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ADAPTING INTERTEACHING TO A HYBRID FORMAT:

A Framework for Implementation

Carmen Farrell, Ph.D.

Abstract

In the world of higher education, expectations of college-level instructors have shifted significantly in the last few years due to the COVID-19 global pandemic. Instructors were required to be more flexible than ever before, oftentimes across different modalities. This essay models an evidence-based teaching method, interteaching (IT), that was originally created for use in a traditional face-to-face classroom and suggests an adaptation of that method for a hybrid classroom. The theoretical framework of IT is explained and an adaptation of IT for hybrid classrooms is provided with a specific college-level course example of implementation. The advantages and challenges of this approach are also discussed in hopes that faculty will build off this idea and empirically test it as higher education continues to require more flexibility from its faculty members.

Keywords: interteaching, hybrid courses, higher education

Adapting Interteaching to a Hybrid Format: A Framework for Implementation

The COVID-19 pandemic has permanently changed how university instructors and their students are expected to engage (Xie et al., 2020). Early in the pandemic, when universities were forced to move all classes online, many instructors were thrown into the unknown with various online platforms, while still attempting to maintain teaching excellence and maximize student understanding. Even more than a year into the pandemic, instructors were still being asked to continuously flex in how they allowed students to attend their classes, whether due to limited classroom capacities or to students falling ill, as universities navigated whether to move back to fully online courses or try to remain in the classroom (Felson & Adamczyk, 2021).

As a result, numerous institutions have adapted or rapidly expanded their more flexible course modalities in order to engage the students who wanted to be on campus in their classes, but to also allow all students more flexibility with how they engage in coursework. Although hybrid and hybrid-flexible (hyflex) course models have been around for years (Beatty, 2006; 2007; McCray, 2000), the shifting landscape of higher education during the pandemic exacerbated the utilization of these modalities (Bashir et al., 2021; Xie et al., 2020). What these terms specifically mean can vary depending on the school and the context, but typically hybrid courses refer to when class instruction and engagement are provided by a combination of in-person and online learning, and hyflex refers to allowing students flexibility to choose what modality they want to engage with the hybrid course in (Beatty, 2006; 2007; McCray, 2000). Particularly at the beginning of the pandemic, these modalities were the first option to attempt to start getting students back in the classroom, and the

increased flexibility for students has become a much more consistent expectation as a result. Indeed, upper administration around the world now consistently promote these hybrid models of coursework as a necessity for engaging students across disciplines, and the number of hybrid courses being offered has increased significantly in the last few years (Bashir et al., 2021; Coates et al., 2021).

Allowing more flexibility for the student has its benefits, but it also requires instructors to utilize new technology, often in more complex ways than they had to prior to the pandemic. During this transitory period in higher education, instructors have started to share strategies and techniques to maximize student understanding (Ali, 2020). One way to be successful is to take concepts and pedagogies that are evidence-based and adapt them to work in a more flexible university environment. Interteaching (IT; Boyce & Hineline, 2002) is an instructional method that was systematically built to increase student engagement by immersing the student directly in the learning rather than the teacher passively instructing the student.

Boyce & Hineline originally created this method of IT as an application of behavior analysis techniques in the classroom with the hopes of improving student knowledge (2002). They were aiming to bridge the gap between behavior analysis techniques and the structure of the higher education classroom by allowing students to “interteach” with one another (described in detail below), give feedback to the instructor on what they need clarification on, and then have lectures tailored to their questions (Boyce & Hineline, 2002). Across the board, implementation of this technique shows improved student scores and retention of knowledge (for reviews, see Hurtado-Parrado et al., 2021; Sturmey et al., 2015). This essay argues for an adaptation of IT for a hybrid classroom, considering the increased expectation for these more flexible course models in higher education.

Due to the hybrid nature of the below description, there are elements in it that are similar to that of concepts like a “flipped classroom” in which students do work/reading/watch lectures on their own time and come to class to engage in active learning or problem solving to enhance their understanding of the content (Bergmann & Sams, 2012). However, with this implementation of IT, the instructor is still lecturing and utilizing some class time for direct instruction as well as peer discussion. So, while there are similar aspects, IT has additional elements that distinguish it beyond a “flipped classroom” format.

Traditional IT Implementation and Results

In a traditional face-to-face classroom environment, IT students would come to class having already read a chapter. Their class begins with a *study guide* that has questions on it pertaining to the materials they have already read (Boyce & Hineline, 2002). The main “interteaching” happens during class, when the students use 30-40 minutes with the study guide as the foundation of a *group discussion*, figuring out the answers to the questions and discussing what they have read in relation to the questions, as well as providing feedback to one another (Boyce & Hineline, 2002). The instructor walks around the room and supervises the conversations, jumping in to clarify or answer a question when appropriate. If students do well in their group discussion, they receive *quality points* towards their grade, as they have engaged well with both the course and its content (Boyce & Hineline, 2002).

At the end of the group discussion, the students are asked to rate their IT session and provide justification for what they did well or what could be improved. They are also asked to complete a *record form* indicating what topics they struggled with and what they would like to be reviewed in the lecture portion of class (Boyce & Hineline, 2002). The instructor then uses that feedback to tailor a *clarifying lecture* based on what the students most needed clarification on or wanted to better understand. From there, the students are expected to use *reinforcement contingencies* to fully complete their study guide based on what they learned in class (Boyce & Hineline, 2002). Throughout the term, students work with others at random during the IT sessions and develop competencies in what they are doing. Students demonstrate

their understanding by taking *probes* that extend beyond the study guides and assess the students in their knowledge and understanding. Boyce & Hinline (2002) suggest there should be a minimum of five probes per term.

IT has become more commonplace at universities, with various disciplines reporting success with the method in their classrooms (Sturmey et al., 2015). Across the board, IT shows consistently increased grades, engagement, and effectiveness compared to traditional lecture-based face-to-face courses (for reviews, see Hurtado-Parrado et al., 2021; Sturmey et al., 2015). More specifically, when comparing traditional lecture-based classes to IT classes, students showed improved examination scores, quiz scores, essay scores, and level of understanding (Cezeaux & Keyser, 2018; Edwards, 2008; Rieken et al., 2018; Scoboria & Pascual-Leone, 2009). Many of these studies also controlled for moderators, including variables like class size, aspects of IT implemented in class, student preference, and type of assessment. Even with those variables accounting for some of the variance in test scores, the boost in scores for IT students remained and the benefits of using this method in classrooms across disciplines are clear (for reviews, see Hurtado-Parrado et al., 2021; Sturmey et al., 2015).

Online Implementation of IT and Results

IT has primarily been used in a face-to-face classroom format, but due to the increase in online enrollment for universities (Xie et al., 2020), as well as the aforementioned need for flexibility due to the pandemic (Krebs et al., 2021), there has been expansion and exploration of IT in online environments (Krebs et al., 2021; Rieken et al., 2018; Soldner et al., 2017). Many of the components of original IT remain the same but are utilized differently in an online environment, and variations extend for both asynchronous and synchronous courses or a mixture of the two.

In one example, students were expected to read the content and prepare a study guide asynchronously. They were then asked their availability and were paired up with someone who had similar availability. Each pair then met virtually to do their paired IT discussion, rather than having everyone in one live synchronous class session (Rieken et al., 2018). TAs supervised the individual pairs in their group discussion and their feedback. The student record forms helped the instructor prepare a brief clarifying lecture that was posted asynchronously, on which the students were then probed in a variety of ways (Rieken et al., 2018). Another study had students prepare their study guide, read and watch the initial lecture asynchronously, and then had a synchronous time for all students to meet and pair up to complete their group discussion and record form (Krebs et al., 2021). The instructor then used that form to prepare and post an asynchronous clarifying lecture. Students in each of these studies who used the IT format scored higher grades and reported greater satisfaction with the IT method in comparison to others (Krebs et al., 2021; Rieken et al., 2018)

In one final example, students had an online synchronous class meeting once per week for 150 minutes (Soldner et al., 2017). Students were provided study guides prior to class, then either engaged in pair discussion via virtual breakout rooms or were placed in their own individual breakout rooms and were probed with quizzes at the end of that same class period (Soldner et al., 2017). The students in pairs were allowed quality points at the end of the probe, while those who were not paired were not. Results showed that there was a significant increase in scores for students who did paired discussion rather than individually reflecting on the study guides (Soldner et al., 2017). Students also expressed a greater preference for the paired discussion format (Soldner et al., 2017). All of these examples reinforce the idea that IT is a successful instructional technique that aids students in better understanding course content, even in an online environment.

These studies with online modalities maintain the same increase in performance that is seen in the more traditional face-to-face IT classes as described above (for a review, see Hurtado-Parrado et al., 2021). Thus, IT is consistently effective in getting students to learn the course material, whether they are online or in-person. Many of the authors of these online studies suggest that IT should be adapted and utilized in even more classroom formats, including hybrid and hyflex mod-

els (Krebs et al., 2021). The present essay intends to posit a hybrid adaptation of IT, as well as discuss the challenges and benefits of its implementation in hopes that this can be used as a foundation for future empirical study.

Hybrid IT Implementation

Course Selection

In considering when and how to implement IT in a hybrid classroom environment, the COVID-19 pandemic presented me with multiple opportunities to engage with this kind of format for several courses, including Introduction to Psychology and Life Span Developmental Psychology. As mentioned previously, universities can vary in how they define hybrid courses, so at my university, a hybrid course is defined as having one in-person class meeting a week for 75-minutes with additional asynchronous online work for the remainder of the week.

When it came to implementing IT in a hybrid course, I decided it would be best to attempt this in Life Span Developmental Psychology. Students taking that course had already taken Introduction to Psychology, so they have had some experience with classes in the field. It is also a required course for both psychology and nursing majors, and as those majors comprise a majority of most sections of the course, they take it seriously. At the time I utilized IT in my hybrid classroom, our university had also just launched an online-only degree completion program for psychology, so enrollment was growing exponentially, and there were not enough fully online courses being offered for the number of students we had. Thus, I was asked to modify my hybrid course so that the one live 75-minute class session a week could be attended in person by our traditional students and live-streamed synchronously online for our online-only students. All of these factors impacted how I chose to implement IT into the one 75-minute live class session a week. It is also important to note that this hybrid version of IT was taught using Blackboard Collaborate Ultra Version 21 (Collaborate), which is where all course assignments and links to the online book were housed, as well as being the online platform for the synchronous students live streaming the class.

In this hybrid course, students were consistent in the modality with which they attended class, and attendance for the live class session each week was relatively high throughout the semester. For the traditional face-to-face students, they were technically allowed to livestream the class if they ever fell ill, but the face-to-face students engaged in the livestream modality less than 10% of the total class time. The online-only students did not ever change modalities. The students in the face-to-face group and the online-only group were self-selected, in that if they were enrolled in the online-only degree completion program, they had to be in the online-only group, and vice versa, which is a limitation of the current implementation.

Procedure

Each week throughout the semester, students were given a majority of the week to read a chapter of the book and complete reaction questions in short paragraph responses (similar to the *study guide* used in IT, see Boyce & Hine, 2002) that were due the night before the live class meeting. These initial reaction responses were graded for completion, such that as long as the student made a genuine effort in answering each part of the reaction question (e.g., came up with logical possible answers to all of the questions), they would get full credit. This initial credit was worth half the amount of points of the corrected reactions, which are detailed after the explanation of the live class session. It was imperative for the students to have a full attempt of the study guide completed prior to entering the live class session that week. For an example of a study guide for this course, see Appendix A. With only 75-minutes of in-class instruction, none of that

time could be dedicated to completing the study guide. The students would get clarification in the live class session, but coming in with attempted answers was especially crucial for this hybrid format.

During the live class session, which was one 75-minute period each week, students attended either in-person or via livestream on Collaborate, depending on their degree modality. Each session started with breakout groups for the first 20-30 minutes of class time, actively engaging in IT's *group discussion*. Those who attended in-person were split up into 3-4 person groups and those online were randomly placed into virtual breakout groups of 3-4 people via Collaborate. Roughly half of the class attended in person and half live-streamed the class session each week, and each section had around 35 students in total. The students had the first portion of class to discuss their reaction questions, share their answers with each other based on the reading, and complete a form to indicate what questions they wanted more clarification on (similar to the *record form* used in IT, see Boyce & Hinline, 2002). These forms were given to the instructor at the end of this group discussion time.

While the students were discussing, the instructor both walked around the room and virtually jumped into each breakout group periodically to make sure the students were on task and to intermittently answer questions or guide the group. While formal *quality points* (see Boyce & Hinline, 2002) were not given for each student, students knew active engagement was an expectation of the course. They were given warnings or point deductions at the instructor's discretion for successive class sessions of either not attending or not actively participating in the discussion. For most students, a simple warning was sufficient to get them more engaged with and participating in the group discussions. All of the students were expected to attend class live for the 75-minute weekly session (whether online or in-person) unless they were ill or had a documented excuse for their absence. If they missed a significant number of live classes unexcused, that would also impact their quality points in the course.

Following discussion time, the instructor took the questions that students had asked and taught a *clarifying lecture* for the remainder of the class period on those topics. Prior to the class session, the instructor prepared lecture slides with videos and visual aids on the entire chapter's content. During the group discussion time, based on both verbal feedback from the students and the record forms, the instructor structured the lecture to focus on what the students wanted a better understanding of. Typically, this structuring of the lecture took about 5 minutes as the students came back from their breakout groups and settled back into class.

During the lecture portion of class (the remaining ~45 minutes of class time), the instructor lectured and incorporated active learning strategies such as debating developmental issues, think-pair-shares, and scenarios. Following the live class period, the students were required asynchronously to revisit their guides, correct their initial reactions, and update them with what they learned from class. They were given 24 hours following the live class period to do this and resubmit for grading. These resubmissions were the corrected reactions that were graded for accuracy, which were worth twice the amount of points of the initial reactions, intending to have a similar effect as the *reinforcement contingencies* in traditional IT (see Boyce & Hinline, 2002). Prior research shows that having students go back and correct/improve their own work can be a useful way for them to better retain information they have learned in class (Fahimi & Rahimi, 2015; Zimmerman, 2002). Students then had the remainder of the week to asynchronously read the next chapter and complete their initial attempt at the next study guide, and the cycle repeated from there.

Two exams were used as *probes* for the students in the class, as they assessed the information the students learned in a comprehensive way by moving beyond the content of the study guides (Boyce & Hinline, 2002). Due to the nature of a hybrid course being once a week, and the wide breadth of content that is expected to be covered in a lifespan developmental psychology course, logistically, only two exam class periods fit into the structure of the course. Both of the exams were multiple choice and non-cumulative. Students took them through the Collaborate course website.

For this hybrid version of IT, the majority of the students' course grades came from completing reaction questions via their study guide. They were given points for an initial attempt as well as double the points for a corrected version graded for accuracy as a reinforcement contingency. Late work was not accepted for the reactions due to the time-sensitivity of

being in class, but the students were allowed to miss one initial reaction and one corrected reaction over the course of the semester without any penalty to their grade. During the live class session each week, they engaged in group discussions where they completed record forms, were assessed on quality points, and then experienced a clarifying lecture. The students also had one midterm and one final examination, which were used as probes. These were multiple choice examinations. For a summary of the specific IT elements as well as their implementation in this hybrid format, see Table 1.

Table 1: Changes Implemented to Elements of IT for a Hybrid Classroom

Element of IT	Changes Implemented for Hybrid Classroom
Study Guide	Reaction questions initially completed prior to class time — graded for effort/completion
Group Discussion	Both virtual breakout groups and in-person and real-time
Record Form	Worksheet where they indicate where they need clarification
Quality Points	Students are observed in their participation, and if not present and/or not participating, points get taken off
Clarifying Lecture	Teacher comes prepared for everything, selects portions to cover in class based on feedback from students
Reinforcement Contingencies	Students go back and correct their initial reactions and submit them for accuracy
Probes	Students take multiple choice exams that go beyond the study guides in assessing their understanding

Challenges and Benefits

Traditionally, IT is implemented in a fully in-person classroom and some instructors have also had success transitioning IT into online formats (Krebs et al., 2021; Rieken et al., 2018; Soldner et al., 2017). Thus, it seems logical that integrating IT into a hybrid classroom would also be a successful endeavor. One challenge of this method is the initial creation of all of the study guides and lectures. For the study guides, I prioritized making sure that enough of the course content was covered in applied and relevant scenario-based questions for the students to work with. Indeed, creation of the study guides was a time-consuming and continually edited part of the IT implementation process. However, those study guides also comprise the majority of the students' grades, so it was a worthwhile investment of time.

Another challenge that is inherently present with a hybrid class structure is that the amount of live class time is limited, having one 75-minute live class session each week rather than two 75-minute or three 50-minute live class sessions each week. This is especially true for a subject like Life Span Developmental Psychology, where you are expected to cover development over the course of a full human life span in one semester. However, by using a chronological framework and ensuring that all three psychological domains of development (physical, cognitive, social-emotional) are covered, doing one period of the life span (e.g., adolescence) per week ended up working out quite well. In terms of hybrid IT implementation, the biggest area where the live class time constraints came up was in the usage of probing. In their original article, Boyce & Hineline (2002) suggest that a minimum of five probes should be assessed throughout the course of the semester. Due to the time constraints of one live session a week, I was only able to have two larger probes in the midterm and final exams. This decision was made because the study guides were a large amount of work for the students in their asynchronous time each week and assessing them weekly on top of having to correct their reactions after class was deter-

mined to be superfluous. In the future, instructors could explore the option of utilizing online quizzes or assessments in addition to the submission of the corrected reactions following the live class period.

Another factor to consider is that in traditional IT, students do their group discussion in pairs and the teacher walks around the room, jumping in as necessary to help guide or answer questions (Boyce & Hinline, 2002). In this hybrid model of IT, the groups were slightly larger – usually 3-4 students in a group – and the instructor had to both walk around the room as well as stand at the computer and jump into each virtual breakout room periodically. This also meant that the students who were online only discussed their reactions with others who were online, and vice-versa. Previous research does indicate that putting students in pairs rather than larger groups has a moderate effect on test scores (Hurtado-Parrado et al., 2021), so this is another limitation of this model. However, the logistics of the instructor having to navigate jumping in and out of virtual as well as in-person groups takes some time and practice, so having smaller groups in this case would have proven difficult.

Finally, because my university has an online-only degree completion program, students had to be self-selected into the two modality groups, based on what type of degree they were pursuing. This did not allow me to randomize the participants or have control over any extraneous variables that might also impact the students' scores. This also made the group sizes unequal, based on the increased demand for the online-only program, which made running analyses on this data impossible. The hope is that this description of implementation can lead others to pursue randomized experimental work with this method.

Even with the various challenges associated with adapting IT into a hybrid classroom, there are numerous benefits as well. Research shows that using IT consistently improves test scores and student learning in both online and traditional classrooms (for reviews, see Hurtado-Parrado et al., 2021; Sturmey et al., 2015). Future research should utilize empirical data to support this structure with large sample sizes and test to confirm the same effects exist for a hybrid classroom. Researchers should also aim to obtain data on which way the students attended class, as well as other personal factors that might impact their grades. Anecdotally, the students rated the hybrid IT class extremely highly in both midterm and end-of-semester anonymous evaluations, and their grades were higher than the averages from previous non-IT life span developmental psychology classes. For example, students gave feedback like “I loved that we had the entire week to complete each assignment, and that we could discuss in class with our peers about our answers, and then correct them based on the class teachings” and “I found the format of the course (with weekly questions and then a thorough review and discussion) was a very effective learning format. There was also a lot of class engagement, which I found to be something great about this class.”

IT has the benefit of allowing the class to focus on exactly what the students need the most help with or clarification on, and this benefit is seen in the hybrid classroom format as well. It is also important to note that this specific example demonstrated success for students in two different modalities: those attending class in-person, as well as those who live-streamed the class synchronously. Regardless of the modality in which the student attended class, allowing them time to use each other as support systems is crucial, and having the instructor there to reinforce or clarify any remaining questions really helps to solidify the information for the students. One other factor to note is that this model of instruction was completed at a small regional public university, so implementation may have to be modified for universities with significantly larger class sizes. Logistically, for larger classes, it might be helpful to have TAs and/or peer mentors help to monitor the discussion portion of class.

Conclusion

The present essay offers a framework for implementation of IT, an evidence-based and mutually beneficial teaching method, in a hybrid classroom. The majority of the traditional IT framework can be implemented in a hybrid classroom,

with some adjustments due to the limited amount of live class time each week. Students received this hybrid IT formatting well, and this teaching method could increase accessibility and improve outcomes for students across modalities and disciplines in a hybrid classroom. This course has been taught this way for two years and will continue to be implemented in this hybrid format each spring semester moving forward. Over the last two years, small updates have been made to the reaction questions/study guides and the lecture slides/activities, but the overall structure of the IT implementation has remained the same. Due to the previously discussed unequal group sizes and group self-selection, formal analyses of data from this university are not possible. Therefore, future research should empirically test this framework.

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Appendix A

Example Study Guide – for Early Adulthood Module

1. For physical development, your book discusses how early adulthood is the physiological peak for humans. What do they mean by this? Give two examples of how your body “peaks” at this time. After this peak, things start to decline. Your book gives examples of how habits you establish in your twenties can greatly impact your later health. Explain how these habits can impact later health and then write at least two suggestions you might give a twenty year old on what healthy habits they should focus on at their age.
2. Your book discusses how people are choosing to get married and have children later in life than ever before. Give two reasons why you think that is. Then discuss what in vitro fertilization is and give one pro of using in vitro fertilization if you can’t conceive and one con. Are there other options for people who can’t conceive that aren’t discussed in this section? Then think about parenting. Define and give an example of at least 2 of Galinsky’s stages of parenting. Do you think families and parents look different now than they used to?
3. Do you agree with Perry’s scheme, that young adults move from dualism to multiplicity and relativism in their thinking? Explain why or why not, and then give an example of each (dualism, multiplicity, and relativism). Then after reading the section on education, discuss what skills learned in college best help students prepare for the workforce and why.
4. Marcia is someone who found her partner in college, got married the summer after graduation, and now is expecting her first child. Ashleigh did not find a partner in college, but instead has built wonderful strong connections with friends that she sees weekly even after graduating college. Did either Marcia or Ashleigh achieve intimacy versus isolation? Explain why or why not for each person.
5. What is emerging adulthood? What parts of Levinson’s theory are similar to this idea of early adulthood? Then describe at least 2 ways that emerging adults may differ across cultures, and write at least 2 sentences describing

each difference.

6. Which of the following do you think is most important in influencing attraction: similarity, proximity, familiarity, or reciprocity? Give at least 2 reasons why you think that is most important. Then do you agree with the triangular theory that there are six different types of love? Give an example of what 2 types of love might look like. Is it possible for someone to be happy without a significant other? Why or why not?