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# How Transformative Learning Theory Can Inform Team Building Pedagogy

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## Abstract

Scholars and practitioners complain that business school graduates are inadequately prepared to function effectively in workplace teams. This outcome is concerning; business school instructors routinely assign students to classroom teams, and the literature offers rich insights for guiding and instructing students to improve collaboration. Yet, telling students how to work with each other seems inadequate; key stakeholders including employers and instructors report dissatisfaction about demonstrated learning. The co-authors designed and implemented an Escape Room Exercise based on the tenets of Transformative Learning Theory. After engaging 83 student teams in the Escape Room Exercise and post-exercise debriefing sessions, students reported transformed perspectives into teamwork, and transformative learning about collaborating with others in their teams, forming a guiding team charter, leading their team, and initiating constructive conflict.

## Keywords

experiential exercise for teambuilding, transformative learning theory, escape rooms

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## Introduction

According to a report by the National Association of Colleges and Employers, most hiring managers rank teamwork skills at or near the top of their criteria for selecting from recently graduated applicants (Gray, 2024). In anticipation of such an outcome, over preceding decades, scholars have argued in favor of assigning management students to classroom teams as a way of preparing them for workplaces (Buckenmyer, 2000). The mere assignment to teams and leaving students alone to figure teamwork out by themselves, however, is known to trigger dysfunctional behaviors and poor learning outcomes (Bacon et al., 2019; Gresch et al., 2020). Hence, the management education literature offers a host of insights into teambuilding in the classroom (Bryant & Albring, 2006; Hunsaker et al., 2011; Seow & Shankar, 2018). Teambuilding efforts relate to a mix of instructor-led advocacy, interventions, directions, and guidelines recommended and/or imposed on students, and to self-directed processes in which students engage with others in experiential and other exercises for enhancing teamwork (e.g., Lebron et al., 2024; Peralta et al., 2015; Wyland et al., 2023).

Rich insights into ways of instructing and engaging students to improve their teamwork skills, however, are falling short in terms of producing intended learning outcomes. Employers complain that fresh graduates of business programs are unprepared to work in teams (Hogan & Young, 2020; Majid et al., 2019; Petkova et al., 2021). Scholars too write about skill-deficient and learning-resistant students. For instance, too many business school students are reportedly skeptical about teamwork (Schultz et al., 2010). Students often insist on working alone instead of working with classroom teams (Pfaff & Huddleston, 2003; Swartz & Shrivastava, 2022) or avoid classes that require teamwork entirely (Wyld, 2021). When instruction and guidelines are provided, too many students define them as burdensome impositions (Ramdeo et al., 2022). Instead of adhering to the letter and spirit of instruction, many students go through the motions and display perfunctory adherence to guidelines and instructions without committing to working collaboratively with members of their team (Buckenmyer, 2000; Clinebell & Stecher, 2002). The results of this reluctance, skepticism, and going through the motions are evident from scholarly reports; students display surface level learning that is reproducible on tests and presentation (Biggs, 1999), but insufficient for functioning in workplace teams (Bennis & O'Toole, 2005; Datar et al., 2010; Ginting et al., 2020; Pfeffer & Fong, 2002).

This article describes an innovative pedagogy we designed and implemented to address the concerns about inadequacy in learning highlighted by scholars and address our own concerns about students who go through the motions when we provide detailed instructions for teamwork. By innovative

pedagogy, we refer to an Escape Room Exercise (ERE), and a series of post-ERE exercises we designed based on the tenets of Transformative Learning Theory (Mezirow, 1991). Business school students are familiar with the concept of escape rooms; 1,900 escape rooms operate as recreational businesses across the U.S. (Vianna, 2023). Escape rooms are also widely used as pedagogical tools in education (e.g., Martina & Göksen, 2022); please see Veldkamp et al. (2020) for exhaustive review).

After designing the pedagogy, we assigned students to classroom teams and engaged them in an ERE as an initiating activity. To escape the room, participants were required to complete seven puzzles in a pre-determined order. Also aligned with the tenets of Transformative Learning Theory, we designed post-ERE exercises that required participants to: (a) engage in critical self-reflection and document their learning, (b) discuss their learning with others in the team, (c) derive an integrated perspective into teamwork based on the learning shared by other members of the team and by other teams in class, and (d) develop a plan of action that crystallized their learning, and could guide their teamwork for the remainder of the term. We encouraged participants to follow through on their plan of action with their team for the duration of the term and complete a grade-consequential final class project. We implemented the pedagogical innovation in 83 classroom teams (321 students) over 3 years at an AACSB-accredited business school located in the Northeastern United States.

This article presents evidence drawn from instructors' observations and participants' verbal and written reports gathered during the post-ERE exercises. Current scholarship accepts such post-exercise reflections in verbal and written reports as evidence of learning that occurred among participants (McDonald et al., 2023; Verzat et al., 2009). As Transformative Learning Theory predicts, participants report: (a) newly reconstituted, transformed cognitive schematics about teamwork, that is, new thinking about teamwork, (b) new emotions or affect attributed to the linkages among constructs in their cognitive schematics (based on Pool & Sander, 2021), and (c) new behavioral intents about collaborating with others in their team during the term, forming a guiding team charter, leading their team, and initiating constructive conflict.

## Theoretical Background

Instructors can draw from current pedagogical literature to produce detailed instructions and guidelines to help students in their classroom teams. For instance, scholars such as Peralta et al. (2015) suggest that instructors should introduce students to multiple stages of team development related to forming, storming, norming, performing, and adjourning to lay the foundations of teamwork in classrooms based on Tuckman (1965) and Tuckman and Jensen

(1977). Instructors must insist on inclusion, openness, accountability, cooperation and collaboration in their classroom teams (Seow & Shankar, 2018). In other words, scholars agree that instructors are the key external agents who can guide students for collaborative teamwork. While some scholars point to the merits of letting students choose their teams (Ciani et al., 2008; Mahenthiran & Rouse, 2000), others speak favorably in favor of assigning students to teams to reflect workplace realities and reduce groupthink (Adams, 2003). The evidence suggests, however, that both approaches produce similar results (Chapman et al., 2006).

In the prolific discussions on teambuilding, the following recommendations attract inordinate attention. First, requiring student teams to form initiating charters to guide teamwork is strongly recommended (Courtright et al., 2017; Hunsaker et al., 2011). When instructed and guided, a student-defined charter is expected to improve teamwork (e.g., Mathieu & Rapp, 2009). Rooted in control theory and psychological contract theory, student-derived charters help participants make explicit the behavioral expectations and team-sanctioned consequences for attitudinal and behavioral infractions such as disruptiveness, social loafing, and absenteeism (Courtright et al., 2017; Johnson et al., 2022). The evidence of their effectiveness is mixed; scholars note that charters can vary in terms of their quality and effectiveness, and that instructor intervention is often necessary (Aaron et al., 2014).

Second, current scholarship advises students to: (a) rotate through important roles such as leader, coordinator, and note taker in their teams (Bryant & Albring, 2006; Page & Donelan, 2003), and (b) complete mid-term formative and end-of-term summative peer evaluations (Hansen, 2006; Jassawalla & Sashittal, 2017; Schultz et al., 2010). Similarly, instructors are encouraged to instruct and help students manage groupthink (Jackson, 2021), manage destructive conflict when it occurs (O'Neill et al., 2017), and encourage constructive conflict within teams (Dyer & Hurd, 2016).

Contrasting with teacher-led teambuilding efforts, scholars speak favorably about instructor-sponsored and student-centered experiential exercises (e.g., Leal Rodriguez & Albort-Morant, 2019; Mercer et al., 2021). Experiential exercises are conducted by instructors, often upon the formation of teams. Participants are encouraged to self-derive learning based on their experiences of working with others while solving problems and completing tasks (Morgan & Stewart, 2019; Swab, 2024). In other words, the instructor does not elaborate on the nature of learning students ought to derive from the participation. Students are placed in competitive, time-constrained situations, and asked to complete tasks that yield clear winners and losers. For instance, scholars have advocated for the tower building exercise (McDonald et al., 2023), and for a game that calls participants to construct a bridge using raw spaghetti (Verzat et al., 2009). Successful completion of tasks requires

communication, interactions, and collaboration with others; failure is commonly encountered, and instructor intervention is kept at minimum.

The insights from current writings that shaped our thinking and research are as follows. First, the reluctance of students to participate in teamwork coupled with the dissatisfaction reported by employers has raised questions about the efficacy of current instruction (Ginting et al., 2020; Pfeffer & Fong, 2002). Pedagogical innovations that can take a step toward addressing the concerns of hiring managers are sorely needed. Second, current scholarship provides a host of insights into the functionality of immersive experiential exercises that help students learn (McDonald et al., 2023; Verzat et al., 2009). The state of the art argues for newly conceptualized immersive pedagogies. Third, initiating experiential exercises can help students navigate through difficult interpersonal processes, recognize the importance of emotional intelligence, and identify some of the risks and uncertainties associated with teamwork (Gresch et al., 2020). Scholars have pointed to the benefits of requiring students to critically examine current ways of thinking and operating in teams and imagine new ways of collaborating effectively with others after participating in experiential learning exercises (Eriksen & Cooper, 2017; Mezirow, 1991). For instance, participants in the spaghetti game complete a debriefing form (Verzat et al., 2009). Hence, we: (a) sought inspiration from Transformative Learning Theory and designed an escape room exercise for experiential learning, and (b) relied on post-exercise reflections of participants to draw an understanding of the learning produced.

## Transformative Learning Theory Inspired Pedagogical Innovation

Scholars are critical of the simple, surface level learning students can display in tests and presentations (Biggs, 1999), and the surface knowledge they hold about teamwork (Tonks, 2002). This type of learning is termed *declarative* or the lowest form of knowledge reflecting memorization and rote learning (De Backer et al., 2012). Transformative Learning Theory speaks to a context of learning associated with procedural and conditional knowledge, that is, when applied to pedagogy, students are more likely to learn how to work in teams because they have learned about the what's and why's of producing desired results (see Abdelshiheed et al. (2023) for components of metacognitive development). Transformative Learning Theory speaks to learning that reflects a paradigm shift occurring in the learning of an individual (see Knowles, 1989; see Exhibit 1 for basic tenets of the theory we applied from Mezirow, 2006). The designs of the Escape Room Exercise (ERE) and post-ERE exercises are tethered to this theory.

**Exhibit 1.** Key tenets of Transformative Learning Theory applied to design of the pedagogy [*Mezirow (2006)*].

*Stage 1:* Have learners experience disorienting dilemmas.
*Stage 2:* Engage learners in self-examination with feelings of guilt and shame (i.e., negative emotions)
*Stage 3:* Facilitate learners' critical self-assessment of assumptions underlying their actions.
*Stage 4:* Have learners share their learning with others in the team, and in the class.
*Stage 5:* Engage learners in exploring options for new roles, relationships, and actions.
*Stage 6:* Require learners to discuss and eventually negotiate and commit to a written plan of action.

The key tenets of Transformative Learning Theory relate to engaging participants in exercises that produce one or more disorienting dilemmas. Such a dilemma is produced when a participant is required to address a difficult task, solve a hard or difficult puzzle. If and when participants fail to solve puzzles, they should see incontrovertible evidence that their current ways of thinking (frames of reference), and current ways of doing (theories of action)—do not solve the problems (Mezirow, 1991). Puzzles that everyone can complete on time are not expected to produce transformative thinking or learning. The notion that exposure to disorienting dilemmas should trigger strong negative emotionality is central to Transformative Learning Theory (Cranton, 2002; Mezirow, 1991). Negative emotionality serves as a catalyst in the process of self-reflection; it triggers: (a) questioning of dated, ineffectual ways of thinking and doing, (b) new thinking, new emotions, and new theories of action. Mezirow (1991, 2006) highlights that transformative learning results from the process of managing negative emotionality and the associated feelings of guilt and shame. Furthermore, the theory emphasizes that discussions of learning and negotiations with others, and documentation of new learning are necessary before fleeting, often ephemeral notions and new ideas are translated into concrete plans of actions.

To escape the room, students working in teams are required to solve seven puzzles. During the initial weeks of classes, students are assigned to classroom teams and engaged in the ERE. Each team must escape the room in 45 min. The conceptual domain of each puzzle is unique, and no puzzle is divisible for parceling out to individuals for solo efforts. Creative thinking, active negotiation with others, and collective decision making are required to

escape the room in time. Each puzzle is designed to produce a disorienting dilemma. A dilemma serves to disorient when a learner applies existing frames of reference to solve a puzzle with members of their teams, and attempts solutions based on existing theories of action—and experiences delays and failure (Mezirow, 2006). By frames of reference, we refer to participants' cognitive schematics or cognitive structures in short term memories and to the structure of assumptions and expectations they use to filter reality and draw meaning, for example, "this is what and how I think about teamwork when I think about teamwork" (see Atkinson & Shiffrin, 1968 for memory structures). Theories of action relate to deeply held beliefs about "if I do x while functioning in teams, then I am likely to help the team succeed or fail in these ways" and serve as good predictors of a person's behaviors regardless of what they might explicitly espouse (e.g., Argyris & Schon, 1974).

When teams enter the correct answer to a puzzle on a Google form, participants can proceed to the next puzzle. When a puzzle is successfully completed, it suggests that participants' extant frames of reference and theories of actions about teamwork are effective. When teams fail to solve puzzles and fail to exit the room, the failure is incontrovertible and non-camouflageable. Participants cannot plausibly present retroactive, obfuscatory explanations to their team or to their class, and claim that the failure to exit the room did not occur. When a wrong answer is entered on the Google form, the process comes to a dead halt. It requires participants to consider that their extant frames of reference and theories of actions about collaborative teamwork are flawed. As Carter and Nicolaides (2023) and others indicate (Baumeister et al., 2007), the disorienting dilemmas, and the negative emotions that they produce are key to triggering the transformative learning process (Stages 1 and 2 of the theory). Mezirow (2006) labels this negative emotionality as guilt and shame; the theory holds that these feelings lead participants to confront their own "problematic frames of reference" and begin defining new ways of thinking and doing (Mezirow, 2003, p. 58).

## *Post-ERE Exercises as Scaffolds*

After engaging in the ERE, students participate in post-ERE exercises that adhere to stages 2 through 6 as shown in Exhibit 1. The exercises serve as pedagogical scaffolds for transformative learning (see https://library.geneseo.edu/ERE for complete details on the ERE and post-ERE exercises). Scaffolding refers to a process by which instructors engage students in a series of simple tasks that enable gradual, step-by-step learning of new, unfamiliar, complex constructs, and methods (see Ambrose et al., 2010, Belland et al., 2022, Shepard, 2000; Wass et al., 2011 for instructional scaffolding).

The first stage in the scaffolding process relates to self-reflection. Students ponder over their personal experiences and over what their actions and inaction produced. In the context of delays and failures to solve puzzles, participants must think and respond to questions in words and in writing—how and why their existing frames of reference and theories of action failed to produce intended results. Mezirow (1996, p. 163) notes: "in transformative learning the learner intentionally transforms his or her established frame of reference to allow a perspective that is more inclusive, differentiating, critically reflective, open to other points of view, and more integrative of experience." Transformative learning is less likely occurring if participants engage in blaming others, in defensive reasoning and/or retroactive explanations to justify failure to escape the room; or reproduce trite inferences, for example, "we should communicate better." It is more likely occurring if participants engage in critical self-reflection about what they did, why they did it, what outcomes were produced and why, draw contrasts between pre-ERE and post-ERE frames of reference, and start speculating about better ways of working collaboratively with others (or transformed theories of action, based on Dirkx et al., 2006; Mezirow, 2000; Figure 1).

The critical self-reflection produces emergent meanings and nascent frames of reference that can rapidly evaporate because they are often formless and ephemeral (Cranton, 2002). Mezirow (1991) notes that the process of rendering these emergent, nascent notions more concrete requires public discussion, and openness to public inquiry about their efficacy so that it translates to concrete theories of action (see Slavich & Zimbardo, 2012). Hence, after the self-reflection process, we require team members to discuss their learning with others on the team and negotiate an action plan that will guide their team's behaviors during the remainder of the term (see Mezirow, 2000). We regard these explicit, written plans as the concrete, post-exercises theories of action, for example, statements that address "what I will do differently in the remainder of this term in my team," and "what the team intends to do differently during the term," as the key outcomes of the pedagogical innovation.

## Running the Escape Room Exercise

### *Learning Objectives*

As a result of engaging in the innovative pedagogy, students will:

A. Recognize that despite prior experiences with teamwork, they are unprepared for teamwork when tasks are challenging.

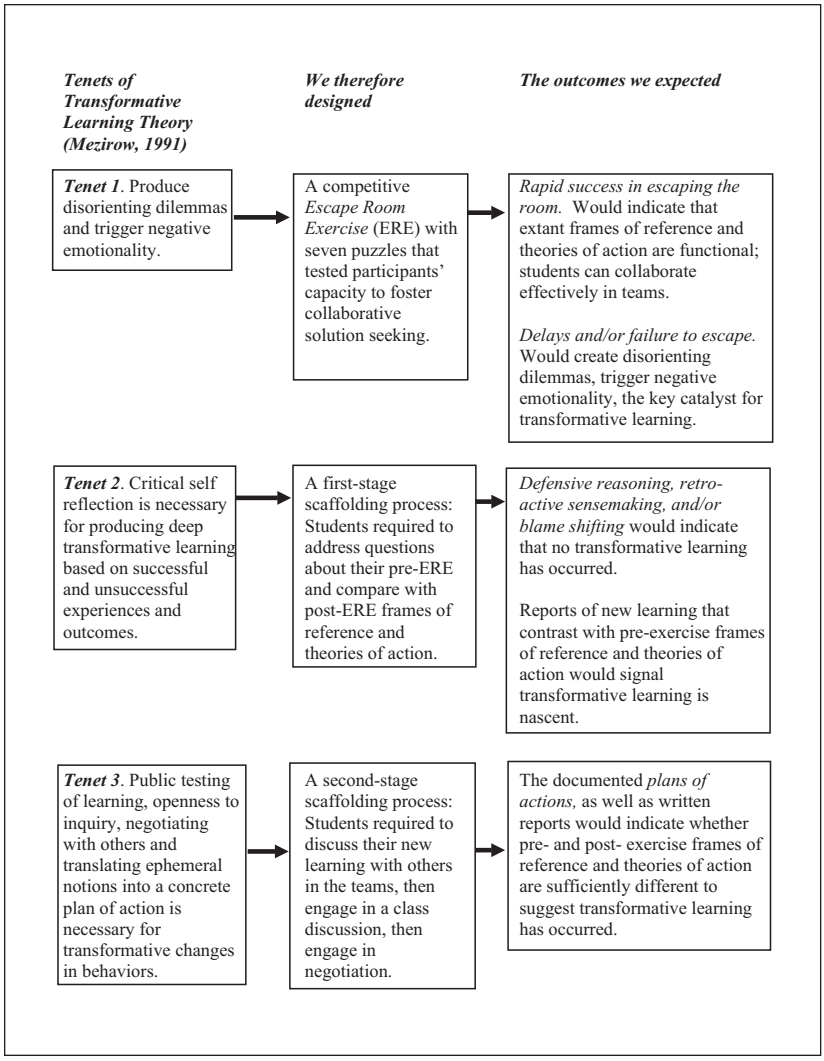


**Figure 1.** Design of the Transformative Learning Theory-inspired experiential learning exercise (please see https://library.geneseo.edu/ERE for details).

B. Recognize that they cannot solve complex tasks on their own while working separately from others in teams and must collaborate with others.
C. Identify the weaknesses in their frames of reference and theories of actions and explain how they hurt their team's progress.
D. Explicitly formulate a plan of action that reflects changed frames of reference and new theories of action about collaborative teamwork.

## *Intended Audience*

The ERE is intended to serve students in undergraduate and graduate business and management classes. Instructors aiming to foster students' learning about effective teamwork are likely to find the ERE of interest. We implemented the ERE in undergraduate *Organizational Behavior* and *Human Resource Management*, and graduate *Leadership* classes. While the ERE can be implemented in any type of college classes, it is likely to produce the most learning in any course that addresses issues of group dynamics or team development, or any course in which instructors assign students to teams for completing class-related projects.

## *Steps and Timing to Run the Activities*

During the intial week of the term in which the ERE is implemented, students are assigned the following questions for homework. Students submit responses directly on the learning management system in Week 2 of the term.

- How many formal teams, such as those formed in classrooms or for extra-curricular activities, have you participated in since your high school and college years?
- How prepared are you for classroom teamwork?
- State your year (e.g., sophomore and junior), gender, and major.

Then, the instructor assigns students to teams for participation in the ERE. The assignment is informed by students' self-reports, it aims to ensure diversity of gender, year, and major in teams. The ERE serves as the initiating learning experience to aid collaborative teamwork for the remainder of the term. After completing the ERE, students continue working with teammates, complete a comprehensive class-related project (final team presentation and a term paper per team worth 25% to 35% of the final grade). In the third week, the 75-min class is structured as follows:

- 45 min: ERE (see step-by-step instructions for implementing the ERE in Exhibit 2).
- 15 min: Individual reflections, written responses to structured questions (see below).
- 15 min: Instructor-led class discussion. Responses recorded on whiteboard for all students to see.

**Exhibit 2.** Instructions and guidelines for implementing the ERE.

Step 1: Instructors should read and familiarize themselves with the material included on: https://library.geneseo.edu/c.php?g=1463493&p=10886064. Alert students in advance that they must bring a laptop for participating in ERE.
Step 2: Prepare physical materials (see instructions for documentation included in a Manila envelope, see link above). Please prepare one Manila envelope per team.
Step 3: Reproduce on the white board the section starting with "Things to keep in mind: . . .," and ending with " . . . some puzzles."
See https://library.geneseo.edu/c.php?g=1463493&p=10886064 for details.
Step 4. Instruct students to sit with their teams and maintain a physical distance from other teams.
Step 5: Hand out the Manila envelopes to each team, instruct them not to open the envelope until the exercise commences.
Step 6: Read the excerpt that begins with "Welcome to the Internship Opportunity . . . " and ends with: "Defeat the other groups and claim this very rare prize! Go to this link and complete the puzzles until you reach the final folder. The competition begins. . .NOW."
See https://library.geneseo.edu/c.php?g=1463493&p=10886151 for details.
Step 7: Write on the white board: bit.ly/InternOpSafeT. Ask students to open this link.
Step 8: Start the 45-min timer. Note: in response to questions that emerge from participants during the exercise, limit answers to information noted in Step 3 above.
Step 9: Teams that complete the ERE successfully during allotted time receive validation after entering all correct answers (they come to a page informing them that they have won).
Step 10: When time expires, announce the end of the exercise, bring the class to order, and commence with individual reflections (see the section titled *debriefing*.)

## Debriefing

The debriefing occurs as a two-stage process. The first-stage debriefing occurs immediately upon the completion of the ERE. The intent is to gather top-of-mind issues. The debriefing serves as a record to guide discussions that occur in subsequent classes. Participants are required to answer the following questions and enter their responses directly into the College's learning management system; both instructor and student have access to their answers (15 min).

1. Which puzzles did your group complete? How did the ways in which your team communicated and shared information, and worked together—help the process?
2. Which puzzles did your group *not* complete? How did the ways in which your team communicated and shared information, and worked together—*hurt* the process?
3. What would you do differently, were you to participate in such an exercise again? What would you do differently as an individual, and as a team?
4. How did this team exercise work compared to if you had to solve all the puzzles on your own/individually?

The second stage debriefing occurs in the subsequent class scheduled at least 48 hr after the ERE and the initial debriefing. This debriefing requires participants to engage in the following activities over a 75-min period:

- 15 min: Students, working with members of their assigned team, discuss their individual reflections, and the aftermath of the class discussion held in the final 15 min of the previous class.
- 60 min: Teams define *how* their new learning will translate into the ways they agree to function as a team. Each team submits a consensus view on the plan of action for the remainder of the term.

The purpose of this debriefing stage is to encourage participants to translate their implicit notions and learning into explicit statements for discussion and open themselves up to the scrutiny and inquiry of others. This step is critical for transforming ephemeral and momentary learning and concretize them into plans of actions which initially emerge as suggestions for self and others, and upon discussion are concretized into a plan of action. The class discussion is devoted to making explicit the newly developed learning, the transformed frames of reference, and the new theories of action. The instructor aids discussion by asking, "what is the new learning that challenged existing ways of thinking, and what will you think and do differently as a result?"

## Method

### *Data Collection*

The ERE and post-ERE exercises were conducted in 18 sections taught by a co-author over 3 years at an AACSB-accredited business school. This included 12 sections of undergraduate *Organizational Behavior*, 2 sections of undergraduate *Human Resource Management* courses, and 4 sections of the graduate *Leadership in Organizations* course. Qualitative data were collected from 321 participants in 83 teams over six semesters (58% male, 42% female; 84% undergraduate and 16% graduate students). Undergraduate participants (average age = 21 years) were pursuing majors in Business Administration (58%), Accounting (15%), and other majors (11%) including Economics, Communication, Math, and Psychology. Sixteen percent of participants were enrolled in a master's degree in accounting (average age = 24 years).

The ERE yielded four types of qualitative data for analysis: (a) notes made by the instructor while observing participants engaged in the ERE, (b) the written responses to questions submitted by participants about their critical self-reflection, (c) transcripts of the white board notes that summarized discussions occurring in classrooms, and (d) the written reports by teams reflecting consensus about their plan of action for the remainder of the term. While item (c), or the data related to class discussion and the notes made on whiteboards were visible to all participating students, other data were not shared.

### *Data Analysis*

We closely followed the guidelines of Miles et al. (2014) for analyzing the four sources of qualitative data. The guidelines are useful for coding and categorizing written notes and compiling lists of inferences along with supportive evidence from transcripts, and for developing a conceptual framework that illustrates the breadth of the findings. The inference drawing resulted from highly iterative processes. We examined our notes with the starting inquiry: "what did participants do and say during and after the ERE?" We examined our notes for evidence to identify antecedents and consequences of what we had noted as the most observed issues. This process yielded an initial set of observations and work-in-process inferences that were later modified based on verbal and written reports from participants and teams. A similar process was followed for the analysis of verbal reports from participants. As students spoke publicly about their experiences and learning, their words were summarized and noted on the whiteboards in the

classrooms. The written reflection reports from participants—as individuals and teams—were independently analyzed by two co-authors.

The process of inference drawing was aided by a data-matrix we generated from the qualitative data. In the matrix, each row represented a participant (321 rows) and each column was devoted to the responses from participants and to the notes made by instructors. For instance, the first cell in each row indicated a participant's team number, class, and status (did their team complete the ERE in time). In each resulting cell, we included data points (e.g., whether the participants had completed the ERE), direct quotations from verbal and written reports to help illustrate the point, and our inferences. Based on analysis of each column, we identified key themes. The co-authors completed this iterative analysis and met to discuss findings, cross-check inferences, and conduct reliability tests ("is the inference drawn justified by the frequency counts of the themes and the words used by participants, or notes made by instructors?"). The findings discussed below represent the consensus view of the co-authors.

## Results

The pre-team building homework shows that all 321 participants have functioned in over 10 teams, 39% have functioned in over 20 teams, as part of their experiences as high school and college students prior to enrolling in our classes. All participants report confidence in their preparation for teamwork and 83% rate themselves 3 or higher on a 5-point itemized rating scale (1 = very unprepared and 5 = very highly prepared). Yet, the rate of failure to collaborate with others in the ERE is inordinately high (86%), and negative emotionality is uniformly reported by all participants (100%). Despite prior experience and reported confidence, the level of preparation for teamwork in time-contained and competitive environments with challenging tasks is inordinately low. Our data analysis produced four key findings that serve as a guideline for detailed discussions that follow, and can serve as a checklist for instructors choosing to implement the pedagogical innovation we present:

A. Students are unprepared for the initiating steps necessary for working as a team despite reported prior experience. All dive into tasks as individuals (Implicit theory of action: "Fire, ready, aim."). Students expect each participant to know how to proceed, focus on tasks, contribute equally, coordinate their actions without slacking off.
B. Students are unprepared for addressing puzzles in the ERE that are counter-intuitive and defy common-sense, quick solutions. The strong expectation that tasks are rapidly solved by polling other stu-

dents, and escape is imminent—leads to disappointment upon non-camouflageable failure.

C. Even though 14% of teams escaped the room, *all* teams had trouble, and most found it impossible (86%) to pivot (i.e., to change course after encountering delays and failure to complete a puzzle in a one-shot effort). When the first-shot attempts fail, students report experiencing surges in negative emotions. The modal response to negative emotionality, as distinct from regrouping and trying new approaches for problem solving, is tuning out of team activities.

D. No team could prevent groupthink despite professing awareness of the concept, nor effectively challenge others when they disagreed about proposed actions.

Figure 2 presents the conceptual framework that illustrates the impact of implementing the pedagogical innovation, that is, it encapsulates how and why the exercises we designed trigger transformed frames of reference and new behavioral intents.

## *Disorienting Dilemmas and Emotionality*

Twelve of 83 teams (14% of teams, 43 of 321 or 13.4% of participants) won, that is, they escaped the room before other teams in their class. An additional 13 teams (16%) escaped the room in 45 min but were not the first team to finish in their class. Fifty-eight teams (70%) were unable to exit the room. All participants begin the ERE with positive affect and enthusiasm; they are confident that they possess the skills and experience to help their team escape the room. When the ERE commences, most participants propose solutions to the puzzles right away (71%). About a third (29%) immediately argue in favor of dividing and allocating tasks to each participant and working separately. The initial positive affect is apparent in the voices:

> Two ways we helped each other with team dynamics were designating tasks for certain people (i.e. dividing up the work) and speaking up when we figured out our certain task.

> We completed the first challenge quickly. We all picked a different question to focus on and then completed the questions by communicating our answers.

> We finished the first five questions quickly. We split the questions among us so we would make progress on all of them at once.

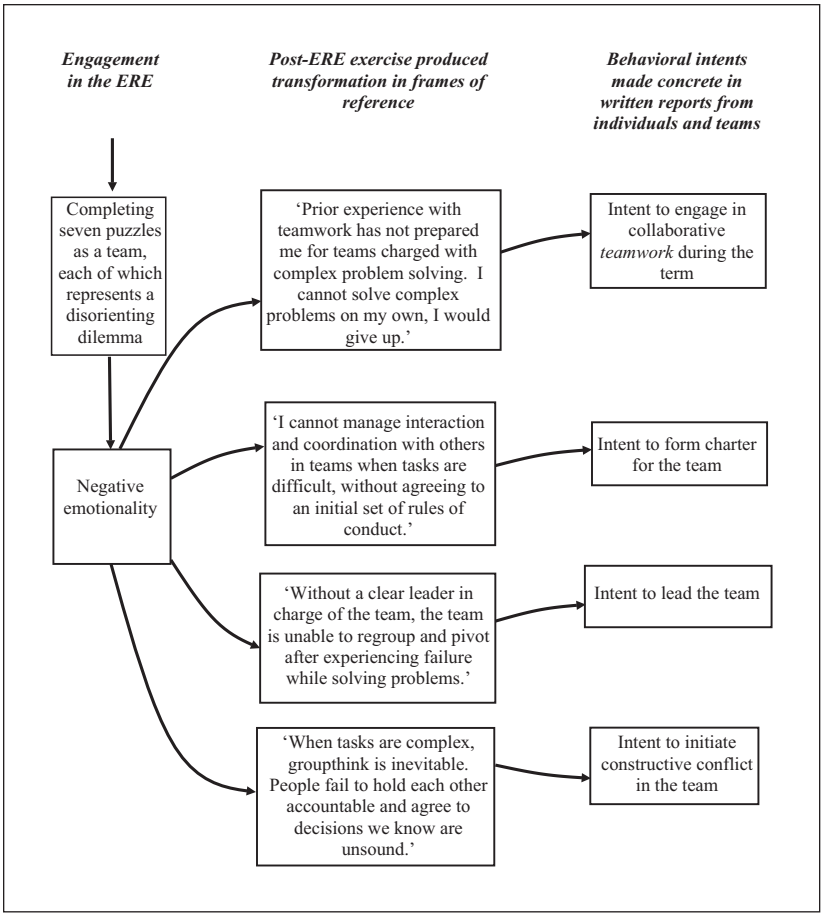


**Figure 2.** Conceptual model.

The positive emotionality, the confidence, and the faith in "let's just dive into the task," last until proposed solutions via simple brainstorming fail to solve a puzzle. As Mezirow (2003) predicts, the delays and the failure to escape represent disorienting dilemmas and trigger varying levels of negative emotionality among participants. Also aligned with the prediction of Transformative Learning Theory, the emotions serve as the key antecedent to the transformed frames of reference and new behavioral intents. We rated each student on a scale of 1 (lowest) to 10 (highest) level of negative emotionality they reported. Only one of the 321 participants described

their emotionality at a score lower than 10 on a 10-point scale. The level-10 negative emotionality is analogous to one experienced after losing a game in a competitive sporting event on campus.

Negative emotionality emerges as a three-part construct; it refers to a combination of frustration (dominant in 74% of reports), blame (dominant in 33% of all reports), and shame (dominant in 34% of all reports). Frustration emerges at the gap between what participants assume will occur and what occurs in the ERE. It is expressed as a mix of annoyance, discouragement, disappointment, anger, and impatience. Blame relates to the attribution of responsibility to other team members for the failure to escape the room. Shame emerges as the feelings of inadequacy that interferes with participants' interactions with others. Both blame and shame are predicted to result from the self-reflection process (see Mezirow, 2006). Consider the following voices:

| | |
|---|---|
| Frustration | "I personally started getting frustrated and impatient as we weren't progressing anymore when we became stuck." |
| | "We had difficulty with moving on from the Excel sheet to the URL link. We seemed to all think on our own rather than explaining our thoughts out loud, as we started to get frustrated. Our patience was tested during this time, lack of communication hurt our progress." |
| Blame | "My group had trouble completing the (name of puzzle). The team began to get frustrated which ruined the dynamic as well as the team members began to give up when they felt they couldn't figure it out." |
| Shame | "I should have taken more initiative. I feel bad that I was thinking of ideas in my head but afraid to say them out loud. Most of the time, my group members had the same thoughts as me anyway, so I was hesitant for nothing." |
| | "Individually, I should have paid more attention to detail in each of the puzzles. My team members held the critical path document, I should have looked at it sooner, but I did not. . . . we could not, together, brainstorm and solve it. That is where we failed in the end. My bad." |

## *Transformed Frames of Reference and Theories of Action*

Mezirow (2000) argued that the shifts in frames of reference can remain nascent, formless, and evaporate, and that public discussion with others about new thinking is key to rendering new learning into concrete theories of action. Emergent constructs in cognitive schemas require deliberate and public rehearsal before they are rendered concrete and expressed as behavioral intents. Hence, the post-ERE activities call students to self-reflect, examine their extant and emerging frames of reference, think through new theories of action, and discuss and negotiate with others to derive an action plan for their teams. Table 1 highlights the key differences in teamwork related cognitive schematics of participants, and key learning outcomes produced by the ERE and post-ERE exercises.

*Transformed Learning: Collaborative Teamwork.* The most supportable inference participants draw from their experience in the ERE is that, despite the challenges, they would choose teamwork over individual effort if they had to work again on complex, creative endeavors. The general sentiment is: "we were unprepared for problems without intuitively obvious solutions, that is, those that were beyond any single individual's capacity." This is a viscerally felt emotion. Nearly all participants (97.5%) say that without *teamwork*, they cannot solve difficult problems that require creative solutions on their own. They note that without help from others, they would give up:

> Even though we didn't fully solve the puzzles, they (other team members) got information that I would not have guessed, and I was able to share information that they didn't think of. I think the team worked a lot more effectively and the work got done quicker than it would have if I had done the puzzles on my own.

> If I had to solve this on my own, I would not have access to other perspectives. Without teamwork it can be difficult when you are faced with a conflict. There were times where I wanted to give up, but my teammates encouraged me to continue.

> To be honest, if I didn't have a team it would have taken me very long to complete or I probably wouldn't have completed it on my own. Dividing and conquering at some points and collaborating at others made the completion of the exercise efficient and fun as well! (emphasis and exclamation in original).

*Transformed Learning: Creating a Team Charter.* Most participants report dismay when faced with the incorrect assumptions they held that every team member would know what to do and cooperate fully to maximize the team's potential. Most participants (83%) and *all* teams report transformation in

**Table 1.** Changes in the Frames of Reference Articulated by Participants in the ERE.

| Pre-ERE frames of reference related to teamwork | Frames of reference after completion of ERE teamwork |
|---|---|
| *Constructs active in cognitive schemas.* Effective teamwork is about enthusiastic participants who place the team above self, cooperate, coordinate actions, avoid conflict, and social loafing. | *Constructs active in cognitive schemas.* Difficult puzzles and tasks and subsequent failure produces confusion and negative emotions. The team fails to pivot from delays and failure. Team members tune out and give up. |
| *Key assumptions.* | *Key elements of learning.* |
| Teamwork means putting up with many people, slackers and poorly motivated people who will slow me down and benefit unfairly from my intelligence and hard work. | When the task is challenging, multiple frames of reference, energies, motivations, and agreements to help one another are key. Without teamwork, I would have failed on my own; likely given up early. I am more committed to *collaborative* interaction with others on my team. |
| Everyone knows how to work in teams and will dive in as needed. | Cooperation does not survive when tasks are challenging. Extant notions of solutions result in failure. People give up, try to assert, or withdraw, and engage in dysfunctional behaviors *as soon as* we experience failure instead of pivoting rapidly. |
| If we all contribute, and do not slack off, we will escape the room. | In the absence of guidelines and guardrails to calibrate engagement, there is no legitimate way of managing contributions and monitoring progress. Collective agreement over a team charter and rules is essential for teamwork. |
| Listening to all ideas is important. | Listening without challenging or critiquing led to groupthink, and later to failure. |
| As long as I am contributing and not social loafing, I am a good team member and we will succeed. | Relying on simple brainstorming and presenting ideas results in a chaotic situation. It is my responsibility to lead and help the team refocus, pivot when necessary, and manage coordinated action. |
| We are equals, every member can do as they think best, who am I to tell others how to proceed. | All ideas are not equally important nor equally effective. It is my responsibility to express disagreements and challenge groupthink when it emerges. |

their thinking about formulating a charter up front for guiding and calibrating their contributions to teams in ways that lead to cohesion and greater efforts toward problem solving when impediments are encountered. This learning about the vitality of a charter emerges from their personal experience in the ERE, and the observed link between the uncoordinated actions associated with the failure to complete puzzles that led them to tune out of the exercise upon encountering delays and failure. The learning is derived from the evidence they gather about the unworkability of a "free-for-all" strategy that assumes every member will calibrate their actions to cooperate and collaborate with others.

Similarly, all teams explicitly report the intent to form not only a charter, but to do so prior to initiating the tasks assigned for the team. This learning aligns with the literature that advocates for a charter as an instructor-assigned activity to help student teams get organized in the forming stage of development (Hunsaker et al., 2011). However, to the best of our knowledge, our research is the first to show that students can express the need for a game plan or charter to guide their teamwork based on their first-hand experience.

The principal learning that serves as a basis for this transformation and intent are that despite evidence of failure, pivoting does not occur, and that despite knowing about groupthink, participants fear confrontations and choose to remain silent, tune out, or drop out. Even obviously non-contributive behaviors such as engaging in side-conversations, checking cell phones, and disengaging were rendered undiscussable absent a charter, and therefore remained unchallenged. A charter would identify conversations that were legitimate and create a space in which participants are accountable to each other. Consider the words:

> We had trouble with the last puzzle because none of us were having any success finding leads to our problem of submitting the Excel document. We did not give up, but our communication was a little lower at the end because we all were (individually) focusing on finding a solution without an actual game-plan.

> We should have created an initial game-plan at the start instead of how we brute forced our own directions and filled in bits and pieces. Everyone did different things and we don't know what each member has done or is doing.

*Transformed Learning: Leading Teams.* Second only to the commitment to form basic agreements to govern contribution and accountability, is the commitment to lead their teams during the term. Forty percent of participants point to the absence of a team leader—to manage coordination, inclusion, and motivation—as the key cause of their team's failure in the ERE. To one extent

or another, the ERE is a new experience for nearly all participants, that is, no adult stepped in to enforce rules, mete out consequences, offer encouragement and direction when the team faced challenges. Consider the following words:

> One (participant) acting individually would have to be taking charge. I think we lacked a leader in our teamwork.

> We didn't communicate our individual ideas as well on this puzzle. (If I were to do this again) I personally would try to take more of a leadership role and communicate more for next time.

> Individually, I would take more of a leadership role and encourage more group communication.

*Transformed Learning: Initiating Constructive Conflict.* Pre-ERE theories of action inordinately favor social niceties and abhorrence of all conflict (i.e., "conflict is bad; if we avoid it, and keep everything positive, then we can cooperate and solve problems," aligned with O'Neill et al., 2017). This theory of action is rendered ineffectual when team members are unable to regroup after trying poorly imagined solutions to puzzles that some knew would not work but remained silent anyway. We find no evidence of members challenging others' ideas in any one of the 83 teams. At this point in the data analysis, we identified the sole feature distinguishing undergraduate and graduate participants. While describing the identical dynamic of "failure to challenge and agreeing to go along even obviously erroneous approaches to problem solving," only the graduate students use the term "groupthink" in their written reflections. All participants recounted their frustrations about colluding to work on sub-optimal solutions when they knew better, *all* written responses were classified by the co-authors between 8 and 10 (10 reflecting the highest level of collusion in poor decisions). Many (41%) regard the groupthink in their team as their personal failure to critique and challenge solutions proposed by others as the principal reason for their team's failure to escape the room. Thirty-six percent of self-reflections suggest that students aim to take initiative in the future to shake things up, and help the team succeed. In the self-reflective reports and the post-ERE debriefing, participants speak of their newfound conviction in saying what is on their mind to shape the team process, even at the expense of engaging in conflict. Consider the voices:

> Some groupthink about (one of the puzzles) hurt our team. We didn't challenge each other.

> (If I were to do this exercise again) I would try and voice my opinion more. There were two people trying to figure out the last part that were arguing over the sheet. If I voiced that I think we should all look at it together, we could have finished earlier.

> Individually, I would've taken more initiative. I contributed a lot to the team's overall progress but I could've spoken up more when I had a differing opinion.

## Discussion

The contrasts between pre-ERE and post-ERE frames of reference and theories of actions shown in Table 2 serve to highlight the contributions made by the pedagogical innovation we describe in this article. The left-hand column highlights the learning derivable from current literature that can aid educators in crafting guidelines and instruction for students engaged in classroom teamwork. The right-hand column highlights the transformative learning reported by students.

The table makes explicit the vitality of pedagogies derived from the tenets of Transformative Learning Theory in two ways. First, we learn that pre-ERE frames of reference and theories of action are dysfunctional and ineffectual yet deeply embedded among students. Informing or instructing students is unlikely to motivate changes in thinking or action. Much of the learning about teamwork prior to engaging in the ERE is unrelated to solving complex problems in teams. Virtually every student begins with confidence about completing tasks as a team, virtually no one is prepared for the difficulties and failures. The most common behavioral response is "tuning out." No participant starts the ERE intending to tune out, they do it upon encountering an impediment anyway.

Second, based on pre-ERE frames of reference and theories of action, participants remain undeterred despite immediate evidence that their extant ways of thinking and taking actions produce error, delays, and failure. As Transformative Learning Theory predicts, all participants feel notable levels of shame and guilt during the critical self-reflection (see Exhibit 1). Moreover, few participants calibrate the negativity they feel. Only 43 of 321 students (13.4%) show capacity to pivot when faced with failure to complete puzzles. Notions of impediments, public failure, and embarrassment, rising negative emotionality, and pivoting are almost entirely external to activated frames of reference. In other words, delays and failure are unexpected, the negative emotions are unavoidable, and failure to pivot seems almost guaranteed. Future research can explain whether the above learning is unique to our campus, unique to our students, or reflective of the population of business school

**Table 2.** Instructor-directed Teambuilding Efforts Versus ERE-shaped Learning and Resulting Behavioral Intents.

| What the current literature suggests instructors should do to foster teamwork in classrooms: | The self-derived learning students report after ERE and post-ERE exercises. |
|---|---|
| Advocate for *collaborative* teamwork at the beginning of the term in which students are assigned to teams (Bryant & Albring, 2006; Seow & Shankar, 2018). | "When a team is charged with complex tasks, one person does not have all the answers. Failure is experienced when this is tried because all problems do not have intuitively obvious solutions. Complex tasks require collaboration with others, I must think of teamwork as a solution to problems that I cannot solve alone." |
| Require students to form a charter during the initiating stages of the team (Hunsaker et al., 2011). | "When the team is charged with complex tasks, and people attempt unilateral solutions, free-for-all ensues. Without pre-agreements on a charter and rules of engagement, team members are not emotionally ready to take the risk of challenging others and hold each other accountable. I will insist that we form a charter as an initiating step." |
| Assign formative and summative peer evaluations to reduce social loafing (Jassawalla & Sashittal, 2017). | |
| Tell students about the perils of groupthink that can impede a team's performance (Jackson, 2021). | "Groupthink is the default outcome when the team's task is confounding, and participants hold a surface level stake in the outcomes. Confused people with a bias for speed and action take the first option presented without critique.<br>To prevent negative emotionality resulting from blind pursuit of suboptimal solutions, I will not hesitate to initiate constructive conflict in future." |
| Appoint or require teams to elect/select participants to roles such as leader, note-taker, timekeeper (Bryant & Albring, 2006; Page & Donelan, 2003). | "All teams are not managed by referees and adults who ensure rules are followed. Teamwork requires members to perform roles essential for managing its multiple processes. A leaderless team, and a team in which key functions of timekeeping and note-taking are not performed—leads to the loss of motivation and ultimately to failure. From now on, I will volunteer to lead my team." |

students. Nevertheless, this learning helps explain the limited effectiveness of instruction about teamwork and the disappointing results in the workplace (see Buckenmyer, 2000; Clinebell & Stecher, 2002).

## *Theoretical Implications*

We can derive two inter-related theoretical implications for future theory development to serve the interests of the key stakeholders in business education, that is, students, instructors, and employers. First, to the best of our knowledge, there is no evidence of pedagogies derived from Transformative Learning Theory that were then implemented successfully to produce learning about teamwork in business schools. Current thinking is implicitly tethered to the assumption that "if you tell students to do what the literature suggests, they will do what is necessary to improve classroom teamwork." Recent reports from scholars and practitioners explicitly reject this assumption; they point to ill-prepared students as evidence (Petkova et al., 2021; Ramdeo et al., 2022). In other words, telling and guiding students is not helping. We find that important learning about teamwork related to collaboration, charters, initiating constructive conflict, and leading can emerge *without* telling. Students self-derive this learning after participating in our pedagogical innovation.

At present, empirical evidence of Transformative Learning Theory-derived team building pedagogies that were implemented in practice, with results to indicate that participants exhibit transformative learning, is hard to identify in management education or other literature. Bulk of the literature is devoted to review-based discussions (see Carter & Nicolaides, 2023). Empirical evidence mostly emerges from scholarly attempts to understand transformations in thinking and behaviors that have already occurred, from the lenses of Transformative Learning Theory (e.g., Durant et al., 2016). Haber-Curren and Tillapaugh (2015), for instance, analyzed students' capstone write-ups from a Transformative Learning Theory perspective. Kuechler and Stedham (2017) critically evaluated a mindfulness exercise implemented in a graduate program for evidence of transformative learning. Boyer et al. (2006) examined whether students' reflective writing showed signs of transformative learning. Scholars have advocated for the application of the theory to re-envision business programs (Brandhorst et al., 2024). In other words, while scholars discuss the merits of the theory and write about how it was used to understand archival data, this is the first article to present findings that an experiential exercise that adheres to the tenets of the theory can produce transformative learning about teamwork in classrooms.

Second, current management education literature says little about the centrality of negative emotionality in classrooms to the fostering of cognitive

and behavioral learning (see Fiset & Byrne, 2021; Gibbons et al., 2022; Joshi et al., 2025; Wyland et al., 2023). Literature devoted to theories of education, however, calls attention to the vitality of negative emotionality (e.g., Rowe & Fitness, 2018). For instance, Dirkx (2008) writes:

> We have a ways to go before educators recognize emotions in adult learning, especially so-called negative emotions, as something other than a barrier or challenge to effective learning experiences, something to get off one's chest before real learning can occur (p. 91).

Dirkx (2006) notes that instructors can engage in a disservice if they fear or eschew triggering negative emotionality in classrooms. For instance, he notes with some consternation that " . . . educators still regard the manifestation of emotion within the learning process as a distinctly negative development and seek ways to avoid or mitigate their expression" (p. 11). Similarly, scholars caution instructors against avoiding negative emotions in classrooms. For instance, Carter and Nicolaides (2023) note:

> Fundamentally, it is most important to understand that the nature (evolutionary purpose) of an uncomfortable sensory or emotional experience, such as fear, anger, or sadness, is to bring attention to a physical need or threat from the environment. Unfortunately, these experiences are often identified as "negative emotions," creating the belief that they are inappropriate or harmful and need to be avoided or ignored. These experiences are, in fact, helpful and serve to inform for purposes of survival and learning (p. 27).

Business education literature reports an instance in which an instructor erred on the side of triggering overwhelming negative emotionality, and cautions against extremes (Lund Dean et al., 2020). Despite caution, we find that calibrated triggers of negative emotionality have the power to transform learning about teamwork in exactly the way Transformative Learning Theory posits (Mezirow, 2006). Such calibrated triggers are known to produce moving, transformative experiences in museums (Chisolm et al., 2020; Garner et al., 2016), and transformative learning experiences in the context of leadership education (Heifetz & Linsky, 2002). New theoretical understanding of the links between negative emotions in classrooms and important cognitive, emotional, and behavioral learning of business school students is sorely needed.

## *Practical Implications*

The following inter-related practical advantages of our pedagogical innovation may interest constituencies that hold an interest in producing workplace-ready

students from business programs (Gray, 2024). First, we see evidence that pre-graduation classroom teams are inadequate facsimiles of workplace teams (as noted by Majid et al., 2019); they fail to expose students to complex interactions and interdependencies encountered while solving complex problems without intuitively obvious solutions. Our study highlights the underdeveloped capacity to pivot and change course when delays and failure occur. In this regard, instructors may find it useful to know that ERE participants realize that their current ways of thinking and acting lead to failure after attempting to solve complex puzzles in team environments. Students come to this realization based on self-reflections, the learning crystalizes during the scaffolding function served by post-ERE exercises. This is in sharp contrast to relying on instructors to *tell* students that: (a) they are unprepared for completing challenging tasks in as teams, (b) they must pivot rapidly based on emergent feedback, and (c) they are likely to give up when they experience failure.

Second, our pedagogical innovation produces value because current thinking regards negative emotionality in classrooms not as a vital catalyst for new, transformative learning but as a signal of instructors' insensitivity and incompetence (Mazer et al., 2014). It is logical, given this assumption, for instructors to shy away from any negative emotionality in classrooms (as noted by scholars such as Dirkx, 2006). While implementing the pedagogical innovation, it is not instructors who tell students that all ideas, all frames of reference they hold, and all solutions they propose are not equally interesting to others, nor equally effective when applied. Students see first-hand that their unilateral suggestions for improvement are not necessarily followed by others. The negative feedback emerges in the psychosocial and task environment of the ERE, it does not originate from the instructor. Participants attribute negative emotionality to themselves, to their naïve frames of reference and to their incapacity to manage interactions with others—and not to instructors. No participants identified the inherent difficulty of puzzles as the problem, all pointed to their failure to pivot upon encountering impediments to the absence of a charter, to the absence of leadership, and to their reluctance to initiate constructive conflict.

## Conclusion

We designed and implemented the pedagogical innovation in response to disappointed scholars, and in response to our own observations that detailed instructions for team building produce limited effect. Educators seeking to prepare the current generation of traditional-age undergraduate students for the realities of workplace teams might consider the ERE and post-ERE exercises as an important preparatory step. Our qualitative data, gathered from

multiple management classes, provides exploratory evidence to suggest that students gain better insights when instructors apply new pedagogies that adhere to the tenets of Transformative Learning Theory. In other words, the disorienting dilemmas, the critical self-reflection, and careful instructional scaffolding—as advocated by the theory—can produce fundamentally new thinking, emotions, and behavioral intents. Our learning is anchored in purposeful samples, and in qualitative data. Hence, our learning cannot claim to reflect the breadth of pre-ERE frames of reference among the 350,000 students who graduate from business school programs each year (NCES, 2024), nor the breadth of post-ERE learning that this population would report if they participated in the ERE. In other words, future research is essential to determine whether the ERE and post-ERE exercises: (a) translate into actions in classroom teams over the term and (b) translate into new actions in workplace teams.

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