe their experience of the interaction in their team, main frustrations are not outcome oriented. Instead, working with multiple personalities, different learning styles, “laziness” or non-commitment from team members are identified as difficult issues to deal with. Common requests we receive as faculty is to help them develop team leadership and membership skills, which include effective communication strategies. However, when students are asked to identify what constitutes great team experiences, they highlight that there should be high levels of trust and safety, the ability to relate and work with others, high levels of self and other awareness, clear understanding of the task, effective and efficient contribution by all team members toward completing tasks and collective or shared leadership. Based on such feedback from students, we put forward that team focused courses in business schools should take into account the complexity of the lived experience in teams and include not only task oriented skill development but to also include relational oriented skill development.

As team researchers, we are not only familiar with the work on teams but also the evolution of team research and team and development models. Although initially suggested by Homans (1950) it is only recently that team researchers conceptually converged on a view of teams as complex, adaptive and dynamic systems (Ilgen, 1999; Arrow, McGrath & Berdahl, 2000) and generated a stream of research focusing on the importance of team interaction (Crouch & Yetton, 1988; Krayer, 1988; Morgan, Salas, & Glickman, 1993; Pavitt, 1994; Burmingham & West, 1995; Wekselberg, Goggin, & Collings, 1997; Seers & Woodruff, 1997; Bradley, White, & Mennecke, 2003; Hare, 2003; Wittenbaum et al., 2004). From a team development standpoint, focusing on the lived experience of teams based on the quality of their interaction does not
suggest a linear approach to team development. Instead, it would align with theories such as chaos and complexity where the focus is on the initial and emergent states of teams. Aligned with this emerging trend, some team researchers are focusing on or surfacing diverse aspects of interaction to capture team climate (Anderson & West, 1998) or conversational spaces (Baker, Jensen, & Kolb, 2002) and team interaction based on the assessment of a team’s actual or lived experience and it’s desired interaction at that point in time (Lingham, 2009; 2015).

Although numerous team theories or models exist in research and practice, very few look at team learning and development from the perspective of a team’s lived experience in comparison to what the members would like to experience. Most of the feedback or comments we get from team members are based on the discrepancy between what they hope to experience and what they actually experience as they engage with each other along task, non-task, leadership and safety aspects. Recent research that focus on team interaction aligns suggest that central to the quality of team interaction is the quality of team experience. Also, coaching has become part of new trends in research and practice. Differing views on coaching such as an act of leadership (Hackman & Wageman, 2005) or as a relationship between the coach and the coachee focusing on developmental discussions based on current and future performance or behavior (Boyatzis, Smith, & Blaize, 2006) allude to the fact that effective coaching can take place when there is some sense of current versus future or desired states. Feedback systems or methods have been used extensively to identify these two states so that coaching can be initiated. Team coaching methods reviewed by Hackman and Wageman (2005) highlight the importance and significance of having some form of identifying these two states for effective coaching.

Assessing the Lived Experience of Teamwork in Action Learning Projects
In this study, we use the Team Learning Inventory or TLI (Lingham, 2005) to capture team interaction in Action Learning teams as it has a reliability of $\alpha=.92$ and that it captures interaction at the team level at $p<.001$ and that it contributes to our understanding of team interaction in research and practice and that not only is it significant and timely in today’s organizational environment (see Lingham (2004) for details of psychometrics) but that it has also been used in an international organization going through a change (Richley & Lingham, 2007). Further, this approach provides a framework, a common language and a methodology to provide team level coaching toward team directed learning and development (Davar & Lingham, 2007).

**ACTION LEARNING**

The increased use of teams to work especially in action learning in corporate settings has resulted in action learning programs being developed as part of graduate and undergraduate programs in business schools (Raelin, 2006). Raelin (2006) also states that most action learning programs have focused on teams developing the skills to focus on working with external clients (i.e. real life projects, not case studies) with the intent to provide them with a successful project and to develop collaborative leadership. Raelin (2006: 152) also defines action learning as “a method to generate learning from human interaction occurring as learners engage together in real time work problems” highlighting that action learning occurs in a team environment or the general domain of team dynamics and dialogue. In operation, action learning involves a team working together with a corporate client to work on real life task determined by the organization so that the students (as a team) can engage in using what they have learned (disciplinary knowledge or theories) to help accomplish the project given to them.

Although most action learning programs may include student teams working on a real life organizational project, most do not focus on aspects of teamwork, project management, team
leadership, team membership or team learning and development. We believe that the experience of human interaction within the team also provides an opportunity for the students to develop team leadership and membership skills – two areas that organizations are expecting from graduates and which is also a focus in corporate training programs.

To highlight the complexity involved in rolling out an action learning program, we show the process as follows in 7 general steps: 1. Sending out calls for projects to organizations in the community that would like to be involved in the school’s action learning program; 2. Collection and selection of projects submitted by organizations; 3. Identifying the final projects based on the student enrollment in the course; 4. Creating the student teams based on complexity of the projects involved; 5. Conducting the course; keeping up to date on how teams are doing as they progress through the semester; 6. Arranging for either presentations for the student teams to their corporate client; and 7. obtaining grades from the clients and assigning overall course grades for students. As can be seen, the administration and teaching of an action learning program is involved and complex as one will have to deal with administrators (at the departmental, school and university levels), corporate clients (that range from key personnel to support staff), faculty, student teams, and individual students.

METHODS

Case Study Design

For this study, as our intent is to follow through with a new design of action learning focusing on team learning and development, we would need to show that: 1. teams have developed over time; and 2. that the use of a measure that captures the teams’ interactions are helpful to the teams and the team coaches. We intended to show that team interaction improves from the initial time (Time 1) the teams begin working together to a later time after the teams are
into past mid-point on their projects (Gersick, 1989) and that team coaching significantly and positively affects team development.

Based on these requirements, we used a longitudinal study research design to collect team interaction data from the teams to assess team learning and development using the TLI at two time periods: Time 1 captures their initial team interaction based mostly on working with a case study and on the initial part of the real life organizational project. At Time 2, we capture their interaction after extensive work (past their mid-point) on their organizational project. We selected Time 2 to take into account the shift of focus on the task after the mid point (based on Gersick’s (1989) on teamwork so that we will capture non-task and task related interactions. Also, as mentioned, between Times 1 and 2, the team coaches provide team level coaching based on the results of the TLI and feedback from their clients. In the Nursing School program, as we had 20 teams in the course, we extended this further to include a sample that will be coached and another that will not be coached to determine if the results are significantly different. Changes in the ratings for each of the four major dimensions are used to show development of the teams during the semester.

**Procedure**

As this is a new design and we wanted to be able to present our findings, we submitted our proposal to the university’s Institutional Review Board (IRB) and was determined to be exempt for our initial study at the management school. In the management school, at week three of the course, each student is provided with a packet that contained the informed consent forms with the TLI. Based on institutional review board requirements, the consent forms indicated that their involvement was strictly voluntary and to ensure that confidentiality is kept, the students only wrote their project titles and were told to keep one of the informed consent forms if they
agreed to let us use the data for research. Completed TLI forms were dropped off in the instructor’s office and collected for inputting the data for the teams the following week. The mappings of their interactions and their team self ratings on performance, member satisfaction and psychological safety were handed back to the teams on week five. Another round of data collection using the TLI (following the same procedure outlined above) was conducted on week nine and feedback given to the teams on week eleven. At the end of the semester, the assessments from the clients were collected and the overall grades for student teams were collected from the instructor. All data collected was used for analysis after the conclusion of the course.

ANALYSIS AND FINDINGS

Table 1 shows the team demographics, response rates for Times 1 and 2 and a description of their projects. A total of nine teams participated in this study with response rates ranging from 80 – 100%. Team membership ranged from 3-5 in each team.

As in most individual learning and development programs, assessing or identifying one’s real and ideal is a necessary part of development (some examples are that of executive coaching programs in business schools and organizations and leadership development programs in business schools). However, a validated and robust measuring system of a team’s actual and ideal interactions has not been available until recently. The TLI is such an instrument and therefore we used this for our study. In each instance, we measured the experienced (or actual) interaction and the Ideal interaction (interactions members would like to have). Capturing the actual and ideal interaction offers teams to engage in experimenting with new behaviors to move
their interaction toward the ideal. Table 2 shows the ratings of the four major team interaction dimensions for the teams at Time 1 and Time 2.

As can be seen in Table 2, the real and ideal interactions for most teams improved between Time 1 and Time 2. To further demonstrate the results visually, we show the improvements in all four dimensions and the Team Results in Figure 3. Based on the results shown in Table 2 and Figure 3, three interaction dimensions (Diverging, Converging and Openness) improved while Shared Leadership stayed constant. All three Team Results improved as well with the most in Psychological Safety. This shows that the action learning design that captures team interaction and has team coaching does indeed have a positive impact on teams.

An interesting point is that when two or more major dimensions in the actual interaction was lower in Time 2 (when compared to Time 1) those teams also rated their self report Team Results also was rated lower in Time 2. In our interactions with the team, Team 7 had significant issues both from the client and particularly from within the team that had to be addressed. The mappings from Time 1 did offer a forum for discussion but between Times 1 and 2 there was an issue that became a sore point that prevented them from interacting well. This matter surfaced when we provided the team with the mapping and ratings from Time 2. An intense discussion followed and all team members decided that they should have a conversation around this issue that was making their team interactions unhealthy. If not for the mappings they received, the team mentioned that they would have tried to complete the project without dealing with this issue. The members also mentioned that their experience in the action learning
program would have been barely satisfactory. This team focused on developing better interactions after Time 2 and they did manage to do extremely well on the project and to also have good and healthy team dynamics. A clearer indication of the differences between Times 1 and 2 for this team is highlighted in the top portion of Table 3. Another team (Team 1) had issues with handling expectations from the client and their faculty expert. This faculty member was not a coach and the team approached the instructor to help them with their team and the project after they received their mappings and ratings from Time 2. They also focused on their coaching session with the instructor and ended up doing extremely well in their project and achieved excellent team interactions. The differences of their team interaction and Team Results ratings (T2-T1) are shown in Table 3. Of particular note was Team 8 who had so many problems with their client and approached the instructor with the issues and the instructor spoke with the client and ended up changing their client due to their unreasonable and continually shifting expectations. With the new client the team thrived and this showed up in their lower Ideal interactions.

To demonstrate the effect of having a visual representation of their interactions, we include and example of a team’s mapping in Times 1 and 2 in Figure 3. As can be seen in figure 3, the mappings do not only show the improvement in the real interaction but also the reduction in the gaps between the real and ideal interaction. The improved real interaction in Time 2 was a result of effective team coaching to help the team practice new behaviors to reduce gaps that the team considered most critical to their effectiveness as a team.
At the end of the program, the qualitative feedback from students in the course evaluations highlighted the usefulness of the team coaching segment of the action learning program. Having a system where teams can see their real and ideal interactions opened up the possibility for effective team coaching based on the results from the TLI. Once teams have the opportunity to compare their real and ideal interaction and identify specific areas that they would like to improve (reduction of gap) and to come up with concrete action steps as a result of the team coaching session, it promotes team directed learning and development (Davar & Lingham, 2006). We were pleased to see that this aspect was one that received the most positive feedback from students.

Clearly, from this group of nine teams, the impact and effect of a team learning and development in an action learning program enhances the dual objective of such programs. All of the other teams in the study mentioned that the ability to “see” their interactions (both Real and Ideal) was very beneficial as it helped them not only understand the complexities in team interaction but also how to help a team identify significant gaps that are critical for the team and to also help team members exercise new behaviors to move toward their ideal interaction.

The overall impact of such a design can be seen in the percentage increase for each major dimension and the self report Team Results in the bottom portion of Table 3. As can be seen, there is higher increase in the experienced interaction (except Shared Leadership) with percentage increases of at least 10%. An increase in Shared Leadership in the Ideal interaction indicates that the teams in this study would like to learn how to have more shared leadership in their teams. One possible reason that was raised in one of the teams (Team 6) was that the international students did not want to take more responsibilities or leadership roles as some felt inadequate to lead due to their lack in language proficiency. This issue may be harder to resolve
as business schools are increasingly finding that more international students are applying for MBA programs in the US.

A good finding is that the self report Team Results (Performance, Member Satisfaction and Psychological Safety) all increased ranging from 4.2% to almost 10% (see also visual representation in Figure 3). This result indicates that the new design that included real life projects with corporate clients and a system that helps the team develop team directed learning and development would be a good design for such programs geared toward these two main objectives.

Finally, we decided to look at the correlations between the four dimensions of team interaction and the Team Results to determine if there are some correlations that lead to higher assessments of performance, member satisfaction and psychological safety that relate to the Diverging, Converging, Shared Leadership and Openness dimensions. Our findings show that the Diverging and Openness dimensions are correlated to Member Satisfaction at $r = .69$ and $.68$ respectively ($p<.05$, 2 tailed) and the Converging dimension of team interaction is correlated to Performance at $r = .73$ ($p<.05$, 2 tailed). A non-significant and negative correlation between Shared Leadership team interaction and Performance could be due to the international students’ lack of confidence in taking the lead to deal with US corporate clients as discussed earlier. We are quite encouraged that despite the small sample size, the significance of measuring team interaction and its impact on team results such as team performance, member satisfaction (positive and strong) and psychological safety (positive but not significant) in an action learning program proves to be a good design for graduate management education.
DISCUSSION, LIMITATIONS AND CONCLUSION

As more schools begin to incorporate programs like action learning to make their curriculum more relevant and applicable to the organizational environment, the dual objective of working with real life problems and team directed learning and development should become more important. However, just having students work in teams around a corporate project does not achieve this dual objective. In this paper, we present an action learning design that achieves both these objectives. We argue that a good action learning program should have three major components:

1. Having students work on real life corporate project;

2. Having the students work in teams to work on these projects while providing the opportunity for students in these teams to develop team leadership and membership skills through the use of an assessment to capture team interaction and a way to also allow themselves to rate the performance of their team, how satisfied they are as members and also how safe they feel in the team as they go through their work on these projects; and.

3. Incorporating Team Coaching as part of the program

Although most action learning programs offer real life projects in such designs, the second component may not be as equally weighted. In order to incorporate the second component into an action learning program, instructors need to have a measurement system in place as well as team experts who can function as team coaches for these teams. Other options that could be considered is for establishing prerequisites that students need to fulfill prior to attending an action learning program. Such prerequisites could be a semester long course on
team leadership or a course on team learning and development so that students enrolling in an action learning program would either have the knowledge on teams or will learn that knowledge in the action learning program. It is not absurd to propose that action learning programs be considered a capstone course as it requires students to be well versed with the different disciplines that business schools offer and also have enough team experience and team centered courses prior to enrolling for an action learning course. Although not explicit, such courses also function as providing corporations with the caliber of the students we bring and hence reflect the quality and reputation of the school.

The results in this study show that a good action learning program will help students develop from real life projects while also developing good teamwork and team leadership skills. The success of this program can also be seen in the outcome assessments for each team.

A limitation of this study was to not have qualitative data to support the quantitative findings. All of the qualitative information used in the study was obtained during the coaching sessions either in the classroom or in separate coaching sessions. Incorporating team level interviews may have added more support to this study. However, the quantitative results show that the new design was not only successful but effective in achieving both objectives of a good action learning program. Although one might argue that our sample size is a limitation in this study, we present that it is a good size for an action learning program. The fact that the results from the program were successful from clients’, students’, and the instructor’s perspectives demonstrates that such programs should be conducted with a maximum of ten teams so as to allow for team coaching (as the number of coaches may be limited).

A good action learning program therefore is not only complex in the design and roll out but also in the delivery. Instructors of action learning should be very conversant with team
research or have extensive team related work experience to be effective as instructors. As a capstone course, action learning would incorporate the diverse knowledge areas in business schools and also to develop high level teamwork and team leadership skills. To add to the variables in a successful action learning course in the quality, knowledge and team relevant skills that the instructor needs to have as well.

As action learning is already part of organizational life, the focus on team learning and development is becoming increasingly important in organizational training (Richley & Lingham, 2007), having students experience and develop skills related to this methodology would help prepare them for their next role as leaders and managers in organizations. Based on the results of this study, we propose that a successful action learning program in graduate management education involves real life projects and a validated system to measure team interaction that provides an immediate visual impact or value, as well as to allow students to rate their own performance, satisfaction and psychological safety as all these are intrinsically tied to the success of achieving students with high level of team related skills which will certainly be relevant and applicable to the organizational world that they will be entering upon graduation.

In February 2006, the administration of our university commissioned a global outplacement, career management and coaching firm to conduct a survey with MBA recruiters to better understand how our school performs against other schools. The firm asked the recruiters to rate both importance and satisfaction on key buyer values. The values which showed the largest

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1 Buyer values rated include ability to market self, overall professionalism, preparation, articulate strengths/weaknesses, manners, questions, appearance, ability to execute, teaming/ability to work with others, critical thinking, intellectual capability, problem solving skills, leadership, personality, business
gap between importance and satisfaction were identified to be our school’s largest opportunities for development. The largest, statistically significant gap between what recruiters felt was important versus how they rated our students or new hires was on “Teaming/Ability to work with Others.” Aligned with this finding is that the Graduate Management Admissions Council (GMAC) published results that show 38% of recruiting organizations surveyed think the “strong “soft” skills” are extremely important when hiring an MBA student into an organization (GMAC 2006: 9). Project Management skills are shown to be attractive to all areas that recruit MBA students (with the exception of Finance and High-Tech) (GMAC 2006:10).

Although courses in business schools are designed to have individual and team level assignments with related grading systems, most curriculums do not include assessing the success of a team based on their interaction and to incorporate team coaching for these teams. Instead, most are based on the final project which is not an indicator of team learning and development or to promote team directed learning. Incorporating a measurement system that provides teams with their real and ideal states of interaction and to include team level coaching would greatly enhance any action learning programs in business schools. We outline this new design in the next section.

In this paper, we propose that a successful action learning program should involve both working with real organizational projects (Raelin, 2006) and also developing team related skills based on real life team interaction as teams engage with their projects.

The increasing number of articles we have reviewed over the past four years on new educational curriculum or course designs and development suggest that more business schools are incorporating designs that include the involvement of “real life” issues such as that of action acumen, specific skills for the job, “street” smarts/logic, industry experience, personal & professional, understanding of business ethics, well-rounded.
learning and international programs. This focus on being involved in “real life” interactions is critical in business school as it helps students experience working in environments that they will be involved in after graduation. It is this intent that makes action learning more intensive in terms of course design and administration as it involves working with faculty, administrators and key organizational members that are committed to the program.

**Measuring Team Interaction and its use in Team Coaching**

Although Raelin (2006) highlights the significance of the team environment in an action learning program, no actual assessment in this aspect was indicated although he mentions the diverse aspects of team interaction ranging from collective (or shared) leadership, dialogue, involvement, task orientation, individuality suggesting a team directed learning process. The significance of team interaction has been used in organizational settings (Richley & Lingham, 2007); identified by practitioners and scholars as related to team effectiveness (Eadie, 2007; Lingham, 2004) and team learning (Baker, Jensen, & Kolb, 2002).

With the identification of action learning as part of management education closer to authentic pedagogical methods (Mintzberg, 2004) and the increased incorporation of action learning as part of business schools’ curriculums (Revans, 1983), incorporating effective assessment methods is equally crucial. As action learning involves working with a real life organizational project within a student team environment, assessing their work based on the project or assessments (if any) from corporate clients fulfils only part of the objective in an action learning program. We argue that an action learning program should also include the assessment of team interaction and team coaching with the intent to promote team directed learning.

**Our Proposed Action Learning Design**
Over the course of the past few semesters, feedback from clients, recruiters, coaches, faculty, and students were used to update the Action Learning program to drive individual and team development with the primary focus on experiential learning. The major change was from focusing on consultative skill development for individuals to focusing on developing and working in teams. The new Action Learning course work integrates process analysis and project management skill development with helping students develop their team leadership and membership skills while also focusing on written and oral communication skills.

The new design incorporates Experiential Learning (Kolb, 1984) as we allow teams to engage in the concrete experience of a real life project in an organization and a real life experience as a team working on this project; reflection on team meetings and feedback from clients and coaches; understand the theories of team learning and team interaction based on conversational spaces in teams (Baker, Jensen & Kolb, 2002; Lingham, 2004; 2005); and experiment with new behaviors to improve team interaction. This cycle is shown in Figure 1. This iterative model promotes team directed learning and development while also promoting better client relations and project success.

Insert Figure 1 about here

The new design also incorporates the use of team coaches and the use of the Team Learning and Development Inventory (TLI) as part of the team learning and development focus. The TLI was developed and the constructs defined based on the established theoretical framework of Conversational Learning (Baker, Jensen, & Kolb, 2002). The instrument comprises 30 robust items tested through Exploratory and Confirmatory Factor Analyses and
validated as capturing a group level construct using the Direct Compositional Model and its
criteria spelt out by Chan (1998), with Intra-class correlations (ICCs) and within-group
agreement (r_wg). The results established these interaction dimensions as a group level construct
with its reliability at $\alpha = .92$. The TLI (Lingham, 2005) measures 10 aspects of team interaction
along four major dimensions. The four dimensions are Convergent interactions (i.e., task
related), Divergent interactions (i.e., non-task related), Shared Leadership and Openness
interactions. In the Divergent Space of a team, members deal with dynamics that are non-task
related but rather interpersonal, relational, social and personal aspects. In such interactions, the
experience centers on feelings, reactions, open-mindedness, listening, observing, connectedness,
and agreements on issues, and cohesion as a group. In the Convergent Space of a team, members
deal with task related aspects either in engaging in activities that are related to the task, adhering
to an established or given agenda, focusing more on results and the goal or purpose of the team.
The Shared Leadership Space is experienced as members sharing leadership in the team instead
of having the need for guidance, decisions, and leadership roles from single team members. The
Openness Space is experienced as the ability for members to return to previously discussed
issues (or to stay with issues) that capture the attention of team members even if they stray from
the task at hand or if it is important to them. For details of the development of this instrument
together with the psychometric properties including showing that it captures a team level
construct, see Lingham (2004).
References


### Table 1.
Team Demographics, Response Rates and Projects.

<table>
<thead>
<tr>
<th>Team Number</th>
<th>Number of Members</th>
<th>Responses</th>
<th>Project</th>
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<tbody>
<tr>
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<td>Time 1 %</td>
<td>Time 2 %</td>
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<tr>
<td>1</td>
<td>4</td>
<td>4 100</td>
<td>4 100</td>
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<td>Make suggestions meant to improve the organization's performance on the Pneumonia Core Measure 2. The team is to provide strategic suggestions only.</td>
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<td>5</td>
<td>5 100</td>
<td>4 80</td>
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<td>Conduct a study on recruitment and retention of both students and teachers. This would include strategic and administrative initiatives in areas such as marketing and organizational development.</td>
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<td>4 80</td>
<td>5 100</td>
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<td>Develop a Solutions Portfolio map (aka Connector map) and supporting process which demonstrates and maintains the alignment of the organization's offerings.</td>
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<td>4</td>
<td>4 100</td>
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<td>Develop a Market Analysis of a new product launched by the organization. The team is to present the market analysis to the management team.</td>
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<td>Seek to analyze the efficacy of the organization's current marketing programs and develop recommendations to improve the organization's marketing results and reduce costs.</td>
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<td>3</td>
<td>3 100</td>
<td>3 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critical Industry Analysis, market Research and Strategy Development Plan documentation with regard to the financial aid marketplace to better service student funding needs.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>4 80</td>
<td>5 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select an optimal business model based on market potential and competitive landscape for proton therapy. Once the strategy is selected, the breakeven model should be elaborated.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>3 100</td>
<td>3 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review 15 opportunities, describe, rate, and score using an attractiveness/fit results matrix. Rank the top 2-3 opportunities as most promising for further investigation and create Opportunity Profiles from which the team is to present 1 business case complete with Financial Proforma and Marketing Plan to the organization's executive team.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>3 100</td>
<td>3 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve efficiency of inpatient flow in order to maximize throughput/make best use of available capacity/reduce outsourcing.</td>
<td></td>
</tr>
</tbody>
</table>
Table 2.
Averaged Team Ratings (and Overall Averages) of the Dimensions of Team Interaction and Team Results based on the TLI.

<table>
<thead>
<tr>
<th>Team Number</th>
<th>EXPERIENCED INTERACTION</th>
<th>IDEAL INTERACTION</th>
<th>Team Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diverging</td>
<td>Converging</td>
<td>Power and Influence</td>
</tr>
<tr>
<td>1</td>
<td>3.94</td>
<td>3.9</td>
<td>3.5</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>4.1</td>
<td>2.4</td>
</tr>
<tr>
<td>3</td>
<td>3.58</td>
<td>3.8</td>
<td>2.8</td>
</tr>
<tr>
<td>4</td>
<td>3.3</td>
<td>3.8</td>
<td>3.5</td>
</tr>
<tr>
<td>5</td>
<td>4.14</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>3.94</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>3.98</td>
<td>4</td>
<td>3.1</td>
</tr>
<tr>
<td>8</td>
<td>3.48</td>
<td>3.6</td>
<td>2.5</td>
</tr>
<tr>
<td>9</td>
<td>4.42</td>
<td>4.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Average</td>
<td>3.8</td>
<td>3.9</td>
<td>2.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Team Number</th>
<th>EXPERIENCED INTERACTION</th>
<th>IDEAL INTERACTION</th>
<th>Team Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diverging</td>
<td>Converging</td>
<td>Power and Influence</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>3.2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>4.62</td>
<td>4.5</td>
<td>1.9</td>
</tr>
<tr>
<td>3</td>
<td>4.01</td>
<td>4.3</td>
<td>2.7</td>
</tr>
<tr>
<td>4</td>
<td>4.74</td>
<td>4.1</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>4.12</td>
<td>4.5</td>
<td>3.3</td>
</tr>
<tr>
<td>6</td>
<td>4.02</td>
<td>4.4</td>
<td>2.5</td>
</tr>
<tr>
<td>7</td>
<td>3.78</td>
<td>3.9</td>
<td>3.1</td>
</tr>
<tr>
<td>8</td>
<td>3.5</td>
<td>3.9</td>
<td>2.1</td>
</tr>
<tr>
<td>9</td>
<td>4.92</td>
<td>4.8</td>
<td>3.6</td>
</tr>
<tr>
<td>Average</td>
<td>4.2</td>
<td>4.2</td>
<td>2.9</td>
</tr>
</tbody>
</table>

All of the major dimensions were measured using a 5-point scale. The team results were measured using a 7-point scale.
Table 3.
Difference of Team Ratings between Time 1 and Time 2 for Each Team and Across Teams with the Percentage Increase for Each Major Dimension and Team Results Across Teams.

<table>
<thead>
<tr>
<th>TEAM NUMBER</th>
<th>MAJOR DIMENSIONS</th>
<th>TEAM RESULTS</th>
<th>OUTCOME ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diverging (T2-T1)</td>
<td>Converging (T2-T1)</td>
<td>Power and Influence (T2-T1)</td>
</tr>
<tr>
<td>1</td>
<td>0.06</td>
<td>-0.17</td>
<td>-0.5</td>
</tr>
<tr>
<td>2</td>
<td>0.62</td>
<td>0.4</td>
<td>0.9</td>
</tr>
<tr>
<td>3</td>
<td>0.5</td>
<td>0.5</td>
<td>-0.1</td>
</tr>
<tr>
<td>4</td>
<td>1.44</td>
<td>0.6</td>
<td>0.4</td>
</tr>
<tr>
<td>5</td>
<td>0.38</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>6</td>
<td>0.08</td>
<td>0.47</td>
<td>0.5</td>
</tr>
<tr>
<td>7</td>
<td>-0.2</td>
<td>0.13</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>0.02</td>
<td>0.93</td>
<td>-0.4</td>
</tr>
<tr>
<td>9</td>
<td>0.5</td>
<td>0.43</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Overall Average Differences Between Time 1 and Time 2 Across Teams

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Change</th>
<th>Increase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPERIENCED INTERACTION (6-point scale)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverging</td>
<td>3.8</td>
<td>4.2</td>
<td>0.4</td>
<td>10.5</td>
</tr>
<tr>
<td>Conversing</td>
<td>3.9</td>
<td>4.3</td>
<td>0.4</td>
<td>10.3</td>
</tr>
<tr>
<td>Power and Influence</td>
<td>2.9</td>
<td>2.9</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Openness</td>
<td>3.0</td>
<td>4</td>
<td>0.4</td>
<td>11.1</td>
</tr>
<tr>
<td>TEAM RESULTS (7-point scale)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>5.2</td>
<td>5.40</td>
<td>0.20</td>
<td>5.0</td>
</tr>
<tr>
<td>Member Satisfaction</td>
<td>5.2</td>
<td>5.42</td>
<td>0.22</td>
<td>4.2</td>
</tr>
<tr>
<td>Psychological Safety</td>
<td>5.5</td>
<td>6.02</td>
<td>0.52</td>
<td>9.5</td>
</tr>
</tbody>
</table>

1The teams did not have their Time 1 ratings with them when they completed the TLI for Time 2. Each team received team coaching on the TLI between Time 1 and Time 2 to help them develop better team interactions. Two teams had some major issues that were not resolved between Time 1 and Time 2. Due to the results in Time 2, the team engaged intensively to deal with these issues and resolved them before Time 2. By the end of the semester, the teams performed well.

2Team 1 had some issues with the client and the coach. Two team members approached the instructor to get assistance to resolve these issues. The instructor dealt with the issues without overstepping the coach.
Table 4.
Pearson Correlations between the Dimensions of Team Interaction and Team Results.

<table>
<thead>
<tr>
<th>Major Dimensions of Team Interaction</th>
<th>Diverging</th>
<th>Converging</th>
<th>Power and Influence</th>
<th>Openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverging</td>
<td>0.67*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Converging</td>
<td>0.32</td>
<td>0.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power and Influence</td>
<td>0.85**</td>
<td>0.58</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Openness</td>
<td>0.55</td>
<td>0.73*</td>
<td>-0.10</td>
<td>0.49</td>
</tr>
<tr>
<td>Performance</td>
<td>0.62</td>
<td>0.57</td>
<td>0.18</td>
<td>0.41</td>
</tr>
<tr>
<td>Member Satisfaction</td>
<td>0.69*</td>
<td>0.37</td>
<td>0.02</td>
<td>0.68*</td>
</tr>
<tr>
<td>Psychological Safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at p<.05 (2-tailed)
** Correlation is significant at p<.01 (2-tailed)
Figure 1. The Incorporation of Experiential Learning Theory in Action Learning

Concrete Experience from Real Life Corporate Projects and Real Life Team Experiences

Applying Knowledge to Projects and Practicing New Behaviors to Improve Team Interaction

Reflection on Team Meetings and Feedback from Clients and coaches

Better Understanding of Disciplines, Team Learning based on Interaction, Experiential Learning and Conversational Learning
Figure 2. Design of the Action Learning with Timelines Indicated Over the Semester

Week 1
- Select & form teams
- Understand process
- Practice with case study
- Meet coach
- Meet client
- Define scope

Week 3
- Feedback on TLI1
- Develop team goals
- Work on team development
- Work on client project – confirm scope and plan

Week 5
- Meet coach
- Meet client
- Define scope

Week 7
- Feedback on TLI2
- Discuss feedback on projects and adjust

Week 9
- Feedback on TLI1
- Develop team goals
- Work on team development
- Work on client project – confirm scope and plan

Week 11
- Practice client presentations
- Provide feedback regarding client, coach, team

Week 12
- Compare results of TLI1 vs. TLI2
- Develop action plans
- Make appropriate adjustments to team & individually

Week 13
- Final client presentations

Mid-semester interview with client on project progress (administration)
Conduct client mid-semester meeting (team)
Figure 3. Visual Representation of the Improvements in Team Interaction and Team Results from Times 1 and 2.

a. TEAM INTERACTION

b. TEAM RESULTS
Figure 4. Example of the Visual Impact of the Team Interaction Mappings using the TLI

Notes:
The Diverging Dimension comprises these aspects: Involvement, Consideration, Individuality, Relationality and Solidarity;
The Converging Dimension comprises these aspects: Understanding, Action and Task-Oriented;
The Shared Leadership Dimension and Openness Dimension stand on their own as aspects as well.
All these dimensions and their aspects are based on the robust model validated through exploratory and confirmatory factor analyses and further validated through nomological studies and group level analyses over the past four years (see Lingham, 2006 for more details).