10TH ANNIVERSARY

DeVry University
Journal of
Scholarly Research

DEVRY UNIVERSITY JOURNAL OF SCHOLARLY RESEARCH

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DEDICATION TO JOHN GIBBONS

This 10th anniversary issue of the DeVry University Journal of Scholarly Research is dedicated to the late Dr. John Gibbons. Always supportive of faculty-led projects, John was instrumental in seeing that the journal became a reality. John possessed a rare combination of wisdom, kindness, and compassion. He led the faculty not as an authority figure, but as a person with empathy and deep understanding of human nature. For all who knew him, John was a guiding light. He believed in the capacity of all people to fully reach their potential, and he knew how to nurture and inspire greatness in every life he touched. His legacy continues not only in this journal but also in those who were lucky enough to know him.

A MESSAGE FROM THE PROVOST & ASSOCIATE PROVOST

Celebrating 10 years of Scholarship

A look back:

The DeVry University Journal of Scholarly Research (DUJOSR) team first met in 2013 to plan the very first issue for Spring 2014. The Journal was in part, a vision of Dr. John Gibbons who believed in the need for us to be more intentional in sharing our faculty scholarly work and research. The inaugural edition included a message from Dr. Donna Loraine, Provost and Dean of Faculty at that time, who wrote "*We are delighted to see the inaugural edition of the DeVry University Journal of Scholarly Research. Scholarly activity is an important component of a faculty member's role at DeVry University. It is fitting that we now have a journal to showcase scholarly activity.*"

Today, we celebrate ten years of showcasing our faculty scholarly activity, and we are so proud of every edition that has come out over the years. We continue to be steadfast in our commitment to promoting our faculty's scholarship and their innovative thought leadership.

A look forward:

As we look forward to the next ten years of success with the DUJOSR, it is important to reaffirm our commitment to the original purpose of the Journal, which is to empower DeVry faculty to make meaningful contributions in their field. As a predominantly teaching institution, this Journal exemplifies research that goes beyond primary research by including scholarship of application, scholarship of teaching and learning, and scholarship of integration (Boyer's model).

We are very grateful for all the scholarship work that our faculty have and continue to accomplish, including recent work in new and expanding areas of technology such as Artificial Intelligence. We are very excited about the recent addition and call for faculty-student collaboration in scholarship, which enhances the learning experience and strengthens students' educational portfolio.

None of this past or present success would be possible without the incredible guidance of our DUJOSR leadership. Thank you to all our faculty for ten years of success, and thank you to our DUJOSR leadership for creating the foundation for the next ten years of success.

Shantanu and Darryl

Shantanu Bose, PhD
Chief Academic Officer and Provost

Darryl Field, PhD
Associate Provost – Academic Operations

A MESSAGE FROM THE MANAGING EDITORS

We welcome the DeVry University community to the latest edition of the *DeVry University Journal of Scholarly Research* (DUJOSR, Vol. 8, No. 1).

The DUJOSR continues to uphold the goals of the founding board to advance knowledge in higher education and in our program areas, and particularly to establish our name as we build the literature in our domain of online learning. We provide a platform to share the scholarship of our community and to offer support to our members who seek to publish for the first time.

As part of our 10th Anniversary celebrations, we are announcing two new submission categories; Faculty-Student Collaborations and Course Reviews – please find the details in the Call for Papers section of this issue. The Faculty-Student Collaborations will offer students a chance to engage in scholarly work, and we are pleased to welcome Dr. Emre Ozmen as the new Editor. Dr. Ozmen is also the co-author of our first submission in this category - Quality Problems at Chipotle: How to Prevent Food Poisoning. We have added course reviews as a category which expands our submission opportunities for relevant and insightful reviews of interest to our community. This opportunity was prompted by a submission from Dr. Andrea Henne, which is also included in this issue.

Our colleagues in the Colleges of Business and Management (COBM) and Engineering & Information Science have provided perspectives on Team Teaching. From the COBM, we have included a paper intriguingly titled, The Value Proposition of Alternative Dispute Resolution, and a paper that examines the use of metaphors and a neuro linguistic pattern to mitigate resistance to change. We are delighted to include an EIS paper from one of our "frequent flyers", Dr. Penn Wu. Our final paper from the College of Liberal Arts and Sciences (LAS) poses a highly pertinent question: What will happen in higher education? We are excited to include a From the Classroom piece, and we can again enjoy a well-timed book review from scholar Dr. Shawn Schumacher.

We appreciate the sentiments shared by the Provost, Dr. Shantanu Bose, and Associate Provost, Dr. Darryl Field, and encourage you all to celebrate the achievements that are reflected by the DUJOSR's 10th Anniversary. Do consider contributing to our vision for the future of online education in business, healthcare, and technology in the next or following issues! We encourage all members of our community to consider the full range of opportunities to publish in the Journal as well as to contribute as a reviewer or member of the editorial board.

We would like to acknowledge the efforts of all of the members of the DeVry University community who have published in this issue of the DUJOSR, and all who have contributed and supported us for the past 10 years – we begin and end this issue with our thanks to Dr. John Gibbons – and celebrate the endurance of his vision for scholarship.

Please visit the DUJOSR via the library and CTE, and in the Journal archive in the DeVry University Newsroom: https://www.devry.edu/newsroom/academic-publications.html

Deborah Helman, PhD
Managing Editor

Michael Bird, PhD
Managing Editor

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JOURNAL INFORMATION
The *DeVry University Journal of Scholarly Research* (ISSN 2375-5393 1) is a semi-annual multi-discipline, peer-reviewed, journal devoted to scholarship and education research.

The journal is the work of the faculty, staff and administration of DeVry University. The views expressed in the journal are those of the authors and should not be attributed to the sponsoring organizations or the institutions with which the authors are affiliated.

DEVRY UNIVERSITY JOURNAL OF SCHOLARLY RESEARCH

CALL FOR PAPERS, SPRING 2025 ISSUE

The *DeVry University Journal of Scholarly Research* (DUJOSR) continues to expand its pages to include a variety of publishing opportunities for faculty. Academic scholarship remains a staple for the journal, but new categories include Case Studies, Book Reviews, Course Reviews, Letters to the Editor, and From the Classroom, and Faculty-Student Collaboration sections, in which faculty can share vital experiences and best practices. These categories of submission are fully described below. Specific deadlines and instructions for submission conclude this "Call for Papers".

ACADEMIC SCHOLARLY ARTICLES

For the Spring 2025 issue, we continue to solicit "working papers" (3000 to 5000 words) in our scholarly article category.

Papers of all types are welcome including theory, empirical, or methodology papers, as well as literature reviews, from both positivist and naturalistic traditions. Research- and evidence-based papers emphasizing practical relevance that resonate with our readers are preferred. We regard submissions as "working papers" that can be submitted to other journals for consideration (but have not been previously published elsewhere).

The review process requires that each paper is coded and blind reviewed by two peer reviewers with expertise in the author's discipline. Faculty volunteers (for whom profound gratitude is expressed) comprise the peer review board. Final publication decisions are made by the editorial board, consisting of College and Managing Editors.

Authors who have previously submitted academic scholarly papers for past issues are encouraged to re-submit their revised papers. Papers should be sent with an additional document that specifies detailed responses to reviewers' and editors' feedback.

CASE STUDIES

DUJOSR solicits case studies (ranging from approximately 500-word short cases, to 1000 to 3000-word long cases) that have not been published elsewhere but are considered "working papers." The purpose of this initiative is to create a repository of case studies that can be used by faculty to teach DeVry University graduate and undergraduate courses. Our aim is to provide students with a unique and valuable learning experience that has been generated by our faculty.

Case studies of all types are welcome, including multi-media. We would prefer case studies that emphasize practical relevance that resonate with our faculty and students. Case study submissions must also be supported by a set of directions, i.e., Faculty Teaching Notes. The teaching notes must indicate the relevant courses and TCOs associated with the case study, as well as suggested question strategies and pedagogical practices.

The case study should be significant, complete, compelling, inclusive of alternative perspectives, qualitative, sufficiently evidenced, aligned with one or more Course Objectives, and written with accuracy and relevance.

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The review process for case studies is the same as for academic scholarly papers. Case studies will be evaluated on the following criteria:

- Timeliness of case & relevancy (tied to 1 or more Course Objectives)
- Theoretical framework, and practical applications
- Opportunity to expand knowledge,
- Implications for field of studies

- Case notes for faculty
- Writing quality: Clarity, conciseness, and organization, grammar and mechanics,
- APA format, including in text citations and reference page.

There is no submission deadline; case studies will be accepted on an ongoing basis.

BOOK REVIEWS

Book reviews continue to be a regular feature in the journal pages. They are an important part of scholarly life. They alert colleagues to new developments in the academy, foster discussions that can lead to new scholarship, and ultimately provide us with both a broader and deeper view of the world, which we in turn can share with our students.

Reviews of either fiction or non-fiction works should adhere to the following publication guidelines:

1. Reviews should be between 500 to 1000 words in length, double spaced, and include the following: author, title, place of publication, publisher, year, price, page length (including introduction and text), and International Standard Book Number (ISBN).
2. Reviews should include a brief summary of the scope, purpose, content of the work, and its significance in the literature of the subject. Reviews should evaluate the strengths and weaknesses of the work as well as attend to its use of sources, including documentation, methodology, organization, and presentation.
3. Reviews should be fair, balanced, and treat authors with respect.
4. A signed permission form to publish a review is required.

COURSE REVIEWS

Course reviews should pertain to an academic course attended by the author of the review.

1. Reviews should be between 500 to 1000 words in length and provide an overview and critique of the course content, name, location, supporting organizations and date.
2. Reviews should include a summary of the scope, purpose, content of the course content, and its academic significance. Reviews should evaluate the strengths and weaknesses of the course as well as attend to its use of documentation, methodology, organization, and presentation.
3. Reviews should be fair, balanced, and treat authors with respect.
4. A signed permission form to publish a review is required.

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LETTERS TO THE EDITOR
Letters to the Editor are a welcome addition to the journal pages. Letters that reply to or extend academic scholarship published within DUJOSR pages are particularly welcome, as these add rich texture and dialogue to ideas presented. Letters should be professional, well-tempered, and engage with content meaningfully. Letters that do not necessarily attend to previously published work but are timely and relevant are also welcome.

Letters responding to published articles in DUJOSR should identify the month and year of the article, review, or previous letter on which it is commenting. The full title of the article, review, or letter as well as the author(s) should be included. Letters should be double-spaced and 500 to 1000 words in length. Letters may express well-tempered opinions but should include citations in cases where academic integrity requires documentation. Letters should be fair, balanced, and treat authors with respect.

FROM THE CLASSROOM
This section of the journal is newly offered to faculty who have rich pedagogical experiences worthy of sharing with a larger audience. Papers in this category may use research to support ideas but may also consist of valuable experiences about which research may not have yet caught up. Well-crafted papers that demonstrate increased student engagement in the classroom are particularly prized. In this category, the recommendations for length are 750 to 1000 words, but longer papers of exceptional quality and relevance will be considered. Content should seek to express pedagogies that transcend the commonplace or that provide an interesting new spin on well-trod best practices.

FACULTY-STUDENT COLLABORATIONS
Collaborative faculty-student publications provide an opportunity for students to engage in scholarship and learn how to publish as part of a collaborative effort. This section of the journal is newly offered to faculty who have the opportunity to encourage students to prepare papers from course projects or assignments. In this category, the recommendations for length are 750 to 1000 words for case studies, and 2500 to 3000 words for research papers. Content should seek to express domain (related to the course taken) expertise that transcends the commonplace or that provides an interesting new spin on traditional approaches. Submissions are not peer reviewed - they are dealt with by the editor. Faculty members are expected to act as mentors, collaborators, or consultants for the students' scholarly work.

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EDITORS' INSTRUCTIONS FOR AND SUBMISSION AND DEADLINES

All submissions are expected to follow the APA 7th edition style sheet. APA source materials are available in the DVU LibGuide APA/Writing Center. In addition, the APA publishes a handbook advising writers on all aspects of the publishing process: Publication Manual of the American Psychological Association, Seventh Edition (2020). Please consult the following websites:

DVU Library:
https://libguides.devry.edu/APA

The American Psychological Association (APA):
https://www.apa.org/
https://apastyle.apa.org/style-grammar-guidelines

Please note that *DUJOSR* allows the use of AI-generated content in all its submissions categories, but faculty and student authors must acknowledge the use of such content as relevant and as appropriate so that it is clear to readers which content is generated by AI and which is by the authors themselves. In addition, authors are expected to correct any AI-generated factual content or APA documentation errors before submission. For more details about how to acknowledge AI-generated content, see the "How to Cite AI Tools" section of the DVU LibGuide on Artificial Intelligence – Faculty. Please consult the following website:

DVU Library:
https://libguides.devry.edu/AI

The submission deadline is March 1ST, 2025. Please submit your work and a Turnitin Report in any category to Managing Editors, Deborah Helman and Michael Bird, at *DUJOSR@devry.edu*.

The Managing Editors reserve the right to edit all submissions in any category of submission for length, tone, and content, over and above recommendations made by peer reviewers and College Editors.

LETTER TO THE EDITORS:

ON THE CUSP OF TRANSFORMATIVE CHANGE

Dear Editors,

I am writing to draw your attention to a critical issue in educational research, famously known as "Bloom's 2 Sigma Problem." Originating from Benjamin Bloom's seminal study in 1984, this research endeavored to explore the variances in student performance under different instructional conditions. The findings revealed that students who received individualized tutoring, enhanced with mastery learning techniques and continuous feedback, significantly outperformed their peers in standard classroom settings. This disparity, quantified as two standard deviations or "2 sigma," signifies a leap from the 50th percentile to an exceptional 98th percentile in performance.

Bloom's study uncovered that the key to these remarkable outcomes was not solely the academic content but the synthesis of content and connection. The essence of the student-tutor relationship, characterized by consistent feedback, belief, reinforcement, and encouragement, was instrumental in driving student progress. This insight sheds light on the enormous potential of personalized education. However, the challenge lies in scaling the benefits of individualized tutoring within the constraints of class sizes and resources.

Since this groundbreaking research, there have been numerous attempts to replicate the two-sigma improvement through various approaches, including technology-enhanced learning, peer tutoring, small group instruction, flipped classrooms, and mastery learning. These methods, while beneficial, have yet to fully resolve the logistical and economic challenges posed by the need for one-to-one tutoring.

In this context, contemporary advances in Artificial Intelligence (AI) offer promising avenues. AI-powered adaptive learning systems are capable of emulating the personalization of one-on-one tutoring by tailoring content and feedback to individual learning styles and needs. Features like 24/7 chatbots, virtual tutors, and automated essay evaluations represent significant strides in bridging the gap between traditional and personalized instruction.

While these expansive AI systems provide extensive subject coverage, it is imperative to address ethical considerations, particularly regarding their potential misuse in academic settings. The overarching message, however, remains clear: AI is intended to supplement, not replace, human educators. By responsibly leveraging AI, we can democratize the benefits of personalized education, extending the reach of the "2 Sigma Problem" solution to a broader student base.

As educators, we must be cognizant of normalcy bias—the tendency to underestimate the likelihood and impact of significant changes. The emergence of disruptive technologies like AI challenges us to transcend this bias and prepare our students for a world that is constantly evolving. It is our responsibility to equip them not just for the present but for a future that holds endless possibilities. In embracing these changes as opportunities for growth and learning, we can foster a forward-thinking mindset among our students.

In conclusion, as we stand on the cusp of these transformative changes, let us embrace the future with readiness and enthusiasm. Let's prepare ourselves and the next generation for a world that is rapidly advancing and ever-changing.

Mohamed E. Brihoum, PhD
DeVry University, Florida

TEAM TEACH: AN EMPIRICAL THEORETICAL MODEL WITH COMMUNITY OF INQUIRY

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ABSTRACT

Team Teach is a model of teaching and learning in which two or more educators collaborate in the planning, delivery, and assessment of courses to the same group of learners. Team Teach presents five models of delivery and facilitates a community of inquiry that shapes a collective identity in the three manifestations of cognitive, social, and teaching presence. Best practices of Team Teach include focusing on learning outcomes, establishing clear expectations and roles, and facilitating institutional support. The combination of multiple examples and perspectives within Team Teach allows students to be more engaged, facilitates relationships between educators and students, eliminates duplication efforts, helps to train new faculty, and increases teaching and learning efficiency. The benefits of Team Teach are many, among them the creation of improved teaching environments in which students are exposed to different professional experiences and backgrounds. It also provides opportunities for educators to distribute the workload, create new teaching ideas, engage students with different learning styles, and role model professional behaviors to prepare students for today's complex and diverse work environments.

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Keywords: team teaching, higher education, community of inquiry

TEAM TEACH: AN EMPIRICAL THEORETICAL MODEL WITH COMMUNITY OF INQUIRY

The science and art of Team Teach offer limitless teaching and learning possibilities in higher education (Castellanos-Reyes, 2020). This article explores a scholarly definition of Team Teach within a stimulating community of inquiry in which educators and learners may excel in their academic pursuits. This paper elaborates on the essential attributes of Team Teach, the benefits and challenges of Team Teach as a viable learning environment for college students, and shares empirical evidence on Team Teach outcomes, benefits, and challenges to overcome significant teaching and learning roadblocks in the collaborative classroom. It proposes a theoretical framework to accomplish higher levels of teaching and learning excellence in today's challenging academic times (Dang et al., 2021).

SCHOLARLY DEFINITION OF TEAM TEACH

William Alexander proposed Team Teach (i.e., team teaching) in 1963 at Cornell University as a model for middle school education (Gaytan, 2010). Although Team Teach models have been popularized in K-12 education, faculty members in higher education often collaborate in research initiatives but are seldom collaborators in teaching (Lock et al., 2017). "Team Teach" can be defined as a pedagogical approach with two or more educators who collaborate in planning, delivering, and evaluating courses for the same group of learners (Dang et al., 2021; Yellowley & Farmer, 2005). Team Teach models can satisfy educators' needs to be successful when teaching challenging subject matter topics, reduce their sense of isolation, and share diverse teaching philosophies (Lester & Evans, 2009). For those who advocate for Team Teach models, engaging in collaborative teaching goes beyond serial teaching ("you teach today, I teach tomorrow" mentality). In this context, Team Teach is a collaborative endeavor in which educators meet to consult about content,

student engagement, and assessment. In a true Team Teach model, all instructors are mentally present and contribute meaningfully to the teaching experience.

Scholars have warned of the dangers of becoming isolated during a teaching experience, as facilitators risk becoming detached from other professionals and thus limiting their pedagogical approaches (Minett-Smith & Davis, 2020). The "Myth of the Independent Scholar," attributed to Sullivan, proposed that knowledge-sharing and knowledge acquisition should be a collective experience. Distributed leadership theory proposes that leadership is a property of the collective rather than the individual, suggesting that collaboration in education can create synergies and more effective tools and routines while focusing on processes and actions (Power et al., 2023). Furthermore, collective teaching develops positive relationships necessary to overcome the challenges of today's higher education landscape. Scholars agree that higher education needs interdisciplinary collaboration, increased diversity, and globalized approaches to satisfy the needs of the modern adult learner (Lester & Evans, 2009). Additional drivers of Team Teach include ensuring that students have access to the appropriate level of expertise, engaging students in active participation, and role modeling collaborative behaviors necessary to be successful in workplace settings (Minett-Smith & Davis, 2020).

VARIATIONS OF TEAM TEACH

The existing literature on Team Teach described five models (Power et al., 2023). In the first model, "One Teach, One Observe," one educator conducts the class and a second educator serves as support, moving around the class (personally or remotely), without offering immediate interventions. This model's value is in the ability of a second educator to assess classroom behaviors and real-time outcomes (Lock et al., 2017). The second Team Teach model is the "One Teach, One Drift" or "Interactive or Co-Teaching" (Minett-Smith & Davis, 2020). This model also involves two educators but, contrary to the previous model,

the second educator is more action-oriented and offers support to students while the class is happening. For example, in remote teaching, this second educator supports students in chat rooms, offering help with questions or instructions to complete exercises. This model has been demonstrated to be more successful with novice learners.

The third Team Teach model is "Station Teaching" (Power et al., 2023), in which students are separated into diverse modules facilitated by different educators. In this model, students receive education from different content experts separated by modules. When classes are small, it can create learning stations that are more intimate and engaging. A variation (and fourth model) is the "Tag Rotation Approach," in which educators rotate modules. For example, in a higher education setting, each educator is responsible for a different weekly module, rotating roles throughout any given session. The "Tag Rotation Approach" allows students to receive content from diverse content experts. This model is more effective for advanced students who demonstrate increased skills and the need to apply the concepts learned (Lock et al., 2017). However, delivering this model can be difficult when educators have disparate teaching styles and students can make comparisons that interrupt their learning pace.

The fifth Team Teach model is "Parallel Teaching," in which educators deliver the same content to separate groups of students simultaneously (Power et al., 2023). In this model, educators plan lessons collaboratively, including assessment methods, but then later each educator is responsible for delivering these lessons individually. This model is commonly used in higher education and creates value by providing educators with the opportunity to share the workload and bring individual expertise during the planning phases. "Parallel Teaching" allows educators to create neutral or less biased content and increases efficiencies related to sharing teaching tools and assessment methods. Scholars have found that this model works best when educators have similar or complementary teaching styles (Lock et al., 2017). In a true Team Teach model, instructors would share and integrate all aspects of a course (Dang et al., 2022).

COMMUNITY OF INQUIRY

A community of inquiry can be influential in guiding, structuring, and facilitating Team Teach, and it can help to build a community culture that can improve the overall learning experience. In a Team Teach model, a community of inquiry also contributes to forging a collective identity in which students and educators share a mutual understanding of the subject matter and the pursuit of common goals (Cruz & Geist, 2019). This is not the first time that a community model has been recommended to facilitate Team Teach. Lock et al. (2023) proposed using communities of practice to create Team Teaching spaces that are safe and engaging. Three components of inquiry are embedded in teaching and learning activities including cognitive, social, and teaching presence (Garrison & Arbaugh, 2007) (see *Figure 1*).
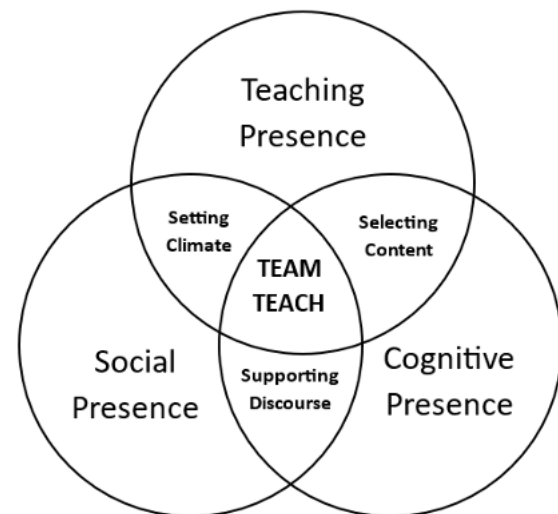
Figure 1: **Community of Inquiry Model for Team Teach**

NOTE: Adapted from "Researching the community of inquiry framework: Review, issues, and future directions," by D. R. Garrison and J. B. Arbaugh, 2007, The Internet and Higher Education, 2(2), p. 157.

Teaching presence explains the distribution of authority and the shared role that educators have in Team Teach related to coordinating, designing, and facilitating collective learning (Wilson & Berge, 2023). Teaching presence facilitates Team Teach discourse, even when areas of disagreement can exist (Garrison & Arbaugh, 2007). Activities complementary to Team Teach include educators' responsibility, presenting content, and using diverse assessment methods while courses are in progress. It is also generally associated with sharing meaning and seeking consensus and understanding (Wilson & Berge, 2023), dynamics continually explored in the Team Teach literature. Social presence, on the other hand, relates to developing an effective communication foundation that builds a trusting environment where students and educators work toward a common goal (Wilson & Berge, 2023). The socialization of ideas and perspectives allows students to develop social connections and practice open communication. Students often feel safer in a learning environment in which they can interact while trying to accomplish a common goal. Social presence facilitates Team Teach interventions by providing cohesion to the group, achieving a sense of common purpose, and keeping focus on the subject matter (Garrison & Arbaugh, 2007).

Finally, cognitive presence is about helping students to develop higher-level thinking. Plotts (2024) emphasized that Team Teach offers inquiry opportunities for students related to strategic, holistic, divergent, convergent, conceptual, and reflective thinking processes. Team Teach models can promote cognitive abilities because they provide students with rich opportunities to evaluate different teaching styles, diverse types of thinking, and synthesize the different "flavors" of teaching styles and industry philosophies. The cognitive component of a community of inquiry also allows students to explore problems, construct meaning, investigate ideas, and apply new knowledge to both educational and workplace contexts (Wilson & Berge, 2023).

TEAM TEACH OUTCOMES

Team Teach, characterized by collaborative efforts among instructors, has gained prominence in higher education to enhance teaching quality and student learning outcomes (see *Figure 2*). Team teaching outcomes appeal to educators because of the possibilities they bring to both professors and students in broadening the curriculum experience, expanding student engagement, creating a culture of debate and critical thinking, establishing new connections among students and professors, allowing better content understanding, improving passing rates and persistence, and increasing teaching efficiency (Yellowley & Farmer, 2005). Collaborative learning also contributes to systems thinking, metacognition, and emotional intelligence (Plotts, 2026).

Figure 2: **Team Teach Theoretical Model**

NOTE: Based on the empirical evidence compiled from Dang et al. (2022), Harris and Harvey (2000), Lester and Evans (2008), Power et al. (2023), and Yellowley and Farmer (2005).
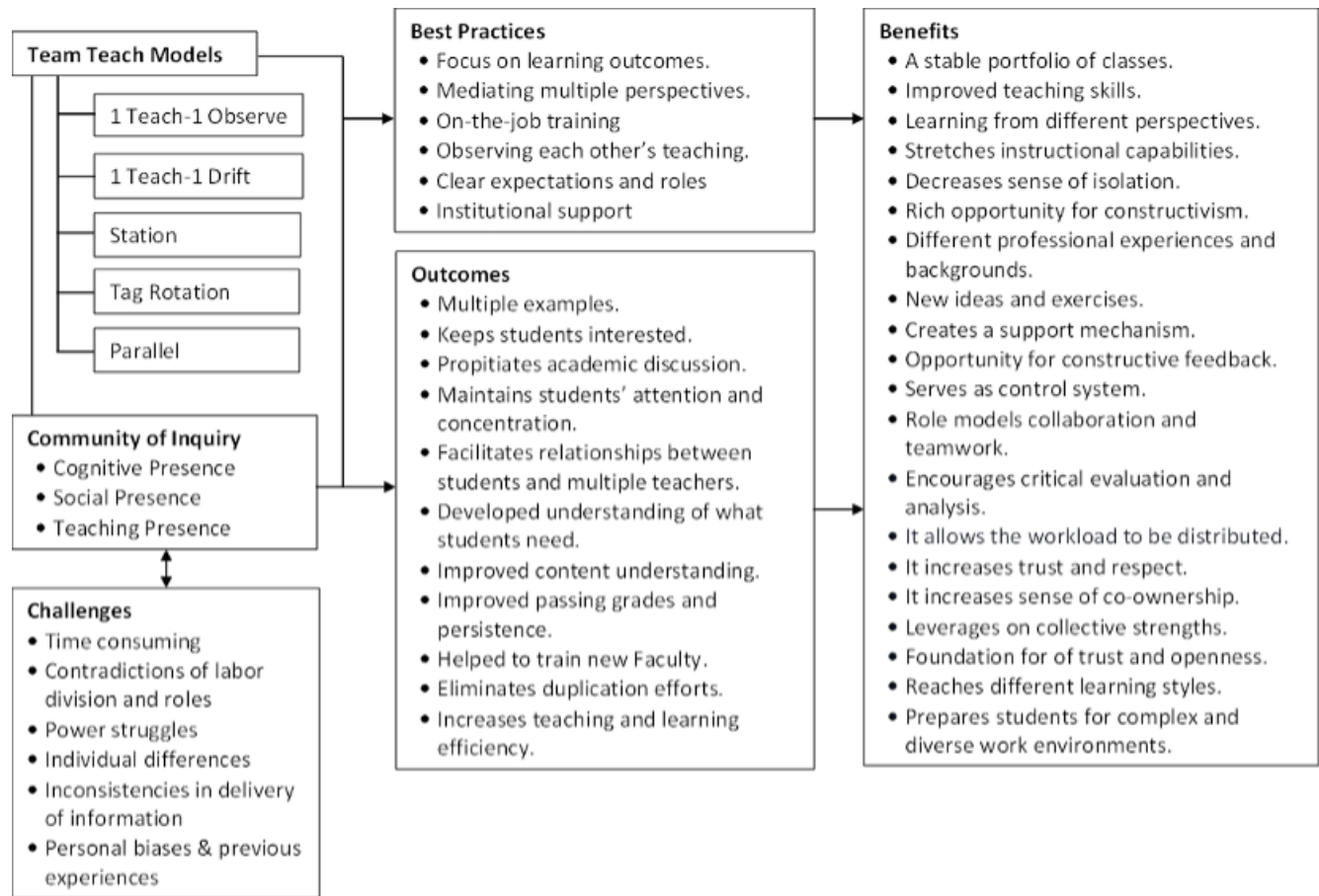
Students participating in Team Teach reported that attending classes was valuable. Broadening the curriculum in this learning environment allowed students to experience more information and examples that they could apply in the real world (Yellowley & Farmer, 2005). Team Teach learners were also interested in having multiple lecturers discuss different viewpoints, welcoming different perspectives in each lesson. Team Teach also provoked academic discussion (Yellowley & Farmer, 2005) and students were more likely to engage in critical evaluation and analysis. These students were more comfortable expressing their various academic points of view when a variety of faculty with different educational backgrounds were present (Yellowley & Farmer, 2005). Learners seemed inspired to venture into academic discovery that led to meaningful content discussions, promoting a culture of debate and critical thinking (Power et al., 2023).

Engaging students in a Team Teach approach helped to maintain their concentration and interest. Each module seemed more interesting as different educators exhibited different teaching styles in the lesson deployment. "Added variation to keep attention" is a desirable student outcome in a collaborative lesson (Yellowley & Farmer, 2005). Students felt inspired as they saw professors collaborating to deliver a more

robust lesson when using a Team Teach modality, facilitating relationships between students and multiple educators (Power et al., 2023). Furthermore, successful Team Teach can only happen when a strong interpersonal relationship exists between professors and students. A functional level of planning from both parts needs to be present to leverage each learning and teaching opportunity in the Team Teach classroom.

Developing understanding enabled students' motivations to be ascertained, as well as providing varied teaching styles from lecturers to help students understand the material (Harris & Harvey, 2000). After participating in a Team Teach course, students engaged in deeper reflections on the content versus just "scratching the surface" of elementary concepts. Students enjoyed the innovative ways Team Teach professors used to make the lessons easy to understand and participated actively in the community of learners by taking part in discussions and lecture opportunities. Learners reported that the opportunity to review and question the content facilitated their understanding of even the most complex parts of the curriculum. Team Teach's dynamic nature empowered students to receive a combination of discussions and listening space. Students believed that multiple teaching styles aided their understanding of the content. As an immediate result, they improved passing rates and persistence (Yellowley & Farmer, 2005). Earning higher grades became easier because students could achieve higher levels of content understanding and mastery.

Finally, Team Teach models empowered faculty, as professors could train new faculty by modeling sound delivery methodologies and creative teaching pathways. Faculty enjoyed streamlined processes because the workload and student care were divided amongst the team. This reduction in workload allowed time to create innovative lesson plans that cater to a wide range of learners. The workload was not only divided; every faculty member became a collaborator of innovative learning methodologies. The endeavor of teaching and learning was truly meaningful because both educators and students were held accountable for

their academic experience (Yellowley & Farmer, 2005). Furthermore, educators were able to leverage their learning styles and take risks to build deeper connections with students.

BENEFITS OF TEAM TEACH

Team Teach model is beneficial for institutions, educators, and students. The collaborative nature of Team Teach provides institutions with a faculty pool active in more than their assigned course. When staff change is required, institutions appreciate having a pool of prepared educators with the knowledge, experience, and connections to teach a course (Dang et al., 2021). New educators also appreciate participating in the Team Teach model because this provides opportunities to learn the complexities of a faculty role by working closely with someone with more experience (Power et al., 2023). This opportunity deepens educators' understanding of different delivery styles and provides novice educators with opportunities to become comfortable engaging with students (Yellowley & Farmer, 2005). Mentoring relationships encourages new educators to try new things and to increase their professional growth (Dang et al., 2021). The Team Teach method supports even experienced educators in unprecedented ways (Yellowley & Farmer, 2005).

Within Team Teach, classes are prepared and delivered in a more collaborative manner that benefits both the instructor and students (Lester & Evans, 2008). This approach has the added benefit of decreasing educators' feelings of loneliness because they are regularly connected to at least one other educator (Lester & Evans, 2008). Collaboration experiences in Team Teach encourage educators to explore more constructive modes of teaching (Lester & Evans, 2008). It provides a "safety net" where educators collaborate to explore ideas, address concerns and solutions, and explore different methods of instruction while addressing tensions or challenges in the classroom (Harris & Harvey, 2000). Educators appreciate learning from one another's teaching techniques and can comfortably try new techniques to grow their skills and abilities (Lester & Evans, 2008). This paves the way in the classroom to experiment

with innovative ideas and exercises (Yellowley & Farmer, 2005). Educators pooled one another's strengths to benefit the class while suppressing their weaknesses (Power et al., 2023).

The educator's personality plays a vital role in Team Teach. Teams of members who value openness can negotiate different teaching styles effectively, thus creating mutual trust (Dang et al., 2021). The results of open and honest collaboration while drawing on one another's strengths creates classrooms where learning and discovery flourish (Power et al., 2023). Team Teach increases opportunities for constructive feedback, which is similar to a formal peer review process (Yellowley & Farmer, 2005). The feedback received during a Team Teach session happens consistently, allowing educators to modify their efforts. Team Teach encourages educators to improve their teaching skills and learners benefit from these different perspectives. By having more than one educator in the classroom, students witness "distinct life experiences and different academic backgrounds" (Lester & Evans, 2008, p. 28) of educators. Each educator reaches different learners, making it easier to collaborate across disciplines (Power et al., 2003). Each explanation of concepts happens in similar but diverse ways, and students can focus on those explanations to increase their understanding.

Team Teach also elevates the educator's experience and sense of co-ownership. Educators can voice concerns and change teaching and learning directions that benefit the class (Harris & Harvey, 2000). Students can witness an effective cooperation model, learning how to refine teamwork skills after watching their professors collaborate (Harris & Harvey, 2000). This real-world example of teamwork provides students with good examples of how teams work in synergetic environments (Yellowley & Farmer, 2005). One of the benefits learners experience is witnessing instructors responding to concepts or theories differently, taking risks, and posing distinct positions on the subject matter (Harris & Harvey, 2000). For educators, they can support one another, practice effective communication, develop positive relationships,

and facilitate common definitions for roles and expectations. This learning environment inspires trust, creating a safe space for learning (Dang et al., 2022). Team Teach supports an environment where open communication nurtures the sharing of different viewpoints from educators and learners. This openness also encourages critical analysis and thinking when learners can question and challenge ideas (Yellowley & Farmer, 2005). Within this model, educators adjust their teaching style and provide joint solutions to increase student understanding (Yellowley & Farmer, 2005).

BEST PRACTICES OF TEAM TEACH

Team Teach offers diverse models and outcomes that enrich student learning experiences in higher education (Dang et al., 2021; Yellowley & Farmer, 2005). Educators keep searching for the Team Teach "holy grail;" the model that will allow educators to pay close attention to student learning outcomes, explore multiple ways to present concepts, embrace differences, learn from each other, create supportive learning environments, set clear learning expectations, and deploy supportive leadership models (Yellowley & Farmer, 2005). Educators can deliver lessons that allow both teachers and students to focus on learning outcomes (Dang et al., 2021). Well-crafted class meetings create learning opportunities in which educators can find the right balance of mediation and negotiation of multiple ways to present concepts.

Effective team teachers allow students to embrace differences as a positive element of teamwork (Dang et al., 2021). These educators are "walking the talk" by collaborating with other professors in advancing students' academic pursuits. Team Teach lessons are also complementary in supporting student learning (Dang et al., 2021). On the other hand, Team Teach educators leverage on-the-job professional learning opportunities as they reflect together, allowing them to observe how others teach, and fostering supportive teaching and learning. Finally, educators agree that setting clear expectations of roles to avoid perceived unequal division of labor and power within teams is the backbone of Team

Teach (Dang et al., 2021). Team Teach models must also promote and provide professional development. By providing institutional support and acknowledgment through supportive leadership, educators are empowered to bring greater academic value and success to the Team Teach classroom.

CHALLENGES

Although Team Teach is a valuable experience, it is also more time-intensive and requires increased collaboration when compared to other traditional teaching models. Team Teach, rather than being a *time saver*, requires extra time planning and a meeting of the minds (Harris & Harvey, 2000). For example, Team Teach requires faculty to devote time to both individual and group planning before, during, and after each class to be successful (Power et al, 2023). Team Teach efforts also require logistics, task administration, merging perspectives, and clear communication channels (Cruz & Geist, 2019). Additional challenges relate to the diverse levels of expertise among educators, instruction cross-roles, multi-disciplinary integration, and availability of teaching resources and platforms. Team Teach groups where members do not trust each other are not effective.

Team Teach is not about educators sharing the workload but about enhancing students' learning experiences. Overlooked difficulties can also arise from team dynamics, common norms, and diverse mindsets on how to organize Team Teach interventions (Plotts, 2024). The dynamics of Team Teach can be complex and multi-layered. Dang et al. (2022) reported that collaborative teaching could present contradictions about division of labor, role ambiguity, power hierarchies, individual differences, interpretation of rules, and mediating or supporting roles. Furthermore, students expressed that they could tell when educators were teaching someone else's content and not taking ownership of the course (Power et al., 2023). Educators who were not willing to exchange suggestions and recommendations could limit this learning experience (Harris & Harvey, 2000). In these teams, students struggled with educators' different teaching styles, which resulted in a

delivery of information that was inconsistent and unclear. Some students were confused by conflicting messages and turned to other resources to obtain clarity (Dang et al., 2021). Other students expressed concern about how the inconsistencies in the course caused more effort because they were required to become self-taught (Power et al., 2023).

Challenges could also arise from personal biases from both educators and students. Individuals with negative experiences on Team Teach could be hesitant to engage or consider this culture of collaboration (Plotts, 2024). This is significant for individuals who have never participated in collaborative teaching or socializing in this learning environment. Finally, educators collaborating and planning Team Teach classes discovered that regular time needed to be devoted to reflection. This reflection allowed educators to learn from one another's teaching styles, perspectives, and experiences (Harris & Harvey, 2000). These reflections are an essential component to creating a classroom where different learners can thrive. In general, embedded reflection in Team Teach practice encourages honest scholarly discourse, both for students and educators (Yellowley & Farmer, 2005).

IMPLICATIONS AND RECOMMENDATIONS

One of the implications of Team Teach is leveraging the different skills and talents that instructors can provide. Higher learning institutions often attract field experts with different professional experiences and teaching philosophies, which sometimes can repeat, overlap, or contradict. Establishing clear guidelines for communication and collaboration can support reciprocity in learning from each other and the development of genuine co-teaching relationships (Power et al., 2023). These guidelines must emphasize the importance of sharing ideas and resources to create an ample repertoire of teaching activities to support a positive teaching and learning experience for both instructors and students. Teaching can become a siloed activity, which avoids synergy and prevents collaboration and communication

among instructors (Power et al., 2023). Organizations with the Team Teach model are responsible for providing adequate training and resources to these facilitators, as well as creating teaching structures to facilitate collective teaching and learning (Lock et al., 2017).

Another implication of Team Teach is that all involved parties should demonstrate similar levels of commitment and accountability so that the workload and responsibilities are equally distributed among groups of educators. Choosing Team Teach members or partners who want to engage in mutual commitment can leverage groups of individuals who could have different teaching ideas and opinions (Lock et al., 2023). This includes embracing a diversity and inclusion mindset, in which instructors foster multiple perspectives and can navigate the challenges of positive conflict to achieve mutual outcomes. This will require open communication, purposeful conversations, building consensus, and respecting cultural differences. Scholars agree that this type of collective teaching is as rewarding and constructive as professional development (Crow & Smith, 2005). Finally, a successful Team Teach model also requires putting students' interests first and focusing on specific learning objectives. This means adapting teaching and learning practices to the unique needs of learners and not the individual preferences of educators. This will require differentiated teaching depending on the unique characteristics and attributes of learners. Although the existing research documents the many benefits that Team Teach creates for students (Harris & Harvey, 2000: Yellowley & Farmer, 2005), little literature exists on differentiated Team Teach for higher education. This would include using technologies to reach out to adult learners with various levels of digital literacy.

Team Teach offers many opportunities for future research on community rules, division of labor, and power balance among participants. These dynamics have been observed in previous research, but only as an outcome and not included as main study constructs. Existing Team Teach models are rudimentary and do not present a deep representation of the multiple factors involved in successfully delivering collectively a subject matter. However, several authors have explored the concept of individual differences among members that can be an obstacle to teamwork (Lock et al., 2023; Minett-Smith & Davis, 2020). This research standpoint focuses on factors that hinder teaching effectiveness rather than creating a theory-based model to guide the effective implementation of Team Teach models. As more robust Team Teach models emerge from this research, additional research topics should include comparison of outcomes among models, the impact of technology, and academic performance using quantitative data.

CONCLUSIONS

Proposed in 1963, team teaching that is common in K-12 education is rarely done in higher education (Lock et al., 2017). The existing literature (Minett-Smith & Davis, 2020; Power et al., 2023) outlined five main models of team teaching, including (a) 1 Teach-1 Observe, (b)1 Teach-1 Drift, (c) Station Teaching, (d) Tag Rotation, and (e) Parallel Teaching. The five models differ on how faculty intervene and support students, rotation of modules, number of lecturers, and repetition of lessons. Cognitive, social, and teaching presences enable a community of inquiry that improves the Team Teach learning experience (Wilson & Berge, 2023). The Team Teach model provides a robust curriculum, increased engagement, and deeper understanding, which increases students' persistence and success (Yellowley & Farmer, 2005). Students in Team Teach enjoy seeing educators working together to develop a more vigorous classroom (Power et al., 2023). As students' knowledge grows, so does their motivation (Harris & Harvey, 2000). Students in Team Teach classes demonstrate deeper understanding and credit multiple teaching styles to increase their understanding (Yellowley & Farmer, 2005). On the other hand, educators benefit from the Team Teach model as they can develop more meaningful connections with students (Power et al., 2023).

Through the implementation of Team Teach, educators with less experience can learn from peers and can assess different teaching styles and engagement strategies (Yellowley & Farmer, 2005). Team Teach provides an avenue for open and honest communication between educators, allowing them to learn from each other. Feedback encourages facilitators to improve their teaching skills. Simultaneously, students gain unexpected benefits from observing their instructors collaborate as a team (Harris & Harvey, 2000: Yellowley & Farmer, 2005). Team Teach also empowers educators to be role models while supporting students and to discover ways to focus on learning outcomes in innovative ways (Dang et al., 2021). Team Teach requires educators to work together before, during, and after each class to assign workflow and organization, and to continue planning even after a lesson has taken place (Harris & Harvey, 2000; Cruz & Geist, 2019).

However, the focus of Team Teach should be on the student's learning experience rather than reducing educator responsibilities. Challenges can arise when team members cannot share ideas, which causes students to feel disconnected from the course (Power et al., 2023). Different educator teaching styles can result in learner confusion, forcing students to seek clarification from the textbook or other resources sometimes to the point that students could feel self-taught (Power et al., 2023). Personal bias can also create negative experiences for educators and students because of decreased collaboration (Plotts, 2024). Nevertheless, regular reflection provides educators with opportunities to gain experience from one another, improving Team Teach significantly (Harris & Harvey, 2000). Higher

education institutions engaged in Team Teach must leverage the different skills of educators and offer clear guidelines to collaborate and spaces to share ideas and resources (Lock et al., 2027). Team Teach can decrease teachers' sense of isolation (Power et al., 2023) while supporting an environment of equal accountabilities.

A theoretical Team Teach model can help educators acquire skills like those in professional development (Crow & Smith, 2005). It allows embracing diversity and learning to work through cultural and personal differences. Nevertheless, a true Team Teach model must be envisioned with students' needs at the center and not the individual preferences of educators. Future research should focus on this level of differentiated education, but also on the use of technology related to digital literacy, community rules, division of labor, and power balance among participants. Although several Team Teach models exist, they lack an in-depth representation of the fundamental factors for successful implementation and delivery. The future of Team Teach research should include a comparison between Team Teach models and quantitative data that can endorse promising findings on academic performance.

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THE VALUE PROPOSITION OF ALTERNATIVE DISPUTE RESOLUTION IN A POST-COVID ENVIRONMENT

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ABSTRACT

The use of technology during the pandemic of 2020 fundamentally changed the way conflicts are resolved. The various Online Dispute Resolution (ODR) tools now available provide participants greater advantages over the traditional legal setting, and even over traditional Alternative Dispute Resolution (ADR) methods. Organizational leaders around the world are discovering that ODR methods are vastly increasing the time-honored value propositions of ADR in areas such as costs, time to resolution, confidentiality, and greater flexibility and autonomy, and that future advancements in technology provide even greater possibilities. While certain challenges still need to be addressed, all legal jurisdictions should consider how to best develop and implement ODR policies, as finding an increase in peaceful resolutions allows both parties to feel that justice is achieved in an efficient and fair setting.

During the last two decades an increasing number of organizational leaders have begun to understand the many benefits associated with the use of the various Alternative Dispute Resolution (ADR) methods. Several of these benefits were brought to the forefront of both the legal community and society at large due to the pandemic of 2020. The pandemic forced many leaders to completely restructure the way they conduct business. For the first time, these leaders required employees to work remotely using a variety of virtual platforms, to carry out daily jobs, to meet with colleagues and teams, and generally to conduct business, which was previously performed in a face-to-face manner.

Some of these challenges led to an increased exploration of the benefits of using ADR methods and demonstrated how these benefits could eventually increase through the expanded utilization of ADR in an online or virtual environment. While there are certainly obstacles that must be overcome when using ADR methods, the question of whether the value proposition of ADR has increased in a post-pandemic legal environment with the advent of online ADR or not still remains relatively unanswered.

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Keywords: ADR (alternative dispute resolution), ODR (online dispute resolution), ODR policies, conflict resolution, disputes, organizational leadership

ALTERNATIVE DISPUTE RESOLUTION

Alternative Dispute Resolution describes a series of practices used in conflict management resolution which are an alternative approach to traditional courtroom-based lawsuits. The major difference between ADR and the conventional approach to resolving conflict is that ADR methods emphasize solving the problem, rather than establishing a winner (Bulei, 2021).

There are several main categories of ADR, which fit into the following segmentations: 1) negotiation 2) arbitration, 3) mediation, 4) mediation-arbitration, often referred to simply as med-arb, 5) mini trials, 6) summary jury trials, 7) conciliation and a variety of other names (Peeler, 2013). Due to the less formal nature of ADR, these methods provided solutions to address many of the complexities that are thought to prevent true access to the legal system, while also allowing individuals to resolve disputes without resorting to the prohibitive costs normally associated with litigation.

Alternative Dispute Resolution methods, assist in reducing "... the limited flexibility and high costs of a formal dispute resolution, to achieve a more ethical, reasonable, fair, or a more efficient and privacy-respecting outcome for the conflicting parties, and to bring about peace" (Jansen, 2021). It accomplishes this by providing both practitioners and clients a variety of non-litigious options to achieve agreeable outcomes (McManus & Silverstein, 2011). In fact, in the consumer arena, it is widely accepted that without the various ADR processes, customers would very often "... not have realistic access to redress" (Fejos & Willett, 2016).

CURRENT USE OF ADR

The current use of ADR methods increased over the last few decades and is becoming somewhat of the preferred choice among many organizations and individuals to resolve business and personal conflicts and disagreements (Fiadjoe, 2013). One of the primary reasons for the use of ADR is that it provides both a sense of autonomy and empowerment to the parties when attempting to resolve issues (McGregor, 2015). In addition, with the increased use of the internet to conduct business around the world, the legal profession also witnessed an increase in online disputes, especially between consumers in an e-commerce situation (Abedi & Yusoff, 2011). In 2020 alone, during the height of the pandemic, there were "... approximately one billion e-disputes worldwide, many separated by jurisdiction, culture, language, and the inaccessibility to court redress" (Wing, et. al., 2021). These varying challenges of culture, language, dissimilar legal jurisdictions, and the inaccessibility to the court system provided a perfect environment for ADR to assist in the resolution of disputes, which might otherwise be delayed or found to be difficult for the traditional legal process to settle. The ability to address these challenges furnished the value proposition that has historically been associated with ADR for both practitioners and parties involved in conflict disputes.

INCREASED USE OF ADR

There are a multitude of reasons, or value propositions why there is an increase in the use of ADR in the last few decades, but more especially since the Pandemic of 2020. Parties engaged in ADR methods are utilizing such methods for a variety of reasons, which range from increased access to the judicial system (Fejos & Willett, 2016), reducing time to resolution (Baum, 2010), reduction in costs and increased confidentiality (Moore, 2017), greater flexibility in the results and more autonomy in the overall process (Jansen, 2021). These value propositions ultimately lead to an efficient journey toward the resolution of disputes (International Mediation Institute, 2018). This efficiency resulted in an increased use of ADR among all jurisdictions during the last 20 years, and since 2016 the Centre for Effective Dispute Resolutions (CEDR) showed an increase of twenty percent (20%) per year in ADR cases (Centre for Effective Dispute Resolution, 2018). However, these value propositions, which showed so much efficiency in the resolution of disputes, can be amplified when technology is applied, as was increasingly done during and after the pandemic.

POST-PANDEMIC USE OF ADR

As the 2020 Pandemic caused governments to implement lockdown orders, companies of all sizes moved many organizational processes online to remain competitive. During the same time, many legal jurisdictions clamored to increase use of technology to make sure the wheels of justice kept turning because of these mandatory lockdowns and personal distancing protocols (Ahmed, 2021). Technologies such as video and teleconferencing of courtroom proceedings, remote filings, and even remote jury trials played a role in allowing the justice system to function during the many government lockdown mandates around the globe. However, even prior to the pandemic, many legal academics previously postulated that electronic methods, such as those operating in a virtual environment, may be a viable avenue for ADR methods to embrace (Traster, 1999). As a result, the substantial and significant procedural changes within the civil justice system, through the increased use of technology to resolve disputes, is now the new default position in many jurisdictions (Ahmed, 2021).

The private sector and the legal community confirmed that the normal way of doing business does not necessarily need to remain the same. The productivity of a remote workforce demonstrated to be statistically the same as a workforce which was required to occupy a physical building (Awada, et. al., 2021), and legal jurisdictions demonstrated that justice is served outside of the traditional courtroom, through decades of ADR methods being applied to various civil disputes (Hyde, 2020).

While ADR methods traditionally occurred in a face-to-face manner, technology now offers a new way to apply ADR methods, which is often referred to as Online Dispute Resolution (ODR) (Ebner & Getz, 2012). Though dispute resolution in an online format gained popularity because of the pandemic, such methods are used via an online platform and "... developed over the last twenty years, largely in response to the growth of e-commerce" (Wing, et. al., 2021). However, ODR cannot merely be viewed as traditional ADR online. "ODR is no more 'Online ADR' than

the online versions of banking, education, or gaming are simply offline versions of those systems moved online" (Wing, et. al., 2021). Just as banking and education in an online platform offer a unique value proposition, so too does ODR offer its own unique value proposition, which builds upon those traditionally offered when contemplating the use of conventional ADR methods.

ADR VALUE PROPOSITION

Most experts agree that the increased use and popularity of ADR is due to cost benefits and assured confidentiality when compared to traditional litigation (Abedi & Yusoff, 2011). However, some studies demonstrate that conflicting parties considering the use of ADR methods are not merely looking "... for justice and resolution of their disputes, but an efficient journey to the resolution ..." of their conflict (International Mediation Institute, 2018). Unfortunately, quantifying the costs associated with using ADR methods, such as mediation and arbitration, is not an exact science because every dispute is different. Nonetheless, it is intuitively obvious that ADR methods are more cost effective when compared to traditional conflict resolution (Baum, 2010).

While reducing court costs and increasing confidentiality are important to the growing acceptance of ADR methods, they are merely two of the many value propositions associated with these approaches to resolving conflict outside of the courtroom. From an international perspective, ADR can be a substitute for hearing a case where both parties are from different legal jurisdictions and therefore one court system may be more sympathetic to citizens' requests. In addition, ADR methods, such as arbitration are typically enforceable no matter where the parties are located, while enforcement of a litigation judgement outside the jurisdiction where it occurred may be difficult, if not impossible to enforce (Association for International Arbitration, 2024).

Relationship costs are also assumed to be reduced by using ADR methods, which emphasizes the idea of attempting to reach a

peaceful agreement among all parties involved (Jansen, 2021). The use of litigation in "... common interest developments can lead to long lasting animosity ..." among the various parties involved (Baum, 2010). Given that ADR methods require the various parties to work together to resolve the issue, such methods may even improve personal relationships among the parties concerned.

Finally, ADR methods may aid in reducing emotional costs, as many ADR methods produce a quick resolution to the conflict as opposed to the emotionally draining anxiety of waiting for a court to decide the fate of those involved. This is confirmed by a study which stated that approximately forty-four percent of people engaged in ADR methods thought that it reduced the time needed to resolve the matter (Wissler, 2002).

These value propositions make ADR methods very attractive to a wide variety of practitioners and participants in the legal system. These value propositions also seem to increase in value when online technology is applied. In addition, new value propositions also seem to emerge in a virtual ADR environment.

VIRTUAL ADR VALUE PROPOSITIONS

Virtual or Online Dispute Resolution (ODR) includes all the value propositions associated with traditional ADR, as it effectively combines the efficiencies attributed to ADR with the internet to save time and reduce costs (Abedi & Yusoff, 2011). However, two additional value propositions are associated with ODR.

As technology helped to improve access for the general public regarding various services in the business and healthcare arenas, it is not unreasonable to assume that the general public expects the same to be done within the legal profession (Cohen, 2020). Therefore, the use of technology when applied to ADR, may increase the value proposition by further helping to reduce court congestion (Abedi & Yusoff, 2011) while also continuing to provide even greater access to the justice system for disadvantaged populations (e.g., minority populations). Online Dispute Resolution allows parties located in the

remotest areas to still have access to the courses, and to resolve disputes in a timely and efficient manner.

Online Dispute Resolution is conducted using current virtual meeting platforms which helps to retain the procedural structure of a traditional face-to-face mediation or arbitration session but includes the additional benefits of providing parties access to a wider selection of mediators and arbitrators. Use of a virtual platform helps to further reduce the costs associate with ADR and may even help to "... reduce the emotions associated with conflict because the parties are not in the same physical space" (Ahmed, 2021).

ANALYSIS

The interest in applying ADR methods to certain legal disputes was amplified since the government lockdowns of 2020. Since then, there is renewed interest in exploring how technology enhances the use of ADR methods, as only the most critical court cases could take place in person, thus leaving a vast majority of cases unresolved (International Mediation Institute, 2018). However, it would be incorrect to conclude that the surge in ADR usage was solely due to the COVID crisis, as civil justice systems around the globe for the past was experiencing, "... substantial and significant procedural changes in the increased use of technology" (Ahmed, 2021).

Alternative Dispute Resolution methods are clearly adjunct to the court process, and in no way should be viewed as a pathway to override or substitute it. However, ADR models do provide a unique value proposition as usage provides both an increase in access to the legal system and an overall increase in the sense that justice has been achieved (McManus & Silverstein, 2011). For decades, these methods provided an exceptional value proposition that demonstrated the ability to "... reduce the limited flexibility and high costs of a formal dispute resolution ..." (Jansen, 2021) processes, which normally take place in the form of litigation. Alternative Dispute Resolution methods lowered not only the burden of various costs and time associated with disputes but also provided access to the justice system to those

populations that might not otherwise be able to participate in the legal process due to remote locations or general inaccessibility to traditional legal assistance (Civil Justice Council, 2021). Even prior to the mandatory use of ADR in many legal jurisdictions, it was established that using these dispute resolution methods "... saved more than $75.7 million in direct legal costs ..." (Morel, 2005).

Use of the virtual environment, often referred to as Online Dispute Resolution (ODR), shows potential as a way of increasing access to the legal system, reducing legal costs even further, and providing even more reduction in the time it takes to resolve disputes. Using technology and virtual platforms for dispute resolution "... is a natural evolution of the trend toward using alternative approaches to litigation across a wide range of civil, commercial, family, and other contexts" (Zelezenikow, 2020). Online Dispute Resolution methods is performed in a variety of virtual platforms and makes use of a variety of "... communication methods, such as email, video conferencing or both, as well as a combination of offline and online methods" (Abedi & Yosuff, 2011). This ability allows ODR to serve a wider population more efficiently, effectively, and with a reduction of legal costs and is an example of the traditional value proposition associated with traditional ADR methods being increased by using technology to enhance it.

Virtual dispute resolution methods also provide solutions for both business and personal "... cases that do not justify long, complex trials – such as in the case of low-value transactional disputes, in cross-border and cross-jurisdictional contexts" (Zelezenikow, 2020). The use of virtual dispute resolution has "... the potential to ameliorate the inherent inequalities between consumers and businesses ..." (Fejos & Willett, 2016) and between parties that are not equally savvy in navigating the legal system, thereby giving both a fast and cost-effective way to enforce their rights. Even some legal disputes that traditionally are considered highly litigious are finding that the virtual resolution process may be a solution to litigation. The idea that ADR methods can now be performed in a virtual

environment, with no need to be in the same physical space as the other party, means that, in additional to all the other benefits associated with ADR, the emotional stress associated with traditional divorce proceedings can be vastly reduced (Ahmed, 2021).

CONCLUSION

This paper supports the sentiments that the court system will never operate as it did prior to the pandemic (Hyde, 2020). The use of technology, as was implemented during that crisis, continues to expand how modern judicial systems operate and how business organizations will engage in conflict resolution. Technology now affords those who are engaged in ODR to develop "... different levels of immediacy, interactivity, and media richness ..." from which they can chose to reach peaceful agreements (Zelezenikow, 2020). As presented in a variety of cases from numerous legal jurisdictions, the theoretical and practical aspects of ADR work well in the online environment and should be considered for implementation in the post-pandemic legal setting (Ahmed, 2021).

This paper attempted to determine if utilizing ADR methods in an online or virtual environment increases the traditional value proposition normally associated with its use in the legal community and society in general. It is with confidence that a conclusion is drawn whereby the use of technology to bring ADR methods into the virtual environment will increase the value proposition of 1) reducing costs, 2) increasing access to the judicial system, 3) reducing time to resolution, 4) increasing confidentiality, 5) bringing a greater flexibility in the results obtained and, 6) providing more autonomy in the overall process.

FUTURE RESEARCH

The information presented in this paper focused on the use of ADR methods in Common Law jurisdictions. While ADR methods enjoy widespread use in Civil Law jurisdictions, future research may be undertaken to more fully explore the value propositions associated with ADR and virtual dispute resolution methods presented in this paper, to determine if a similar

value proposition exists in those jurisdictions. In additional, research in legal jurisdictions where technology is available, but is not as advanced as in the United States, United Kingdom and European Union Member States, might also be warranted to determine if the level of technology has a meaningful impact on the value propositions of ADR.

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MITIGATING RESISTANCE TO CHANGE WITH THE USE OF STORY/METAPHORS AND A NEURO-LINGUISTIC PATTERN

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ABSTRACT

The twenty-first century is a time of technological transformation, generating organizational changes and encouraging personal change. For example, artificial intelligence (AI) is being used as a tool to create greater organizational efficiency. In the future, sentient AI may change organizational cultures beyond our imagination. Resistance to this transformational change has come from unlikely sources, such as the creators of AI applications.

There is resistance built on fear without clarity of understanding. When rational and protective, resistance can be helpful for reflection and correction. This article will review the results of a quantitative study conducted in a real organization. Two innovative methods were used to potentially mitigate and change resistance. The author measured how story/metaphors and a neuro-linguistic pattern could change resistance perceptions. Prior to this study, these methods had been only proven anecdotally.

Leaders of organizations are currently implementing AI with efficiency goals. In some cases, leaders eliminate thousands of jobs without considering the long-term economic effects on their companies' culture. Leaders that have utilized AI for economic effects are facing resistance in the form of fear. The premise of this article is to support a position that resistance because of fear is to be managed rather than eliminated. Rational and protective fear can be useful. The dynamics of story/metaphors and the neuro-linguistic pattern are provided in detail in this article. There are many sources in the literature from which to obtain detailed information about them.

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Keywords: organizational change, transformational change, resistance, metaphors, neuro-linguistic patterns

PREFACE INSIGHTS

Let us begin with a story about a child who loved hearing and reading stories, who wanted to learn more about knowledge and wisdom. This child noticed that the words in the stories and the way the words were presented affected others in different ways. The child grew up and attended a major university, where the professors explained the concepts of how words created thoughts and thoughts could change behaviors. One professor talked about the black box of the mind, meaning it was the unknown. This created even more curiosity in this young person to search for methods to achieve positive change within the Black box.

In a master's degree program about learning, this now adult learner discovered the change models and methods of neuro-linguistic programming. The black box was opened with demonstrated methods to create change. The learner saw creative and methodical change techniques used in mental health situations. The learner asked if these could be applied to business workshops to help people to overcome their fears. The learner attended more training and certifications to learn how to use these powerful techniques ethically. The learner became the master practitioner while synthesizing and creating new methods, including methods examined through this academically- approved study. As this learner looked back at the knowledge, there was no quantitative research to support the validity of the knowledge. Thus began the next chapter for the learner to become the researcher and author to see if neuro-linguistic programming could be quantified through research.

In recent years, the discussion of research in change management theories has been limited to commentaries about the revisions of renowned theories and their applications. The author created this organizational study examining the reduction of resistance to change to help future change agents to address resistance. The author determined the significant results in this quantitative design study, determining where the linguistic patterns could reduce resistance and significantly change

perceptions. The measurements were conducted via survey immediately following and up to eight weeks after the workshop. Given the length requirements of this journal, the focus has been directed to the most significant results of this study.

These complex linguistic patterns included story/metaphors and newly developed sentence structures or patterns. These patterns had been anecdotally proven but never measured previous to this study. The research measured results from a functioning US company experiencing organizational culture change. A discussion of specific formats is beyond the scope of this paper.

Resistance is costly. Resistance to organizational change by employees and managers delays implementation, creates emotional stress for both, and reduces the potential savings from rapid change implementation. The delay comes from organizational members' beliefs stuck in the status quo, thus reducing the change's potential improvement in productivity and effectiveness. The potential opportunities from this study were to create organizational readiness, mitigate resistance, and result in productivity improvements realized sooner.

The results showed that the combined use of two of the patterns during a workshop could significantly change beliefs of resistance to acceptance.

INTRODUCTION

This quasi-experimental quantitative study explored the use of change story-story/metaphors (narratives) and the use of a specific neuro-linguistic pattern from neuro-linguistic programming (NLP) within eight workshops. The results were compared between a control group in a set of workshops and two workshops for each of the following variables:

1. story-story/metaphors,

2. specific neuro-linguistic programming patterns, and

3. the combined use of story-story/metaphors with the neuro-linguistic programming pattern.

The change in the participants' attitudes of acceptance to the organizational change was measured prior to, immediately following, and then between 4-8 weeks following each workshop. The results showed significant effects with the use of the combination variable of story/metaphors and a specific language pattern to change beliefs regarding a proposed organizational change through the use of ANOVA methodology.

WHY MOST CHANGE MANAGEMENT FAILS

Resistance to change was identified as the number one reason for the failure of organizational change according to the 1996 Deloitte and Touche survey of 400 manufacturing organizations (Prochaska, Prochaska, and Levesque, 2001). Philosophically, Torben (2012), explained "Change is not the problem, resistance to change is the problem." Most organizational change initiatives fail not because the change is a bad idea but because employees' cognitive reasoning and affective states create resistance (Waldersee & Griffiths, 1996; Piderit, 2000; Bovey & Hede, 2001; and Ertuk, 2008). Smith (2020) discussed why leadership fails to effectively implement change for several reasons including miscalculating fear and its effect on resistance. It should be noted that Hughes (2022) discussed how the premise of most organizational change failing has not been substantiated and researched adequately in recent years.

The last major study about change management failure was done by Gilley, Gilley, and McMillan (2009). Their study included information obtained from surveying 513 working professionals in different industrial backgrounds. The study identified that, in over 80% of the cases, their leaders did not effectively manage change well. When organizational leadership communication does not consider employee attitudes, informational needs, and emotional needs, a well-conceived change management plan can fail (Coetse, 1999). This was further supported by research conducted with 218 employees who were surveyed within three organizations, which showed that change management approaches and the nature of

resistance need to be reexamined (Foster, 2010).

Typically, when leadership introduces a major change, they expected people to accept the change because they (management) believed the change was positive for the organization. If the management is concerned with possible employee resistance, they may use a variety of change management methods such as persuasive interpersonal communication, rational approaches including meetings and training about the change, and large-scale organizational change methods (Bennis, Benne, & Chin, 1985; Gilley, Gilley, and McMillan, 2009; and Marques, 2014; and Nwachuku, 2023). Still, the majority of organizational change is resisted and fails because new ways of communicating are needed to improve the chances for acceptance (Szabla, 2007 and Szabla, 2024).

Bartunek, Rousseau, Rudolph, and DePalma, (2006) found that employees have different perceptions from their management about the present status quo and the future, so they resist cognitively and emotionally, thus creating visible and invisible conflicts and potential delays in implementation of the change. These studies indicate change management, as currently presented in a rational, logical manner, is ineffective. Typically, management introduces change and plans to counteract possible resistance with rational approaches without addressing affective causes for resistance (Harvey & Broyles, 2010).

When employees experience a major change, they see the proposed change from their cognitive perspective or affective perspective. In reacting to the proposed change, they cognitively (rational thoughts) and effectively (feeling) have positive, neutral, or negative responses as well as personal physical reactions (Arnold, Cooper & Robertson, 1995). The general process starts with an awareness something different is being offered, then a swift process of comparison to the status quo starts, followed by uncertainty and conclusion which results in either acceptance or rejection (Harvey & Broyles, 2010). Maitlis, & Christianson, in 2014 described this as sense making in the organization, when the change

is connected to the employees' beliefs, the change can proceed. Manuti, & Giancaspro, (2021) investigated and examined the use of sense making by employees using metaphors to describe the transformational change they were experiencing. Whittle, Vaara, & Maitlis, S. (2023) discussed language's role in organizational sense making but admitted they are uncertain about how that is achieved.

Sense making theory was used as one underlying theory to support this research. The methods used during the workshops in this study were designed to change the employee's beliefs and perceptions. This study implanted Story/Metaphors of change and a well-crafted neuro-linguistic pattern to help employees adjust and embrace the cultural value changes previously presented by the CEO. These cultural changes were reflected in the poster boards around the halls with values and their explanations. The CEO wanted the leaders to promote these values and thus create or enhance cultural change. The other underlying model was programming, using language models and methods to create behavioral change. Sandu, A. (2016) discussed Dilts's work in using the neurological levels model, which this study uses as another foundational framework in support of the linguistic patterns to create the change in perceptions of the leader's proposed cultural change.

This study is based on applying two components of neuro-linguistic programming (NLP). NLP was originally developed in the 1970s at the University of California Santa Cruz to create rapid change in counseling sessions. Later, new applications of specific neuro-linguistic patterns were introduced in the business arena. In 2019, Furduescu provided the history, fundamentals, and objectives of NLP. In the last forty years, limited research studies have been conducted regarding NLP. Story/metaphors have been studied in the field of persuasive communication.

Hajiyeva (2022) explained "Neurolinguistic programming is a model because it has theoretical content as well as practicality. This aspect brings neuro-linguistic programming

closer to scientific status; therefore, neurolinguistic programming should be explained with a complex approach arising from the unity of several sciences, and its mental and linguistic aspects and should be presented as a whole system along with its neurological and psychological aspects." The patterns used in this study were complex approaches designed specifically for the organization's cultural change.

CHANGE STRATEGIES FOR RESISTANCE

Piderit (2000) suggested addressing cognitive (mental models), affective (feelings), and behavioral (actions exhibiting internal resistance) to reframe the resistant action to acceptance. With the exception of reasonable and appropriate resistance –to- change (RTC), Oreg (2023) noted that if the individual employee RTC is not changed by the usual and customary means of leadership communication in presenting the change, then it may be necessary to use persuasion to mitigate resistance to it. This study examined the effectiveness of proactively using the combination of stories and the perceptual change language.

If the solutions for resistance to change create a shift in employee perspectives and attitudes, the resistance can be turned into acceptance (Self, & Schraeder, 2009). Metaphors and specific persuasive language patterns are newer methods to facilitate those change dialogues between managers and employees (Giorgi, Lockwood, & Glynn, 2015). A new idea considered by organizational change researchers comes from Tsoukas, who stated in 2005, that "change occurs in language" (p. 99). Within the unknown territory of each employee's mind, a matching sequence of linguistic patterns provides the potential to influence his or her thoughts, beliefs and behaviors. Flood and Coetsee suggested using "storytelling to create a context for change" (2013). Creating the bridge between change management symbolism and reality, Marshak (1993) identified types of story/metaphors that could be useful in both diagnosis and change management strategies given the type of organizational change including "developmental,

transition and transformational change."
Maslova (2023) explained the concept of the
visual game as a way to connect to someone's
mind for changing his or her perception. She
sees it as place where everyone wins when they
realize the meaning of the metaphor. The use of
Story/Metaphor and the Neuro-Linguistic Pattern
suspends the rational mind and allows the
receiver to visualize and hear the communication
at an internal level.

Boje (2008) discussed "Ante narratives as 'arrows
of time', more attuned to prospective (future-
oriented) ways of sense making" because
they are commonly used in business but not
studied. Boje's narrative approach includes
the Beginning, Middle, End plot with future
oriented plots that he proposes can change the
relationships within the organization (2001).
These stories or antinarratives using time as
element of change provide the underlying
structure for change within the employees'
framework.

Resistance delays the acceptance, commitment
and implementation of the changes. Creating
positive change was examined by Labianca,
Gray and Brass, who introduced a four-phase
change model for changing the decision-making
within a large healthcare organization (2000).
They identified an internal process of change,
comparing the old belief with the new belief
before the acceptance of the new belief. Their
premises led to the current research study.

METHODOLOGY

Hypotheses

The study examined the effectiveness of reducing
the level of attitude resistance of the leadership's
proposed organizational cultural values change.
These interventions were introduced in three
separate versions during a workshop regarding
the implementation of a new organizational
culture. No interventions were used during the
control group workshop.

The working hypothesis for this research was
as follows: Can a relationship be established
between the levels of individuals' attitudes of
resistance toward an organizational change and

the introduction of change story/metaphors and
the reverse-structured time orientation neuro-
linguistic pattern communicated by an instructor
during a workshop?

Data Collection

The data was collected at three different times.
The survey was administered just prior to the
workshop and immediately after. Then the
follow--up survey was administered 4-8 weeks
later in a follow-up meeting and through email.

The participants selected their preferred
workshop dates, thus creating the sampling
for the interventions groups and the control
groups. There were a total of eight workshops:
two workshop sessions for each of the three
interventions and the control group. The two
NLP intervention workshops were followed
by the two story/metaphor intervention
workshops, the two combined story/metaphor
workshops, and neuro-linguistic programming
pattern intervention workshops, and the two
control group workshops. Each workshop
was approximately 3.5 hours, allowing 30-
40 minutes for the completion of the Pretest
and Post Test survey. The same workshop
design including lectures, handouts, exercises,
and discussions was used within all of the
intervention workshops. The variables used
for this study were the application of the story/
metaphor interventions and the neuro linguistic
programming pattern intervention.

Total participation included 154 exempt,
supervisor/leads, managers, directors, and
executives from the organization. The highest
level of management attending was the Vice
President level. The participants included 95
women (61.7%) and 55 men (35.7%). Their age
ranges were 20-40 (21.3%), 41-50 (43.3%), 52-60
(29.3%) and 61-70 (6%). The majority attending
the workshops were in management positions
(74.8%) and the remainder were in exempt
positions (25.2%). This was a well-educated
population with 72.3% having a Bachelor's
degree or higher. The largest ethnicity was
represented by Caucasian with 68.7% with 31.3%
representing themselves as a minority group.

Of the original 154 pretests, the usable data from the surveys included 148 people who completed both the pretest and posttest and answered all of the questions on the surveys. Of those 148 people, 118 completed the follow up test 4-8 weeks following the workshops. This indicated 79.7% return of all of the surveys, with every question answered.

Overview of the Statistical Methods

ANOVA was the statistical method used for this study to determine if there was a statistically significant change in attitudes between 1) the Pretest to the Post Test and 2) the Pretest to the Follow up Test.

Stability of Demographic Population

In addition to the usual demographic responses, the demographic data showed the levels of support for the cultural change in the past and the future. Demographic responses indicated a mostly middle-age, white, female leadership population, which is very loyal to staying with the company until retirement. Given the complexity of the work and constant deadlines in operations at the organization, having a stable leadership and exempt employee team was definitely beneficial to the company's success. It also was supported by participants' expressed views during the workshops, that they appreciated the CEO's and the executive team's leadership. The statistical results supported those comments. The researcher's observations during the workshops indicated stability by the management teams and their expressed desire to make the organization better with the proposed organizational change.

This organization constantly experienced and created changes in products and processes. The chief executive officer's (CEO's) desire for a culture change was to make the teams more responsive and positive to stakeholders through a set of values that he thought people should embrace to reach those goals. The cultural change was not well understood because it was expressed as a concept in the initial launch meeting by the CEO, however there was not concentrated follow-up until the research study's

workshop interventions. The research project workshops offered were a part of the new launch of the culture shift to more positive change for distinctively positive cultural values to apply to everyday relationships within the organization and with stakeholders including service providers and clients.

THE SIGNIFICANT RESULTS

Mixed model analyses of variance (ANOVAs) were used to examine the impact of treatment on the 16 factors, which resulted in seven significant factors. Follow up repeated measures ANOVA with contrasts were used to examine whether there were significant changes from Pretest to Post Test and Pretest to Follow up Test for each of the interventions. Given the need for brevity of this paper, the author presents only two of the significant factors in this article.

Factor 1: Beliefs about Leadership and Peer Support

Factor 1 beliefs about Leadership and Peer Support from key players are defined as the participants' beliefs that leadership was actively supporting the change and beliefs that their peers were embracing the change, too. Peers are defined as fellow employees.

For the pretest to follow- up Test, the results indicated a significant effect for group, $F_{(3, 114)}$ = 7.77, p = .000, but not a significant group by testing time interaction effect, $F_{(3,114)}$ = .452, p = .716. The results of the interaction time indicate that there was continued improvement for the combined group. Follow up repeated measures ANOVA with contrasts indicated for both the Metaphor group and the Combined group, there was a significant improvement in the Factor 1 over time measurements.

The combined groups were found to be significant for Factor 1 when compared to the control group for both the Pretest to Post Test and from the Pretest to Follow up Test.

The combined group results of the pretest to the post test showed a significance of .000 for the mean difference of .5780 when compared with the control group in the pretest to follow- up test

and a significance of .001 for the mean difference of .5572 when compared to the control group.

The results for Factor 1 beliefs about leadership and peer support from key players, showed the combined intervention positively affected the participants' beliefs that leadership actively supported the change and peers were supporting it, too. The result was sustained for the combined Intervention over two time measurements immediately after the workshop and in the follow- up test, 4-8 weeks later. This indicated the combined method was influential in strengthening the beliefs about leadership support and peer approval.

Factor 2: Emotional Acceptance Beliefs about Change

Factor 2 was defined as the participants' beliefs about their positive feelings about the change. Results of the analysis for the Pretest to Post Test indicated a significant effect for the group, $F (3, 144) = 3.74$, $p = .013$, but not a significant group by testing time interaction effect, $F (3,144) = 1.54$, $p = .206$. The effect for testing time was not significant, $F (3, 144) = 3.74$, $p = .013$.

For the Factor 2 pretest to follow- up test, the results indicated a significant effect for group, $F (3, 114) = 3.29$, $p = .023$, and was not a significant group by testing time interaction effect, $F (3,114) = 2.562$, $p = .058$. The effect for testing time was significant, $F (3, 114) = 3.29$, $p = .023$. The results of the interaction time indicate that there was continued improvement for the combined group. Follow up repeated measures ANOVA with contrasts were used to examine whether or not there were significant changes from pre-testing to follow up for each group.

The combined group was found to be significant when compared to the control group for the pretest to post test (.015) and measurably close at a .059 score for significance from the pretest to follow- up test. The Combined intervention for Factor 2 was significant (p=.015) with a mean difference of 0.3386 Pretest to post test and significant pretest to follow- up test (p=.59), with a mean difference of 0.3010 to control group. There was sustained improvement in

the participants' beliefs about having a positive feeling about the change from the pretest to the follow- up test.

The result of the ANOVA indicated for the combined group there was a significant improvement in Factor 2 showing the combined intervention significantly and positively impacted the participants' beliefs about positive feeling about the change.

CONCLUSION

Hypothesis: A relationship was found between the levels of individuals' attitudes of resistance toward an organizational change and the change methods introducing change story/metaphors and the reverse structured time orientation neuro linguistic pattern communicated by an instructor during a workshop. Two factors showed significance for the hypothesis including **Factor 1** and **Factor 2** (see below.)

Factor 1 showed the participants' beliefs that leadership was actively supporting the change and their peers were embracing the change.

Factor 2 emotional acceptance beliefs about change indicated improvement in the participants' beliefs about their positive feelings about the change.

The hypothesis was supported indicating the combination of story/metaphors and the neuro-linguistic pattern intervention reduced the levels of individuals' attitudes of resistance at a 95% confidence level for the pretest to post test results and the pretest to follow-up test results specifically for the two factors. From the previous discussion of the results of the two factors, there was a definite change relationship and impact between the levels of individuals' attitudes of resistance toward an organizational change and the introduction of change story/metaphors and the neuro-linguistic pattern communicated by an instructor during a workshop. The combined intervention created more change in employees' beliefs than the control group results.

The results indicated the application of these two linguistic methods could positively influence employees' perceptions about an organizational

change. Future research using neuro linguistic Programming methods of story/metaphors and neuro-linguistic patterns may provide additional useful methods to changing resistance levels in other contexts.

The research study was based upon the reframing methodology used by trainers and change agents. The use of story/metaphors and the use of the neuro-linguistic pattern provided a new structural view of the change, thus reframing the picture or perception of the change to one that resolves the issues surrounding the resistance. The methods studied offer potential for reducing resistance and increasing the likelihood that organizational change can be more readily accepted. Thus, in these times where leaders and their organizations are looking for efficiencies with the use of AI tools, these methodologies could be used to address the resistance to the introduction of new technology.

As discussed in the beginning, most change management efforts fail because of the lack of understanding the beliefs and emotional needs of the employees. The author believes this study showed that knowledgeable use of specific language patterns can positively change peoples' perceptions and beliefs about a proposed organizational change. The results of this study within a real organization suggest that leaders and well-trained Neuro Linguistic change agents should consider using advanced linguistic methods of communication to create rapid acceptance of the change. The author proposes that further research of these and similar neuro linguistic patterns be explored in other contexts.

FINAL THOUGHTS

Looking back from the future, the author would have told the child seeker that, through the many serendipitous steps along her journey, she would discover the answers to her quest, including the black box of the mind.

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EXPLORING TEAM TEACHING WITH ENGAGELI

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ABSTRACT

The pedagogical delivery of DeVry University Tech Core courses is based on a team teach model. This model offers many advantages which include the collaborative work of faculty in presenting live lectures and course project demonstrations. Students benefit from the opportunity to learn from various professors and are offered several choices of weekly huddle hours. However, one of the challenges of this structure is to effectively manage questions that arise from a large group of attendees as different sections of the course are merged during live lectures. In this study we will reflect on our experience teaching in this modality and analyzing course enrollments and course success over the last two years. Our goal is to pinpoint opportunities for improvement and propose a new Team Teach Model 2.0 that will be based on the use of Engageli for the upcoming sessions. This technology offers distinct features that we can harness to improve the learner experience not just within team teaching approaches but also within supplemental live lessons and standalone online lessons conducted at DVU.

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Keywords: Team teaching, Team Teach Model 2.0, pedagogical experience, Engageli©, community of inquiry

INTRODUCTION

Team teaching is a collaborative instructional approach where two or more educators work together to plan and conduct lessons for the same group of learners. Collaborative teaching, a pedagogical approach with roots in K-12 education, has gradually gained momentum in higher education. Extensive research has demonstrated that collaborative teaching yields numerous advantages, including improved learning outcomes and higher retention rates (Minett-Smith and Davis, 2019; Bacharach *et al.*, 2010; Villa *et al.*, 2008).

Based on Friend and Cook (2021) there are five primary classroom models that co-teaching educators can implement based on their teaching goals, course material, and the needs of the learners. Looking at *Fig. 1*, we see that in the "one teach, one support" model, two educators are present during the lesson. However, one educator takes the lead in delivering the entire lesson while the other observes and provides assistance to individual learners. This model can be expanded to more than two educators in that there would be more supporting faculty to offer personalized support, ensuring that no learner is left behind. Another approach is "parallel teaching," where educators divide the learners into groups and instruct each group simultaneously. This model allows for smaller class sizes, fostering more intimate and focused interactions between educators and learners. In the "alternative teaching" model, learners are divided into targeted groups differing in terms of ability or specific learning needs. In the "station teaching" model, educators set up different learning stations within the classroom, each focusing on a specific aspect of the lesson. Learners rotate through the stations, receiving instruction and engaging in activities designed by different educators. Lastly in the "team teaching" model, educators take turns leading the instruction. Each teacher brings their expertise to different lessons, providing learners with exposure to diverse teaching styles and perspectives. This model encourages a collaborative teaching environment, where educators contribute their unique strengths to the overall learning experience.

Each model brings a unique set of characteristics, advantages, and challenges, catering to the diverse needs of learners and educators alike.
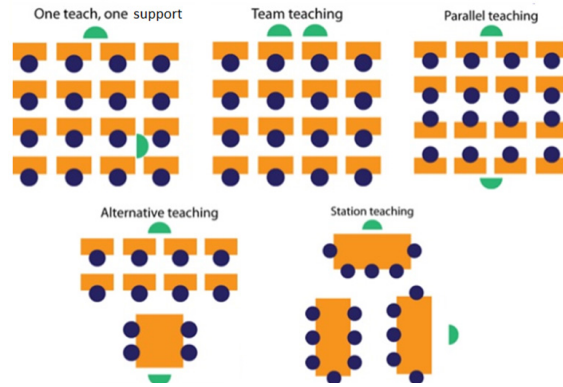
Figure 1: . **Various co-teaching models** (*Murawski and Spencer, 2011*)

TEAM TEACH AND THE TECH CORE CURRICULUM

The team-teach model at DVU within the College of Engineering and Information Sciences (CoEIS) was introduced in 2019, primarily for the Tech Core classes. Since its inception, the team-teach approach has expanded to include other courses within CoEIS. This study will specifically focus on the Tech Core classes, which form a series of courses aimed at developing interdisciplinary skills necessary for today's fast changing digital world. These courses are integral to most programs within CoEIS, with many students enrolling in all or a subset of them.

- **CEIS101/CEIS101C:** Introduction to Technology and Information Systems
- **CEIS106:** Introduction to Operating Systems
- **CEIS110:** Introduction to Programming
- **CEIS114:** Introduction to Digital Devices
- **NETW191:** Fundamentals of Information Technology and Networking

When examining enrollment trends in the Tech Core classes (*Fig. 2*), we see an overall increase in enrollment for the past two years. CEIS101C has the lowest enrollment and is subsequently combined with CEIS101 for live lessons. Although the course material is the same, the difference is that in CEIS101C students are certificate seeking students who do not receive a laptop unlike degree seeking students.
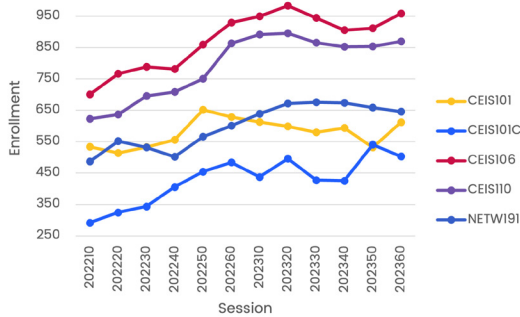
Figure 2: **Enrollment over time for Tech Core classes**

Figure 3: **Course success over time for Tech Core classes**

During the same time period, as enrollment is increasing, we see a steady decline in course success (*Fig. 3*) over time for most courses, most noticeably in CEIS101C. Among all courses, CEIS110 has the lowest course success. This may be attributed to the substantial workload from zyBooks interactive textbook activities as compared to other courses. Interestingly, all courses experienced a significant drop in course success during the September 2022 session. There could be a number of reasons that led to this dip in course success. The time frame coincides with the start of a new academic year for children of DVU learners. Around this time many organizations altered their hybrid work policies, requiring employees to spend more days in the office. Both of these could have disrupted learners' schedules and reduced the time they could dedicate to their studies. Another contributing reason to this drop in course success could be due to Hurricane Ian. This weather disaster is the third-costliest weather disaster on record in the US, the deadliest hurricane to strike the state of Florida (Rosenthal, 2022).

The R-value between course success and enrollment, based on the total number of enrolled students in the Tech core classes in this study, is listed in *Table 1*. The most significant correlation between enrollment and course success was seen in CEIS101/C courses. These courses are the first ones in the Tech Core sequence where students may be navigating coming back to school and learning about DVU student resources. For subsequent courses in the Tech Core program, the correlation between course success and enrollment does not show a strong correlation insignificant. Therefore, in this study the authors draw focus on their experience teaching CEIS101/C and the corresponding student feedback from the End of Course and Student Satisfaction surveys. We hope to possibly improve the strong negative correlation shown between enrollment and course success with our proposed Team Teach Model 2.0 proposed in the next section.

Table 1 : **Correlation between course success and enrollment**

COURSE	R-Value
CEIS101/C	-0.84
CEIS106	-0.54
CEIS110	-0.39
CEIS114	-0.59
NEWT191	-0.44

The team teach approach in CoEIS courses integrates elements of the "team teach" model with the expanded model of "one teach, one support" proposed by Friend and Cook (2021). Additionally, it incorporates a team lead who primarily serves as the course coordinator and the host of the live lessons. In this model, all enrolled learners are invited to join a weekly live lesson where all the assigned instructors participate. Prior to the start of the session the team collectively decides when to host the weekly live lesson and how to divide up the lectures and the project presentations amongst the group of faculty assigned to teach that course for that particular session.

One of the main advantages of this teaching modality is that each instructor has their own presentation style and brings their own experiences, perspectives, and ideas to the lecture. By having various educators present, it keeps the leaners' attention. The remaining instructors in the team who are not presenting assist the presenter by engaging with learners in the chat and providing support as needed.

Another advantage of the team-teach model in CoEIS is that all the instructors hold office hours open to all learners, providing them with a wide variety of choices of office hours to attend. This diverse array of options ensures that all learners can seek additional guidance outside of regular class hours, catering to their individual learning needs and schedules. Additionally, it fosters a supportive learning environment where learners can engage with instructors which in turn contributes to their academic success and overall positive learning experience.

Below are some sample student comments from End of Course and Student Satisfaction surveys reflecting the aforementioned advantages of team teaching:

- "Loved this course, I actually liked having more than one professor discussing during class. It made it easier for some reason. I feel like it was a better understanding from multiple professors coming from different perspectives. Like one professor would lead the lesson, another would do the project. I liked it. Loved this class, loved what we did in it. …"(March 2023)

- "All the professors were great and the way they each presented in their strong suited areas was well planned." (March 2023)

- "The Professors did a great job keeping everyone engaged and made it fun." (January 2023)

- "The amount of care and support that was given to me was beyond my expectations, I would recommend any changes or edit. Keep the course wonder as it is. The support and the much-given time from the Professional staff during the meetings as well as outside of the meetings was truly a blessing. Having the CEIS 101 family was a wonderful start on my journey in technology world." (November 2022)

- "All professors that influenced their portion of this course were very clear with instructions, they had character, and they were very courteous to those who had questions." (November 2022)

- "The class had many professors that are ready to help with any problems I may have." (July 2022)

The advantages of team teaching are not just limited to the learner experience. There are several advantages for faculty. The collaborative nature of team teaching encourages an exchange of ideas and perspectives. This active involvement not only revitalizes experienced educators' passion for teaching but also inspires new faculty members. Through team teaching, faculty who are teaching the course for the first time have a support system and resources in place (Byrn et al., Heck et al., 2010). As an added bonus, the teaching load is reduced such that faculty do not have to prepare a lesson for every week.

In addition to discussing advantages, we must also address the limitations. Even though there are several professors monitoring the chat, sometimes maintaining control of the chat and addressing individual learner questions becomes challenging, especially if there is a very large number of sections in the course. As the live lesson is open to all sections of the given course, that means that there can be well over 100 learners in attendance for the Tech Core live sessions.

Another challenge is offering only one live lecture per week which is oftentimes scheduled at 6pm PT/9PM ET. Although this start time suits those who live on the West coast, it may be too late for the learners and educators on the East coast. Oftentimes, the class meeting concludes close to midnight (ET) due to an extended Q&A session. After the lecture and after the project presentation, the team holds a Q&A session where they can address individual learner questions or help them troubleshoot their projects. Very often in CEIS101/C, the same question is asked repeatedly by students. Even though the faculty address it verbally or in the chat, it takes quite a bit of time making sure that everybody gets a resolution to the issue that they are encountering.

Another limitation of team teaching is that if there is a large number of sections in the course, then not every instructor gets a chance to present. Since there are eight week sessions, it limits the number of lectures or project presentations. Those limitations are clearly stated below by some learners in their End of Course and Student Satisfaction Survey feedback.

- "I did not like that the class has 200+ students in a classroom. When ever I attended live sessions I felt like this is just a JOB to the professors because my questions in the chat will get lost of not answered because of the amount of students in chat, so my message would get lost in the scroll and the professor would move along with out assistance." (March 2023)

- "I think it would be helpful too if there were 2 different lectures throughout the week. Sometimes 8pm CST is late for some of us." (Jan 2023)

- "The only thing I would suggest is having class earlier in the day instead of so late. I'm sure there is a good reason for being so late though." (Jan 2023)

- "My only advice would be to lesson the size of the web ex classes. having 200+ people in one Webex meeting is extremely distraction. Many people are asking the same questions over and over again in the chat and through voice chat. To me It should be a more personal experience with each professor teaching their own class. It also makes for less of a relationship with your actual professor. I never heard saw my professor, nor heard his voice the entire session." (November 2022)

- "I would suggest more times throughout the course because some of us work later in times and I would love to be involved with live classes more often!" (Sept. 2022)

- "Perhaps smaller groups for Live sessions so that things aren't bogged down by multiple questions and such. 200+ people in a live virtual session where students aren't actively muted by the given professor active at that moment can be a little... chaotic. I understand it is difficult and also aggravating to students at points to be actively muted until they are called on to ask their question/questions and receive answer to such." (November 2022)

- "Hosting optional weekly sessions for just your section." (July 2022)

- "More one on one with the professor would be ideal." (July 2022)

- "Smaller live sessions so that there can be more of a focus on bolstering and cementing the information and knowledge." (July 2022)

Our discussion of the advantages and limitations of team teaching is based on research, our collective experience, and students' comments. It is difficult to make a commensurate comparison to courses that do not use this model since there would be differences in subject matter and level of difficulty.

TEAM TEACH AND THE
TECH CORE CURRICULUM

DVU has implemented Engageli as the main conferencing system to connect with learners, replacing Webex. Therefore, it is important to consider how to implement team teaching with this new platform. This technology offers distinct features that we can leverage to improve the learner's experience. With this new technology we propose Team Teach 2.0 Model called "One Teach, All Support" (*Fig.4*) which addresses some of the limitations related to the current team teach model in CoEIS by leveraging the unique features in Engageli.
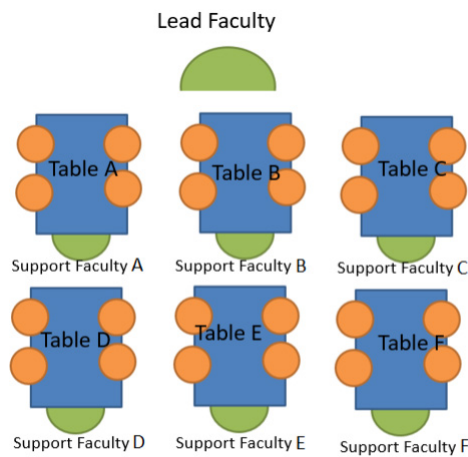

Figure 4: **Team Teach 2.0 "One Teach – All Support" Model**

The first recommendation is to offer two or more class meeting times. By hosting multiple class meetings, we can accommodate both learners and faculty in various time zones. One approach could be to leverage the Playback Room feature by recording the lecture and project demonstration in the live class within Engageli. After the live lesson, faculty would host a scheduled watch party or two of the live class in the playback room. Another more strategic approach could be to record the lecture and project demonstration ahead of time and then play that recording during the live class. By recording the lecture and project demonstration ahead of time, we can offer a polished live lesson

that can be used over many sessions. This has the potential to alleviate the workload for faculty in having to create a lecture every session such that energy can be directed towards engaging with learners during the live class or the playback room. During the live class or the watch party, the faculty can pause the recording, activate a poll, ask a probing question, or conduct some active learning activity.

The second recommendation we are proposing leverages the Tables feature in Engageli. The team lead would change the name of the tables to the faculty member that will be assigned to that given table. This creates an opportunity for continuous engagement of a faculty member during the live class by directly supporting the learners at their table. Most importantly, learners can choose to sit at the table of the professor of their section, which will strengthen a connection and foster a sense of belonging. Faculty who are not presenting during the live class would be assigned ahead of time to a table.

On the note of Tables, the Table Mode audio format can be utilized for a hybrid version of "parallel teaching" and "station teaching" proposed by Friend and Cook (2021). One approach is that instead of having a Q&A session open to the entire class, the Q&A can be held at each table led by one faculty member. With a faculty member dedicated to each table, students can receive personalized attention and guidance tailored to their specific questions or concerns. This approach ensures that no student feels left out or overlooked during the Q&A session, fostering a sense of inclusivity and support.

Another approach is to have targeted topics covered at each table. After the lesson and topic demonstration, professors could set up station teaching for additional learning and support based on student needs and interest. For instance, one or two tables can be dedicated to troubleshooting the project. Another table can focus on microcontroller programming using the Arduino IDE, offering in-depth tutorials and practical exercises to enhance programming skills. Additionally, another table can be

dedicated for advanced hardware configuration for students seeking an additional challenge to the course project. Especially in CEIS101/C, ideas on data analytics, networking and cybersecurity can be explored further at each station.

The last recommendation we are currently proposing to the Team Teach 2.0 model is to leverage the Q&A forum and chat features in Engageli. The Q&A threads persist between the live class sessions as well as in the playback room. You can see all the questions and answers that are posted whenever you log into the class or into the playback room. To open the Q&A forum, you can see the questions that have been posted and add your answer. One faculty member, for instance, the team lead, would be responsible for answering the questions that are posted in the Q&A forum. The Q&A threads are a great way for learners to post a general question, so faculty don't have to take on repeated questions during the live session. However, learners may want to have their exact question answered during the live lesson. One way to ensure learners' questions are answered during the live lesson is to direct them to post the question in the chat within the table. That way the professor assigned to that table will answer the question. Then the learner can see that this is being directed to the professor that is assigned to that table.

CONCLUSION

The Team Teach Model 2.0 proposed in this paper is based on pedagogical experience, research, and student feedback with the goal of bringing an engaging learning experience in the Engageli environment. The effective management of live lessons with increases in enrollment and number of participating course sections is vital to this objective. Finding solutions to improve student success does not mean moving away from a team teach model but rather leveraging Engageli's Tables feature and taking advantage of the Q&A forum and playback room. The collaborative nature of team teaching brings students much needed support in their studies by offering almost daily office hours and lecture presentations from different professors. However, individual student questions and concerns during synchronous lessons should be handled more efficiently. A possible solution includes moving away from the use of the general chat board and making use of Engageli's individual table chat boards or Q&A forum assigned to specific faculty members to manage. In the coming sessions, we will continue to seek ways of refining our proposed model as we strive to find the optimal use of Engageli for an improved student experience. We also plan on continuing our research of the team teach model and its implementation through Engageli by expanding the types of classes to also include courses taught in the College of Liberal Arts and Sciences and College of Health Sciences.

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CAN THE TAGUCHI LOSS FUNCTION APPLY TO PRODUCTION OF "DIGITAL DOWNLOADS"?

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ABSTRACT

This paper explores the merit of using the Taguchi Loss Function (TLF) for the manufacture of physical products versus the production of digital downloads. While the use of the TLF is found to be an effective metric of production quality for physical products, the mathematical value of the TLF approaches zero in the production of digital downloads. When the loss is always near zero, TLF loses the effectiveness to pinpoint the optimal settings of parameters to achieve a desired outcome of the production of a digital download. It is determined that the TLF should not be used as a tool for evaluating quality factors of digital downloads.

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INTRODUCTION

The Taguchi method focuses on design, development, and improvement of products by eliminating variations and/or deviations in manufacturing before they can occur, particularly the variations and deviations in quality that can lead to increased costs and decreased customer satisfaction. It is necessary to note that the term "manufacturing" is a subset of the term "production." While the output of manufacturing is always a tangible physical good, the output of production can be either tangible or intangible.

During the manufacturing process of physical products there are identifiable deviations in the output, such as inconsistent length, width, height, and weight as well as incorrect color, shape, and aroma, not to mention malfunction, insufficient functionality, and defect. Research identified nine fundamental factors that can affect quality of physical products during the manufacturing process. These include markets, money, management, labor, motivation, materials, machines and mechanization, modern information methods, and increasing product requirements (El-Daghar, 2017; Brun, 2011; Al-Saket, 2003; and Oschman, 2009).

When deviations of a quality factor occur, the cost of quality issues increase. The total cost of quality issues per unit can be calculated using the following formula, where q_i is the cost of a quality factor and o_i is the total occurrence of that quality factor. For example, a product is assessed to have a quality issue due to two occurrences of labor mistake, then q_i is the cost of labor mistake and o_i is 2.

$$C_Q = \Sigma \, o_i \times q_i$$

The Taguchi Loss Function (TLF), one of the outstanding tools of the Taguchi method, was designed to measure the deviation from a target value and assigns a cost to that deviation. TLF is ideal for manufacturing physical products and has proven to be a highly effective tool.

Due to the need for digitization, many products are quickly switching from their physical forms to downloadable forms. For example, Best Buy no longer sells DVDs or Blu-rays of movies, but, rather, hundreds of software, game and movie titles are available for subscription downloading via the BestBuy.com website (Meyersohn, 2023). In other words, these products are sold as "digital downloads."

A "digital download," which is typically a downloadable multimedia file, is intangible and is "duplicated" not "manufactured." The production of digital downloads is a quick replication of the original copy (also known as the "first copy"). It can be downloaded directly via the Internet. When technologies are sophisticated enough to guarantee identicality, the file integrity can be well preserved, so that the downloaded file is identical to the original copy.

The question arises, then, if "digital downloads," as intangible goods, may be produced and sold without deviations in the same way as physical products, is the Taguchi Loss Function still effective in quantifying the financial loss incurred due to deviations in product quality from the target value of "digital downloads"?

WHAT ARE "DIGITAL DOWNLOADS"?

The term "digital downloads" refers to any finished products that are sold, delivered, transferred, used, and/or consumed online in the form of being one or a group of files. They are typically delivered or transmitted to customers through direct downloading from a designated website. Common examples of digital downloads include eBooks, digital art, music, movies, video, audio, video games, templates, printables, newsletters, 3D models, sound effects, software, plugins, updates, fonts, articles, e-tickets, gift cards, certificates or bitcoins.

Digital downloads have become a popular way to commercialize products. It allows the buy-and-sell of downloadable products in the form of digital files without the need of physical media such as a Compact Disc (CD), Digital Video Disc (DVD), or Universal Serial Bus (USB) drive.

Unlike physical products, digital downloads enable the convenience and immediacy of buying and selling products. Authenticated buyers

can gain immediate access and consume the content on digital platforms. A digital platform is software and technology designed to enable the use of digital content, including a website, a registration service, an authentication mechanism, a contact database, payment processors, an online shop and showroom or tech support. However, buyers need a device, such as a desktop, laptop, tablet, or smartphone to read, write, play back, consume, and edit the downloaded content.

PRODUCTION OF "DIGITAL DOWNLOADS"

In the case of a physical product, the term "production" describes the action of manufacturing the product from components or raw materials. It is the process that turns raw materials or components into finished, sellable, and physical products. The process can require machinery, assembly lines, factories, manual labor, and other elements. The outputs are tangible objects that occupy space in the real world.

In the case of digital downloads, the term "production" refers to the process of acquiring digital files from a designated server onto a local device over the Internet (particularly the World Wide Web). The production of digital downloads does not involve any tangible or physical raw materials, except the required devices that transmit the file from source to destination. The entire process has very low human intervention. The outputs are a sequence of "bytes" and are only accessible via a software program.

DO "DIGITAL DOWNLOADS" HAVE DE-VIATION DURING DOWNLOADING?

Physical products could have identifiable quality issues, such as defects, inconsistency, or insufficiency. These issues are the results of deviations during the manufacturing process. Even with automation, occasional deviations from the target value are inevitable.

"Digital downloads" do not require manufacturing. Their "production" leads to the replication of the original copy. A replication

of "digital downloads" is a digital file that is identical to the original copy. With a successful download, the buyers receive an exact copy of the original one.

The production focuses on how to successfully transmit a replication from the seller's device to buyer's device. All quality issues involved in creating the first copy are isolated from the production of digital downloads. Theoretically, all issues should have been resolved before finalizing creation of the original copy. If the original copy does not have identifiable quality issue(s), neither would the replication.

An error can occur when transmitting files between two different devices. This can cause problems, and the errors may not be detectable by a quick glance. In other words, deviations may happen during the "downloading" process. For example, two bits are swapped inside the downloaded file which causes the file to display incorrect content. However, this study could not obtain an available percentage of download failures from public resources. Download failures are not common occurrences. Most downloads, especially with reliable Internet connections, succeed without a hitch.

There are methodologies, such as checksum, to ensure that the downloaded file is the identical replication of the original copy. A checksum is a calculated value made of numbers and letters and is used to verify the integrity of a downloaded file. It works like the fingerprint of a digital file. Below is an example of SHA256 checksum.

2e17b6c1df874c4ef3a295889ba8dd7170bc5620606be9b7c14192c1b3c567aa

Fedora is a free and open-source Linux distribution. In the following figure, the FedoraProject.org website guides users on how to verify the integrity of their downloads through the verification of a SHA256 checksum. MD5 is another popular algorithm of checksum. Although there is no checksum that is 100% accurate, it is generally agreed that the

possibility that two files differ but have the same checksum value is nearly zero.

Verify your download

Verify your download for security and integrity using the proper checksum file. If there is a good signature from one of the Fedora keys, and the SHA256 checksum matches, then the download is valid.

1. Download the checksum file into the same directory as the image you downloaded.

2. Import Fedora's GPG key(s)

```
curl -O https://fedoraproject.org/fedora.gpg
```
ⓘ You can verify the details of the GPG key(s) here.

3. Verify the checksum file is valid

```
gpgv --keyring ./fedora.gpg Fedora-Workstation-39-1.5-x86_64-CHECKSUM
```

4. Verify the checksum matches

```
sha256sum -c Fedora-Workstation-39-1.5-x86_64-CHECKSUM
```

If the output states that the file is valid, then it's ready to use!

Close

Digital signature (DS) is another method used by sellers of digital downloads for verification. With the involved cryptographic technologies, a digital signature works like electronic seal of an envelope. It provides a higher level of security than checksums, as they not only verify file integrity but also authenticate the source.

With the integrity checking, the chance for buyers to receive a "digital download" with deviation in quality is nearly zero. However, checksums and digital signatures are not universally used for digital downloads, especially digital downloads that have less-sensitive content such as eBooks, movies, and music. First, recent advances in technologies already provide a highly trustworthy downloading environment to most residential users. For everyday downloads of music, movies, or news content, checksum verification or digital signature certifying are deemed an extra step and unnecessary. Second, most sellers furnish convenient tech support to walk buyers through the entire download process. Third, most buyers simply re-try the download till it is successful. They prioritize simplicity and convenience over integrity verification.

As a result, production of "digital downloads," which is the downloading of files, could have deviation(s). This is still an issue that warrants the sellers' attention because any deviation incurs some form(s) of cost, regardless of whether it is a physical product or a digital download.

COST OF DOWNLOADING

The word "downloading" means the use of a device to obtain electronic content from the Internet. Examples include a web page, social media posts, music, movies, emails, songs, photos, and data files.

Downloading content from the Internet could cost money for both the source server and the destination device. However, many internet service providers (ISPs) offer unlimited plans to enterprises. For example, Verizon Fios is an Internet-dedicated service that provides unlimited data plans to sellers of digital downloads. Below is a table that compares three Fios Business Internet plans. All plans offer unlimited data; the increase in the amount of downloading does not change the Internet service cost. As a result, the cost of downloading is relatively constant to a seller of "digital downloads," and it may be treated as a fixed cost.

Downloading Bandwidth	Monthly Fee
200 Mbps	US $69
500 Mbps	US $129
1 GB	US $249
(Source: Verizon Website)	

It is necessary to note that some download services, particularly music or software, may set a limit on attempts (typically less than 5) to prevent abuse of purchased downloads. They might also have bandwidth limitations to prevent overloading the servers.

On the buyer side, there are two common download channels--Internet and data plan. Most ISPs offer residential subscribers a flat rate per month without a data cap to access the Internet. A data cap, also known as a bandwidth cap, is the limit of bits a subscriber is allowed to transmit vis Internet connection per month. In the United States, residential subscribers typically pay a flat rate (known as a monthly fee) with an unlimited volume of data transmission. With the flat-rate pricing model, the cost per download is irrelevant to most residential subscribers.

A data plan is a subscription service for mobile devices, typically smartphones, to access the Internet via cellular networks. In the United States, mobile data carriers may offer data plans with a cap per month to subscribers, although they might also offer unlimited data plans. If the allowed transmission volume is used up, subscribers need to pay for additional download volume. Below is a table that lists data plans offered by Consumer Cellular.

Data Volume	Monthly Fee
1 GB	US $20
5 BG	US $25
10 BG	US $35
Unlimited	US $50
(Source: Consumer Cellular Website)	

To summarize, the number of times a file is downloaded does not affect the cost of selling a digital download, although it might possibly become a variable for establishing the target and calculating deviations. A buyer can download the same "digital downloads" multiple times without incurring any marginal cost per download to the seller. Only when the buyer of "digital downloads" uses a data plan and exceeds the data cap, the buyer incurs downloading costs. However, the buyers' download cost is irrelevant to the sellers.
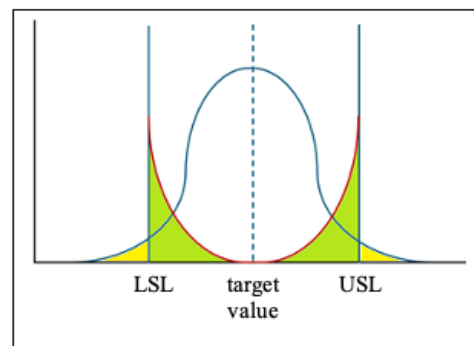
THE TAGUCHI LOSS FUNCTION

Dr. Taguchi suggests that every process has a target value, and a loss incurs as the product moves away from target value. This loss may involve delay, waste, scrap, or rework. The mathematical relationship between a deviation and its target value is not linear. The loss is proportional to the square of distance (delta or Δ) from the target value and may be expressed by the following formula.

$$Loss = \Delta^2$$

As shown in the following figure, the two sides of green area represent the loss, while products with deviation falling inside the yellow areas are not acceptable and are wasted. The red parabolic curve describes the loss as the product moves away from the target value. Both lower specification limit (LSL) and upper specification limit (USL) are the tolerance limits set by the customers or set by the product specifications. The distance between target value and USL is known as the positive tolerance, while the distance between target value and LSL is the negative tolerance. The unit to measure the tolerance could be download speed or download time (Maghsoodloo et al., 2004).

By setting the loss of a particular deviation as constant, Dr. Taguchi further introduced the "Loss Function" as a statistical equation that can be used to quantify the financial loss incurred by the deviation. The equation is known as "Taguchi Loss Function" (TLF), as shown below, where $L(y)$ represents the cost that incurs when the actual value (y) deviates from target value (T) of an attribute, and k is the loss coefficient which is a constant that determines the rate at which financial loss increases with deviations from the target value. An attribute is a physical characteristic such as width, height, length, or weight. The target value refers to the desired value of an attribute. The constant k can vary from process to process and is typically used to represent the cost of quality issue. TLF is a key concept in the Taguchi method; it highlights the importance of minimizing all deviations.

$$L(y) = k \times (y - T)^2$$

The delta, which is computed by $(y - T)$, represents the deviation of the actual value

from the target value. The square of delta, $(y-T)^2$, depicts the relationship between deviation and financial loss. The loss increases exponentially as the deviation from the target value increases.
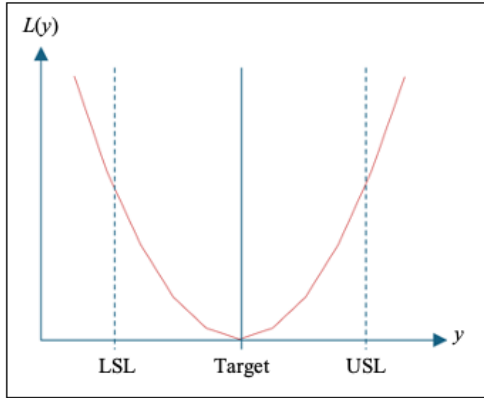
The constant (k) can be computed using the following equation. A product's "scrap cost" (SC) is the loss of materials that cannot be re-used during the manufacturing process, and typically consists of the cost of the scrap material itself and cost of processing the scrap. Adjustments are additional costs incurred due to the deviation. They are the quality loss. Kiran (2017) depicted that the quality loss can originate from: (1) cost to produce, (2) failure to function, (3) maintenance and repair cost, and (5) cost of redesign and rework, and (5) loss of brand name leading to customer dissatisfaction.

SC = Cost of scrapped material + Cost of processing + adjustment(s)

For products with an USL and a LSL as well as a target value in the middle, the constant (k) can be computed by setting the TLF equal to the product's (SC) at the specification limit, as shown below.

$$k = \frac{4 \times SC}{tolerance^2}$$

When the actual value of deviation (y) equals to the target value (T), the delta is zero, and the loss $(L(y))$ is also zero. Zero in loss indicates an ideal scenario--there are no quality issues. As the actual value deviates from the target value in either direction (positive or negative), the

squared term in the equation makes the loss value increase rapidly. This emphasizes that even small deviations can result in significant quality costs.

For an N-sized production, the total loss of quality is the sum (Σ) of loss of each product with deviations (Benavides, 2012), as shown below, where y_i is the actual value of an attribute (i) of a product. In practice, I can be width, height, color, aroma, etc.

$$L_N = \sum_{i=1}^{N} L(y_i) = L(y_1) + L(y_2) + L(y_3) + \underline{.....} + L(y_N)$$

Dr. Taguchi also suggests two variants of TLF. Once is for the "Smaller the Better" scenario; the other is for the "Larger the Better" scenario (Morales, 2023).

Scenario	Use Case	Equation
Smaller the Better	The target value is zero or a minimum	$Loss = k \times y^2$
Larger the Better	The target value is to be as large as possible (or maximum).	$Loss = k / y^2$

TLF IN PHYSICAL PRODUCTS

Physical products require tangible materials, components, and/or parts to build a finished one. They have measurable qualities. Physical products need to go through a process known as "manufacturing" for rapid, consistent product creation. Manufacturers build production lines or assembly lines to massively produce physical products.

Selling products, physical or digital, includes costs like marketing, sales, logistics, distribution, and fulfillment. There are some costs that could be omitted when selling digital downloads. For example, product costs and inventory costs are the two costs specific to the selling of physical products. While manufacturing and packaging are examples of product costs, examples of inventory costs include warehouse, storage,

and preservation. These costs do not apply to products in digital form.

Quality issues of physical products can originate from design, manufacturing, quality control, and delivery. Functionalities and cosmetic flaws are examples of design issues. Substandard materials, cheap components, and improper assembly are examples of manufacturing problems. Defects in materials, poor workmanship, and assembly inconsistency are examples of quality control. Inaccurate delivery, packaging inadequacies, and delays are examples of delivery.

Manufacturers of physical products use TLF as a statistical tool for quantifying the economic loss associated with deviations in product quality. In the case of selling DVD movies to customers, the manufacturing (or production) refers to the process of burning the movie files to a DVD-ROM (known as the medium), and then packing the DVD-ROM in a protective enclosure known as the "Amaray case". It is necessary to note that creating the first copy (also known as the original copy) of a digital movie is not part of the manufacturing. Burning files to a DVD-ROM involves permanently storing a copy of digital files onto the DVD-ROM that can be read by most DVD players and computers. An Amaray case, as shown below, is the standard retail packaging format for DVDs.

Amaray DVD case

The dimension of an Amaray case is expressed by three attributes: height, width, and depth. A standard Amaray case is made of recycled polypropylene material with a dimension of 190.5mm × 133.3mm × 12.70mm (height × width × depth). The deviation on the depth an Amaray case can cause scratches on the laser-reading

side of DVDs. Interestingly, the manufacturer of Amaray case can only sell their products with a ±1.1 millimeter of confidence interval of depth. The actual value (y) of depth in a batch of standard Amaray DVD cases can range from 11.6 to 13.8 millimeters.

During shipment, a DVD-ROM might be scratched if the depth of an Amaray case is less than 12.7mm. Small scratches can less likely affect the ability of the DVD player to read the disc, because the data are far below the surface of the disc. However, customers often demand a replacement if the DVD arrives with scratches on the surface. To a seller, each replacement case incurs additional cost. The constant of quality (k) is the sum of unit cost of a DVD pack plus shipping and handling as well as additional operation costs and is determined to be $47.50.

TLF is an ideal tool to illustrate how the deviations on depth of Amaray cases can affect the value of a DVD movie, particularly the loss caused by such deviation, in terms of the cost of replacing the scratched DVDs. It can also provide a monetary measure of the loss of seller's image by customers. According to TLF, the loss incurred when y is 11.6 can be calculated as:

$$L(y) = k \times (y - T)^2 = US\$47.50 \times (11.6 - 12.7)^2 = US\$57.48$$

The following table lists the losses based on deviations (y) on depth of Amaray cases. It is necessary to note that the manufacturer could purposely ensure the depth is larger than the upper bound, 13.8 millimeters to ensure that no scratches can result.

y	L(y)
11.7	US $47.50
11.8	US $38.48
11.9	US $30.40
12.0	US $23.28
12.1	US $17.10
12.2	US $11.88
12.3	US $7.60
12.4	US $4.28
12.5	US $1.90
12.6	US $0.48

In a N-sized production, the total loss of quality is expressed as:

For example, in a batch of 200 DVD packs, 11 of them are packed with Amaray cases with depths that are less than 12.7mm, as listed in the following set. The total loss of quality in this batch is $263.18.

$y_N = \{11.7, 12.5, 12.2, 12.0, 12.0, 11.8, 11.7, 11.8, 12.5, 12.2, 12.1\}$

For most physical products, TLF provides an effective framework for understanding the relationship between product quality and financial loss. It enables manufacturers to make informed decisions about product design, manufacturing processes, and continuous improvement efforts of a physical product.

TLF IN DIGITAL DOWNLOADS

Unlike physical products such as smartphones, USB drives, laptops, and pacemakers, creating digital files does not require an assembly line or a production line. Although the preparation of a digital file to build the first copy (known as the original copy) of a "digital download" could be an investment, the production is merely the process of copying, duplicating, or reproducing the original files. Creating the first copy of a digital movie is not part of the production.

With current technologies, the production of "digital downloads" has been simplified to a direct download from the designated server. With the rise of video on demand (VoD), streaming technology has become an economical option for transmitting digital downloads. VoD is a technology that allows users to access videos any time without the constraints of a static broadcasting schedule. Streaming technology enables the real-time transmission of video, audio, and data over the Internet. Services like Netflix and Spotify have been streaming content directly to subscribers' devices. Subscribers can play the content as the files remain being transmitted without the need to worry about storage limits.

The most significant cost for selling "digital downloads" is the cost that enables direct file downloading from host servers to buyers' devices. The cost varies depending on several factors: server type, storage space, bandwidth, data transfer rate, management and maintenance, cloud type, and server location. As explained previously, digital content providers typically sign contracts with ISPs to obtain flat-rate services; they pay a fixed monthly fee for subscribers to download files. On the other hand, sellers normally take into consideration that technical glitches happen. The pricing strategies for selling digital downloads already include the cost of tech support. Typically, the selling price ensures customers get what they paid for. If the download fails, the customer can re-try till success without extra charges. It is necessary to note that this paper limits its scope by calculating loss as a loss to the producer. However, loss may also be measured as level of user satisfaction.

Downloading	Seller	Buyer
Attempt	Might have a limited number of attempts to discourage excessive downloads.	Unlimited till successful downloads rather than limiting attempts.
Larger the Better	The target value is to be as large as possible (or maximum).	Overage charges may apply after exceed data cap

From the buyers' perspective, the cost to download files from a designated server depends on two main factors: ISP charge and subscription fee. As discussed previously, most buyers pay a flat monthly rate to download files, and it is commonly agreed that buyers are responsible for paying their cost to access Internet to download files. If a download fails, buyers typically can continue the downloading till success without additional costs.

Without the need to ship physical version, the quality issues of "digital downloads" can be limited to troubleshooting including corrupted download, incompatible tools, incorrect format, unsupported operating systems, etc. These issues fall into the scope of tech support. The term "tech support" refers to the assistance provided to users of a product or service when they encounter technical issues. The focus is on how to successfully download the files.

The quality of download should be measured by duplicability which refers to the ability of something to be reproduced or copied exactly. The target value (T) is 100%, while the actual value (y) is how exact the downloaded file is compared to the original file. For example, "95%" means that downloaded file is only 95% correct. It is necessary to note that many downloading protocols can detect and fix errors during transmission, improving the chances of a complete and accurate download. Although this study could not obtain available percentage of download failures from public resources, download failures are not common occurrences.

The cost of tech support may account for the Taguchi Loss coefficient (k) because it is part of the efforts to ensure that a product meets its intended purpose and satisfies customer needs. Interestingly, most buyers simply choose to re-try the downloading till success, rather than spending time and efforts to obtain tech support through customer service. The cost of tech support and how tech support affects the production of digital downloads are two research realms.

Interestingly, even when taking the cost of tech support into consideration and subjectively

assigning the cost of tech support as the Taguchi Loss coefficient (k), this paper finds it difficult to differentiate the actual value (y) and the target value (T) of digital downloads. When a download succeeds, even after several attempts, the goal to reach the target value (T) is fulfilled, and the deviation (y) equals to the target value (T). When all the N buyers succeed in a state that they all obtained the digital downloads they purchased, the Taguchi parabola downgrades to a straight line which is the line of target value, as shown below. Both USL and LSL vanish, too. In the case of digital downloads when the target value is perfect duplication, the chart cannot have a parabolic curve.
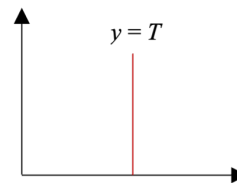
When the digital download is an identical replication of the origin, the difference between y and T, (y-T), is zero. The value of the constant (k) becomes irrelevant because calculation results of the formula, $k \times (y-T)^2$, is always zero and it implies that the loss of quality $L(y)$ is zero. TLF, thus, significantly loses its effectiveness as a statistical tool for quantifying the economic loss incurred by a product as it deviates from its target.

Likewise, in an N-sized production, in which the "digital download" is successfully downloaded N times, the total loss of quality is zero because:

$$L_N = \sum_{i=1}^{N} L(y_i)$$
$$= L(y_1) + L(y_2) + L(y_3) + \underline{\cdots\cdots} + L(y_N)$$
$$= 0 + 0 + 0 + \cdots + 0$$
$$= 0$$

The variants of TLF, both the "Smaller the Better" and "Larger the Better" scenarios, do not apply to digital downloads. When the target value is expected to be 100%, it is not the "Smaller the Better" scenario. Since y equals to T, the adjusted equation for the "Larger the Better" scenario will not reflect the loss and its relationship with deviation.

If the downloading never succeeds, the negative experience may cause the buyer to withdraw. The cost of losing a customer is absolutely part of the quality cost. When losing a buyer, the Taguchi Loss coefficient (k) could be large, but the actual value (y) cannot be defined. However, TLF relies on a defined deviation value to obtain the associated loss. Without the deviation value, TLF becomes ineffective. TLF is not applicable to digital downloads.

CONCLUSION

TLF is typically used in manufacturing and engineering processes to quantify the deviation from an ideal target value. Unlike a physical product with measurable qualities, digital downloads do not have any physical presence and can be delivered instantly over the internet. They are produced and sold without deviations in the same way as physical products.

Although buyers of digital downloads could have technical problems such as slow Internet connection, unstable network access, insufficient skills for file downloading, they are factors beyond the sellers' control. This study confirms that the cost of downloading files is part of the sellers' operational costs and is irrelevant to the production of digital downloads. The advances in technologies have minimized the occurrence of download failure. Most downloads, especially with reliable Internet connections, succeed without a hitch. This phenomenon makes the difference between the actual value (y) and the target value (T) become nearly zero, which implies the loss is nearly zero, too.

The TLF is effective when there exists a measurable deviation from the target value to calculate the loss. When the loss is always near zero, TLF loses the effectiveness to pinpoint the optimal settings of parameters to achieve a desired outcome of the production of a digital download. As a conclusion, TLF should not be used as a tool for evaluating quality factors of digital downloads because its applicability to digital downloads is very low.

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WHAT WILL HAPPEN IN HIGHER EDUCATION WHEN ARTIFICIAL INTELLIGENCE ENTERS THE COURSE ROOM?

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ABSTRACT

This article on higher education and artificial intelligence (AI) is based on a literature review completed by the authors over the previous six months. The following topics related to and in support of AI will be presented, discussed, and further explained. First, a general "look ahead" of what might happen in higher education will be given, and a view of the future related to AI will be considered. The short-term considerations, as well as the longitudinal aspects of the impact of AI, will be discussed. Additionally, digital professors will be considered, and various aspects of the use of AI in tutoring and general course assistance will be presented. Finally, the authors' conclusion and "final remarks" will be offered for further consideration.

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Keywords: AI, higher education, education, learning, future

LOOKING AHEAD

Education and learning, in general, are pathways for change in our society. Guppy et al. (2022) asserted, "The history of digital learning is a narrative of change." No matter the definition, educational technology has, since its inception, seen continuous, accelerating expansion. Bonk and Wiley (2020) captured this accelerating expansion as "waves of learning technology—some waves extended through time, others interconnected, and yet others repeated." Guppy et al. (2022) further suggested a rethinking of higher education within instructional design, campus communities, and instructional delivery modes. Internationalization and globalization continue to create additional impetus for change in higher education. Lee & Stensaker (2021) cited several examples related to a diverse research agenda: "One of the factors driving this diverse research agenda is the intractable nature of internationalisation and globalisation phenomena, whereby the complexity of issues, drivers, explanations, and implications makes them difficult to classify and understand in a clear-cut way" (p. 158).

A VIEW OF THE FUTURE

Several authors have inquired, "What will our classes/sessions/seminars/schools/colleges/universities look like in the future?" This section aims to suggest answers to the following questions concerning higher education: "What will happen? Why? Why is this significant to consider and discuss?"

Bell, Douce, Caeiro, Teixeira, Martin-Aranda, & Otto (2017) suggested that concerns with environmental sustainability, which remain prevalent in our society and will continue for the foreseeable future. They also predicted that the move to distance learning will persist. It should be noted that their research and analysis preceded the COVID-19 pandemic.

Similar conclusions about a strong and growing inclination toward distance learning in higher education appeared in a two-part article published in the Journal of Environmental Health, in which Frey (2013) posited that "by 2030, over 50% of colleges will collapse" (p. 58).

Frey and other scholars who shared a similar prescience did not conceive how distance learning would accelerate as a significant, though secondary societal impact of the COVID-19 pandemic.

More recently, Harrison, Tosey, Anderson, & Elliott (2021), in their article on Human Resource Development (HRD) professional education, pointed to an ongoing shift of presentation and instruction modalities in the United Kingdom (UK). They observed that such instructional changes are centered in more than just the UK. That is, such changes are ubiquitous in the United States and Canada. Harrison et al. (2021) identified a need "for research into professional education in Human Resource Development" (p. 214).

Other researchers speak specifically about the "look and feel" of higher education in 2030. Marmolejo & Groccia (2022) posited a reimagined and redesigned experience of teaching and learning in the post-pandemic world. Additionally, Mui and Murphy (2020) used the previous work of Stiegler and Derrida to suggest a university of the future. Further, "Stiegler and Derrida acknowledge the difficult position in which the university finds itself." Mui and Murphy (2020) amplified Stiegler's warning "against the relentless techno-assaults on memory and attention under the current hyper-industrialized mnemotechnical system of retention that has come to dominate our daily lives" (p. 463).

The question that persists is what will higher education look like? Will today's professors and learners even recognize a university and university learning in the years to come? What of future generations of learners/faculty/staff? Are the capabilities in What is in place today that supports the rapid advancement and changes that are occurring now? The authors suggest the above questions as possible starting points for further consideration.

WHAT IS HAPPENING IN THE SHORT TERM? DO WE REALIZE THE LONGITUDINAL IMPACT(S)?

In the short term, more basic and more systemic questions about teaching and learning in higher education are being posed. Marmolejo & Groccia (2022) suggested that "…moving forward may provide a good opportunity to question our dogmas and assumptions about all aspects of higher education and especially about internationalization (e.g., the common belief that internationalization is mainly about the financial benefits of attracting students), institutional rankings, the role of teachers and students in the learning process (does learning happen independently by the learner, dependently on knowledge provided by the teacher, or interdependently as a result of what we teach them and what students do to create knowledge), and the goals of education (knowledge, job preparation, or informed citizenship)?" (p. 31). Technology and educational-related technology will improve and adapt based upon the exigencies of schools, colleges, and universities. Ongoing discovery, experimentation, and implementation will characterize the advances.

IMPACT OF AI

WHAT WILL HAPPEN TO PROFESSORS IN HIGHER EDUCATION PARTNERED WITH TECHNOLOGY?

Professors will still be needed, of course. There has been a steady shift or maybe drift, especially in adult higher education, as professors and what they do in an educational setting have changed from a "sage on the stage" approach to teaching and learning to more of a "guide on the side" methodology. Rather than be the "know-it-all expert," professors of the future will serve as "senior facilitators" in courses, especially graduate courses and those undergraduate courses that are provided near the conclusion of a degree program.

The professors of tomorrow and beyond will be called upon to serve quite literally as "experts" in a wide range of disciplines (their content area of expertise, technical specialists, human services, and support to struggling students, as well as others.) Woiwode (2020) presented a strong case related to adult education instructors of the future "…blending disciplinary specialisms with holistic perspectives that enable us to appreciate the big picture while understanding our individual and collective roles in society and on this planet" (p. 30). Given his environmental point of view, Woiwode expressed several excellent forward-thinking arguments. That is, "…one purpose of education is to accelerate a paradigm shift toward integral humanism by generating planetary consciousness" (Woiwode, 2020, p. 31). One conclusion that he does draw relates directly to meaningful learning in the 21st century, "For learning to be meaningful in the 21st century, we need to overcome a narrow focus, moving from "knowledge and skills acquisition" toward "wisdom generation" (Woiwode, 2020, p. 31). Professors will still be needed in the "universities of the future." A suggestion is made by Woiwode for future "learning spaces" to be comprised of "…'safe operating spaces'…to enable people and/or the institutions to test and experiment with novel ideas and approaches to learn from mistakes, failures, and errors" (Woiwode, 2020, p. 37).

In their article, "The Role of Universities in Modern Society" (2022), Moscardini, Strachan, and Vlasova inventoried and reviewed several factors related to the traditional roles that universities have utilized. Based on their own research and collective experiences, they see universities of the future developing as places "…to create a social network of friends and colleagues, to generate respect, self-esteem, self-efficacy coming from something one enjoys, a sense of being needed and a meaning to life in being a part of something larger than oneself" Tegmark (2017) as cited in (Moscardini, et al., 2022, p. 828). They further argued that the current structure of universities and the placement of faculty within the departments, schools, and colleges do not promote collaboration or improved interdisciplinary work. They call for debate on the strategic direction of

current universities and colleges. In essence, the question remains: what should future schools/colleges/universities look like? The following factors are suggested as an answer to this question.

DIGITAL PROFESSORS

Digital professors are here! Digital professors (from teaching assistants to virtual professors) are becoming part of the classroom in higher education to help personalize students' learning and help human faculty improve their performance (Bills, 2021). Technology development within college course rooms is quickly being developed but needs to be implemented by colleges and universities (Lucariello, 2023). Examples of educational organizations moving forward include the following:

Jill Watson, Assistant teacher, was created in 2015 by Georgia Tech and has been implemented in graduate and undergraduate classes in various modalities, including online and campus courses. Professor Watson's abilities include answering student introductions, administrative questions, and assessment questions that deal with tests, assignments, and projects (Virtual teaching assistant: Jill Watson, 2020). Another institution, Southern University, has also employed Professor Watson in a graduate course as a teacher assistant with 97% accuracy in conversations with students (Young, 2021). "We continue to build more powerful versions of Jill Watson every semester… Now we can build a **Jill Watson** in less than ten hours," Ashok Goel, a professor of computer science and cognitive science at Georgia Tech (*AI-Powered Adaptive Learning*, 2023, para. 7 and 9).

Ada, Bolton College in the United Kingdom created a virtual assistant with the help of the Watson Conversation service. Ada enhances learning, teaching, and assessments (Bolton College, 2019).

DIGITAL PROFESSOR BENEFITS TO COLLEGES AND UNIVERSITIES

There are benefits to implementing digital professors, as in any digital technology that assists or takes over; creating consistency and cost-effectiveness contributes to a competitive advantage (Chui et al., 2021, pp. 2 - 4). The use of generative AI also allows for cost savings, primarily with an elimination of employee benefits (e.g., vacation and sick pay) and a potential increase in productivity (i.e., no lateness or absenteeism) (Paycor, 2022). Digital professors will also continue diminishing the cost of full-time, tenured, and tenure-track faculty (Young, 2021, p. 1). Additional cost-effective benefits include allowing administrators to upload any changes to curricula across an entire fleet of AI instructors. Other areas that enhance a school's reputation and quality of education and result in increased revenue include the elimination of biases and course development. If programmed correctly, it can eliminate bias toward students based on gender, race, socio-economic status, personality preference, or other considerations. The assistant digital professor can also enhance traditional classroom instruction by providing an interactive learning environment, quicker grading, and more engagement with a professor and course material (Haleem A. et al., 2022, p. 280).

AI TUTORING

An area that professors will soon find themselves unnecessary in will be academic tutoring. Technology is moving extremely fast in replacing humans as tutors. An Intelligent Tutoring System (IST) can assist students with one-on-one tutoring at any time and any place in the world, giving students personalized learning that develops their problem-solving abilities with instant feedback (AlShaikh & Hewahi, 2021, pp. 403-410). One of the best examples can be found in the partnership between OpenAI and Khan Academy, which has a GPT-4 learning system that performs one-on-one tailored, personalized learning experiences (Your AI Tutor: Khanmigo by Khan Academy, 2023). Khanmigo, the newly implemented Khan Academy writing tutors' success, is growing and being implemented for students to help them learn by giving real-time

feedback and as a partner to debate with 24/7. The AI tutor was first introduced in May of 2023 and continued to be implemented within 40 K-12 school districts. The results of the Khanmigo tutoring success will be tracked and researched to justify the continued implementation by Khan Academy. The expectation is that AI tutoring will be highly successful and implemented at all levels of the global educational system (Yamkovenko, 2023, p. 1). Khanmigo tutoring also offers students personalized math, science, and humanities learning and conversations with literary and historical figures (O'Brien, 2023), "It'll enable every student in the United States, and eventually on the planet, to effectively have a world-class personal tutor" Mr. Khan, 2023 (Singer, 2023, p. 1).

Khanmigo is the newest writing tutoring system, which is more advanced than previous systems, and as such, it helps students learn successfully. AI tutoring has been used for years to assist professors and students. California State University Polytechnic currently uses Packback, which has improved writing engagement with students. At the same time, Walden University implemented Julian in 2018 to offer students 24/7 tutoring to assist with learning gaps and reinforce course concepts successfully (O'Brien, 2023, p. 1). Research also indicates that AI tutoring with simulations may provide better results in students learning complex surgical skills (Fazlollahi et al., 2022).

Squirrel AI, created by Yixue Group, gives students real-time support and allows every learner to have an 'AI Super Teacher.' The after-school tutoring system provides language lessons, STEM subjects, and English, physics, and chemistry learning support (Ancell, 2023). Although Squirrel is currently focused on helping K-12 schools, by 2030, Squirrel could be implemented globally for college students as Tom Mitchell, Chief AI Officer at Santa Fe Institute and co-director of the CMU/Squirrel AI Laboratory on Personalized Education at Scale, continues to create artificial intelligence to transform the educational system (Santa Fe Institute, 2023, p. 1).

Few studies directly compare humans and AI as teachers or humans and robots as teachers. Therefore, more precise data needs to be created on how professors perform against digital or robot professors and the effects of digital assistance. However, the lack of research and slow acceptance from academia has not impacted the future development of AI-powered tools and robotics (Roxana & Teanu, 2022, pp. 95 - 97) for higher education. Academics now must imagine the effects of the combination of Text to Video, Text to Speech, Neurological Analysis (Ledwos et al., 2022, p. 1164) and Psychological Evaluations combined with AI and machine learning that creates individualized academic learning (Dawson et al., 2023, p. 1051) tailored to meet students' strengths and weaknesses (Ouyang & Jiao, 2021, p. 841). The combinations integrated within tutoring, digital professors, and robotics could change the learning environment to benefit humanity. How fast AI and robotics are implemented into higher education will vary worldwide. No one knows how the grand experiment with AI and robotics will affect all levels of education globally. "The modern student expects immediate results and real-time experiences, whether it is a phone call with a staff member at two in the afternoon or a chat session with a digital assistant at two in the morning" (Bills, 2023, p. 1).

CONCLUSION

SO, WE RETURN TO OUR ORIGINAL QUESTION: WHAT WILL HAPPEN IN HIGHER EDUCATION WHEN ARTIFICIAL INTELLIGENCE ENTERS THE COURSE ROOM?

That is, "What will happen to higher education in general?" Ueland, Hinds, & Floyd (2021) speak of chaos in higher education institutions. Their research, writing, and conclusions were formulated during a time of extreme worldwide concern based on the commonly understood beginning and end dates of the COVID-19 pandemic. They further suggest using complex adaptive systems (CASs) theory as a schema for understanding the complexities inherent in higher education. "Complex adaptive systems (CASs) theory provides a framework

for understanding how systems of multiple, independent, and intelligent agents interact with each other in a nested and overlapping set of environments to create both a whole that has an identity apart from any of its components as well as a setting in which simplex cause-and-effect relationships are rarely linear or predictable" (Ueland et al., 2021, p. 121). Further, Ueland et al. speak to creating change within higher education and equity in access to appropriate university resources. They specifically include a defined list of CAS characteristics that should be pursued with a focus on 2030 and beyond. The CAS characteristics include appropriate sociological networks, accepting a non-linear approach to change, self-organization (also, re-organization), appropriate feedback loops, path dependency (enablers or non-enablers for change), co-evolution (essentially their term for synergistic interactions), emergence (willingness to try new techniques and ideas), and attractor (a state within a system that creates activity and outcomes). (Ueland, et al., 2021, pp. 126 -127).

FINAL REMARKS

Why should we care? At some level, everyone has some stake in the outcomes generated in higher education. That can be further interpreted as a philosophy of care. As our society develops and grows, our concern must continually shift focus to the future. *What is our concern?* Our thoughts must actively and systematically create a universally accepted climate that includes "knowing" and "critical thinking" and analysis, which AI and human professors can offer.

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FROM THE CLASSROOM:

B-SMART OBJECTIVES: HOW TO WRITE EFFECTIVE PROJECT OBJECTIVES WITH BUDGET CONSIDERATIONS

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ABSTRACT

The skills and knowledge that project managers need are crucial to effectively leading their team and successfully executing a project. A practical skill required when leading a project is the ability to write an effective project objective that captures the scope specifics and provides clarity and understanding to all stakeholders. In this article, we are proposing the B-SMART acronym as a tool to write effective project objectives.

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Keywords: project management, skills, B-SMART

INTRODUCTION

When defining project objectives in project management, understanding the project scope, timeframe, and budget parameters is crucial to being able to write an effective project objective and provide the clarity needed to lead the project. Key reasons these parameters are important for writing effective project objectives are briefly and concisely presented below.

1. **Scope:** The project scope must be specific. This ensures that the project team understands what needs to be achieved.

2. **Timeframe:** A well-defined timeframe helps to keep the project on schedule.

3. **Budget:** In project management, formal projects will require a budget. Knowing the budget helps to keep the project on track by monitoring the project progress using EVA (i.e., earned value analysis).

To understand how to write effective project objectives, we compare the following two examples.

Here is an example of a project objective:

Develop and launch a watch app within three months with a budget of $100,000.

Here is a better example of what a project objective should resemble as a minimum:

Develop and launch a watch app that allows users to track their daily steps and calories burned during exercise within three months with a budget of $100,000.

WHAT IS THE DIFFERENCE?

In our first example, we provided a vague objective that did not include any specific information about the project scope. This lack of detail can lead to confusion and misunderstanding among the project team, ultimately hindering the project's success.

In contrast, when creating project objectives, it is crucial to be specific and provide details about the project's scope and features. To achieve this, the project manager must understand the

organization's vision and mission in order to connect them to the project's goals. By providing specific details about the project in the project objective, the project manager can effectively communicate and lead the team in the right direction to successfully achieve these goals.

For instance, in our second example, we included specific details about the project's scope. This specificity provides clarity and direction for the team and will help them understand what needs to be achieved. Therefore, it's essential to emphasize the importance of specific project objectives to ensure project success (Project Management Institute [PMI], 2017).

The acronym, **SMART** is a good way to remember how to write a project objective (Doran, 1981). Here is our project objective again:

Develop and launch a watch app that allows users to track their daily steps and calories burned during exercise within three months with a budget of $100,000.

Can we find out how the SMART acronym fits into our project objective?

Let us review our project objective against the SMART acronym.

Specificity: What are we doing? A watch app. What will the resulting (app) accomplish? Tracking. What will it track? Steps and calories burned. When will the tracking take place? Daily during exercise.

Measurability: How will progress and success be measured? By tracking daily steps and calories burned during exercise.

Attainable: Will 3 months be adequate to write the app? Does the project team have the capabilities to do the work? Is the project realistic? Given the available resources and constraints, the objective should be achievable.

Relevant: To be relevant the project objective must provide value to an organization's vision, mission, or goals. If the organization developing this type of watch is not interested in promoting a healthy lifestyle, this project would not be

relevant. For this exercise, we will assume the organization is into health and sports.

Time-bounded: What is the time to complete the watch app? 3 months

Did the SMART approach cover all the bases? The answer is no. It seems the SMART acronym after all missed the project budget, which is a critical aspect of any formal project.

To solve this problem, we propose the use of the B-SMART acronym, where "B" stands for Budget. The acronym is catchy and easy to remember. It will facilitate the learning process and ultimately the application of B-SMART project objectives Budget: Do we have a budget for the project?

Yes, $100,000. Is the allocated budget realistic to accomplish the project objectives? Yes.

Next time, let's **B-SMART** when writing project objectives.

Acknowledgment: This paper was written with the assistance of ChatGPT, a language model developed by OpenAI.

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FACULTY–STUDENT COLLABORATIONS:
QUALITY PROBLEMS AT CHIPOTLE: HOW TO PREVENT FOOD POISONING

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ABSTRACT

According to the CDC, every year, an estimated 1 in 6 Americans (or 48 million people) get sick, 128,000 are hospitalized, and 3,000 die from foodborne diseases (Fast Facts About Food Poisoning, 2022). In this paper, we aim to focus on sourcing of material and production (food presentation) quality because they are the biggest factors that are the main causes of Chipotle's food quality issue.

Keywords: TQM (total quality management), food poisoning, Chipotle

CHIPOTLE'S BATTLE

Founded in 1993 by Steve Ells, Chipotle is one of the most popular American chains of casual dining restaurants and continuously expands its business all around the world. Chipotle impresses and attracts customers with their commitment to Mexican food and establish a reputation for the natural value of producing, obtaining, managing, and processing meats and other ingredients (Whitten, 2017).

Despite the appearances of many other new businesses and enormous competition in the food industry, Chipotle achieved a revenue of over 2 billion dollars in 2021. Nowadays, Chipotle has over 3,000 restaurants and over 100,000 employees worldwide. The massive and incredible development and expansion has raised the tough question of managing and controlling the quality of all their sources of meat and ingredients. As a result, Chipotle has faced numerous food quality issues that cost the business not only punitive fines but also the damage reputation and value in customers' mindset.

There are several quality issues that are related to customers, food, and ingredients, services, etc. However, we decided to focus on the quality issue of food and ingredients. Because this is the most vital factor to determine the success of a restaurant, and the most concerned issue in the food industry.

The food quality crisis started in March 2008, around 22 people tested positive for Hepatitis A after eating at a Chipotle restaurant located in La Mesa. The cause started by an employee who tested positive for the disease and lead to the outbreak (Marves, 2022). In April of the same year, things became worse when over 500 people got ill after eating at the Chipotle restaurant near Kent State University in Ohio. After the investigation, the health department determined the cause was due to Norovirus Genotype G2, even though they could not determine the origin, (Multistate Outbreak of Shiga toxin-producing Escherichia coli O26 Infections Linked to Chipotle Mexican Grill, 2015). Chipotle volunteered to shut down their restaurant for a day to sanitize all equipment and replace all food ingredients, they also changed the employees from other locations for the reopening (Berfield, 2015).

In July 2015, a massive outbreak of E. coli was witnessed in Seattle (Siegner, 2015). A food safety case was traced to a Chipotle restaurant; however, because the number of affected people was low, the proper investigation could not be conducted (Marves, 2022). In August 2015, a norovirus outbreak occurred in California that included a Chipotle restaurant. A report stated that there were around 80 Chipotle customers and 18 restaurant employees who developed symptoms and tested positive for the virus (Mai-Duc, 2015). It was the same case as with the previous outbreak, investigators could not figure out the root cause of the outbreak. The Chipotle restaurant closed for cleanup and sanitization. These outbreaks triggered the criticism of Chipotle for allowing sick employees to work and affect to thousand customers (Strom, 2016).

Another crisis in 2015 happened in Minnesota, where a Salmonella outbreak among people who had eaten at 17 different Chipotle restaurants was reported by the Department of Health. The investigation determined the cause of the outbreak was Salmonella Newport bacterium. Most victims had eaten tomato salsa, carnitas, or brown rice. The root cause was identified from the contaminated tomatoes, but it was uncertain whether the reason was the source or packing process (Tomatoes source of Chipotle salmonella outbreak, 2015). Several food quality issues occurred in the same year at Chipotle, including the E. Coli outbreak in Washington and Oregon, and another norovirus outbreak in December in Boston (Ferdman & Bhattarai, 2015).

The latest food quality crisis occurred in 2018. The Ohio Department of Health reported a clostridium perfringens outbreak caused by the Chipotle Mexican Grill in Powell, Ohio. Even though the origin was not traced, the restaurants were closed and just reopened after being cleaned up and sanitized (Neuman, 2018).

By examining the food quality crisis of Chipotle, we can acknowledge the issues were caused by the complicated process of obtaining

meat and ingredients, the food processing, and the incidences of sick employees. It seems to be easy to find out the solutions for these causes; however, with a huge business including numerous employees and complex food processing, it is not simple for Chipotle to manage and control the issue. They started to strengthen the Food Program Safety which focuses on customers' health. They previewed the existing food safety protocol and provided a new one, they also started educating and training all staff and employees on health and food safety (Luna, 2018).

Chipotle's acknowledgment of the food quality problem and the improvement efforts is a positive sign. However, this requires a continuous effort and a proper quality control and management system to maintain the good results and make sure to minimize any consequences caused by the food quality issue. Our group have discussed and determined six main solutions for a better Chipotle:

- Sourcing of materials
- Logistics control
- Production (food presentation) quality
- Employee training and management on quality processes
- Top Management on quality
- Customer focus

In this paper, we made the decision to focus on sourcing of materials and production (food presentation) quality, because our analysis has determined they are the main causes of Chipotle's food quality issue.

FDA'S OVERVIEW: FOOD SAFETY AND SANITATION IN CORRECTIONAL FOOD SERVICE

An FDA article highlights a report from the U.S. Centers for Disease Control & Prevention's National Outbreak Reporting System (NORS), from 2017 to 2020. In prisons and jails alone, there were 46 outbreaks of foodborne disease resulting in 2,544 illnesses, 147 hospitalizations, and 5 deaths. It is argued that serving safe food should be the primary goal of any food service

operation for wellness reasons and to avoid legal and liability issues regardless of how many meals per day are produced (National Outbreak Reporting System, 2022).

The CDC and FDA work together to provide detailed guidelines for businesses in the food industry which includes steps for employees to follow to ensure the safety of food products and service (FDA and CDC Partner to Reduce Foodborne Illness in Retail, 2022). These include:

Handwashing procedure for food service establishments

Food employees shall clean their hands and exposed portions of their arms, including surrogate prosthetic devices for hands or arms for at least 20 seconds, using a cleaning compound in a handwashing sink (FDA Food Code 2017).

Always purchase food and supplies from reputable suppliers

The safety of food and supplies depends not only on the food and supply items themselves but also on supplier's purchasing, storage, and delivery practices. Purchases should come from suppliers with clean facilities, clean delivery trucks or vehicles, and quality products.

Assistance from chemical supplier

The chemical supplier can assist with the most appropriate and approved chemicals for the tasks required.

CHIPOTLE'S APPROACH TO HANDLING THE ISSUE

IS CHIPOTLE MEXICAN GRILL SUCCESSFULLY RECOVERING FROM ITS FOOD-RELATED INCIDENTS?

Gilliard, Hoffman & Baalbaki (2017) discuss how the many incidents of 2015 impacted Chipotle. The company started off the year with high praise as one of the most admired companies in the world. However, after numerous incidents throughout that year, they saw dramatically reduced profits and stock prices.

The issues began early in the year, with Chipotle dropping a major pork supplier, leaving them with a shortage of available pork for more than six months. While they attempted to entice customers to switch to beef or chicken, they still lost many of their customers who only wanted pork. As the chain found a new supplier and began to stock pork again in all its restaurants, several food contamination issues began to pop up around the country. In August 2015, 64 people were reported getting salmonella from their tomatoes. This led to Chipotle switching produce suppliers.

During the same period, in August of that year, 17 employees got a norovirus from a restaurant that had numerous violations for sanitation and properly licensed food handlers. In December of that year and March of 2016, more norovirus outbreaks occurred which were also connected to Chipotle. The company shut down the affected stores for a short period to clean them and replace all the food.

Finally, in October of that year, an E.coli outbreak across 11 states was connected to Chipotle. In December, another, smaller outbreak occurred. Originally thought to be caused by contaminated beef, the CDC determined that, while unsure of the exact source, it was likely due to produce.

The company saw a decline of nearly 15% in sales 44% in profits that year. They also faced a shareholder lawsuit for not establishing quality control measures. The sales declines continued into 2016 as the bad reputation spread and more customers were afraid of returning to the restaurant.

CHIPOTLE'S SECOND ACT

The article, Chipotle's Second Act, was published in TIME magazine on December 12, 2021 (Simons, 2021), indicates the role of Brian Niccol – Chef Executive Officer (CEO) of Chipotle during the crisis time in relation to the sickness of their customers: Norovirus and E. coli bacteria.

Niccol, who had been running Taco Bell took over in March 2018 and served in a number of executive roles during his tenure.

First, he stated that the restaurant needs to focus on what makes them unique and different from others. He started slowly to lure the old and new customers and used the customer loyalty program to establish the new delivery options.

From a big picture perspective, he aims to steer the restaurant into becoming a sustainable business by offering healthful eating available for everyone and contributing to the people lives and communities in which they do business. His ambition is to have Chipotle regarded as an environmentally consciousness la business as Patagonia.

However, the biggest issue is still there: the fear of customers about the food quality. It is not easy to rebuild the image of the restaurant and let customers forget about the food poisoning issue. Therefore, the first thing he tries is to make people "love" Chipotle again.

"The company is also working on sourcing its rice, beans, and cilantro from organic suppliers. Improving food quality rather than saving money on ingredients is key to Niccol's vision of turning the burrito chain into a badge of healthy living." (Steinmetz, 2019)

FUTURE DIRECTIONS

MEAT PROCESSORS GET SMARTER: INSPECTING THE NEW ERA OF SAFETY

The authors of this article discuss how new FDA regulations are beginning to require better contaminant prevention through technology. This article covers the meat industry and the recent inclusion of metal detectors and x-ray machines to test for physical contaminants such as metal or bone fragments. While they agree that this is a good first step for the industry – not only in meat packing but other food processing such as produce – they believe it needs to go further.

One of the primary elements covered in this article is regular testing of the equipment, particularly remote testing. Much of the equipment is in a place that is physically difficult to reach, therefore, daily or even weekly inspections may be out of the question. By

utilizing modern digital testing techniques, faults in the machines can be found and addressed more quickly costs (Yasin & Yavas, 1992).

Another key element is utilizing testing equipment that is versatile and can be easily tweaked remotely. For instance, having a metal detector that can accurately scan items of different types and adjust its sensitivity automatically for each item could be more efficient than requiring a different scanner for each item. Also, utilizing multiple different types of tests, such as x-ray and metal detection, would help to catch as many issues as possible.

Lastly, the authors suggest that this system would be more easily managed through a fully digital reports system. Moving away from a paper-based system to a fully digital system is important because it allows for quicker communication of findings, immediate flagging of issues and quicker responses to issues. It also would integrate better with automated testing and helps to make any potential issues much more traceable (Oltra-Mestre, Hargaden, Coughlan, & Segura-García del Río, 2021).

SIMULATION MODELLING FOR FOOD SUPPLY CHAIN REDESIGN

Improving supply chain design using data analysis can improve quality of foods and reduce supply chain costs, thereby increasing effectiveness. The current food supply chain is very complex. It involves many agents in the process, i.e., in the simplest model, from farmer, processors, distributors, and to retailers. Also, the supply chain is global in focus, not just local. Therefore, the movement of component materials for the final product must be managed efficiently and carefully. The model that the authors propose is called ALADINTM (Argo-Logistic Analysis and Design Instrument), Van der Vorst, Tromp & Zee (2009). Basically, ALADINTM improves the taste of the food as well as sustainability due to reduction of product waste, i.e., the products that must be thrown away because the quality is not suitable anymore.

The focus on the model utilizes a TTI study, namely Time – Temperature indicator. Using

different temperature settings during transport, timing could vary to keep the food fresh and tasty. The difference in timing using a lower temperature could shift the mode of transport from air to road, yielding cost savings in logistics as well as stability of freight. Sustainability of the supply chain, quality of food during transport, and efficiency of the logistics, are all part of the benefit of using ALADINTM FSC (Food Supply Chain) design system. A sample of one of the analyses is shown below (Benítez, Chiumenti, Sepulcre, Achaerandio & Pujolá, 2012):
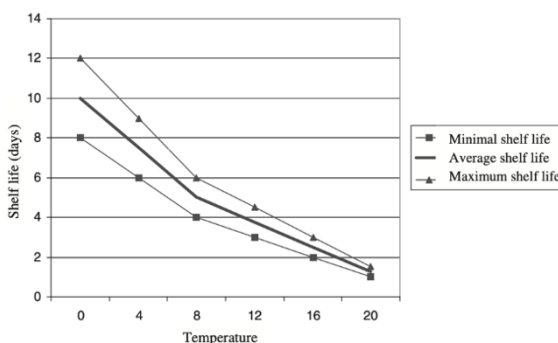

Figure 1: **Average and variability in shelf life of cut pineapple depending on the temperature**

BLOCKCHAIN-BASED TRACEABILITY AND VISIBILITY

Blockchain technology has become an effective solution in various industries such as Healthcare and farming. This article makes a proposition to use blockchain technology in the food supply chain. Blockchain technology utilizes smart contracts to pass on information without a centralized system by using computer codes that attaches to data. Once a user intends to pass on the data onto the next user, a smart contract kicks in and produces the transaction automatically. The passing of information is secure, safe, fast, and private because it does not involve any third-party system and transacts among the two blockchains of data that is verified by all users in the chain (Prashar, Jha, Lee & Joshi, 2020).

The system will allow farm (agricultural producers), distributors, processors, and

restaurants (users) to pass on critical batch information with dates and expiration dates, lab test data, and processing information embedded inside the Ethereum blockchain, so the information is entirely transparent and visible to all users (Yao & Zhang, 2022).

To be successful at using the smart contracts as a proposed solution to provide traceability, the system must be fast and efficient as well. The result of the study is a system that can perform throughput of 161 tps (transaction per second) at 4.82 tps average using 30 clients. With this almost instantaneous data transmission rate, this proposed technology can provide reliable traceability of agricultural supplies throughout the distribution channel to the restaurant level. The final user can be more aware of raw material safety and able to serve fresh and delicious food to customers.

DISCUSSION

The businesses in the food industry should strictly follow the protocol about food safety suggested by CDC and FDA. One-way active managerial control can be applied is through a Hazard Analysis Critical Control Points (HACCP). The FDA defines HACCP as: "A management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product" (FDA, 2018).

While Chipotle has no direct control over the quality of its suppliers, it seems they could do a better job of ensuring quality from them and handling the process of changing suppliers. Ensuring that suppliers understand the company's requirements and properly agree to them beforehand would help to prevent them from needing to drop a supplier. Regular inspection of suppliers to ensure they are meeting the requirements would also help them find potential for a breach quickly so they could address it before it went too far.

For food quality, more vigorous inspection of food at various stages is necessary. Suppliers should be required to submit results of food

testing or submit to regular visits from Chipotle testers to ensure consistent quality. Food should be tested at the restaurant to ensure retained quality, and sample tests should be run to ensure the time in which food can safely remain in the buffet before it should be thrown out.

Employees should be properly trained on food safety and the risks involved. The processes required should be streamlined to make them easy to remember and follow. And regular inspections should be done of each store to see how well employees are following processes and checking the overall cleanliness of the restaurants.

The company should focus on customers and work on the sources of all ingredients. They need to ensure that they can meet any demand from their old and new customers and regain their trust by improving the quality of the food they offer.

Traceability is also important for improving Chipotle's situation. Some of the issues they faced were quite difficult to trace. The E. coli outbreaks were never pinpointed to any specific ingredient. Making sure that there are systems in place to test food for contaminants, ensure the quality of those tests, and tracing each ingredient back through the supply chain is critical. For instance, vegetables are categorically prone to be infected with E. coli more, however, the industry implicitly ignores the potential threat and focus on meat derivatives more than anything else.

CONCLUSION

Improving quality at Chipotle will require systemic changes across the board. Suppliers should also undergo regular inspections and be given standards for safety and food inspection guidelines that they must meet. Food should be inspected regularly, with use of modern technology such as x-ray and metal detectors, to ensure quality is retained throughout the sourcing process. The machines used to test the food should also be inspected regularly to make sure they are working properly. Throughout this process, food should be individually trackable up to the point where it is placed out to be served

to customers. These technologies are already in place across much of the industry and are showing valuable results in managing quality and improving the farm to table process.

At their restaurants, protocols and processes need to be put in place. Staff should be properly trained on proper food handling and sanitation guidelines and the danger of not following them, and inspections need to be conducted regularly. All this needs to be done while providing food quality and an experience that meet the customers' expectations. On the surface, this may seem to be problematic as all these elements can raise costs significantly, but past studies have shown that the implementation of Total Quality Assurance can improve food quality and speed of service while reducing food and labor.

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BOOK REVIEW:
SAME AS IT EVER WAS

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In this 2024 election year, we are seeing a continuation of how political parties and the deep divisions between them represent specific values and belief systems. Current day Republicans, for example, tend to value fiscal conservatism, gun rights, free market capitalism, support for lower taxes, free trade, and governmental conservatism, while today's Democrats favor social programs, consumer protection, equal opportunity, racial equity, labor unions, and criminal justice reform. The agendas of the two major parties compete, conflict, and contribute to partisan politics, creating a gravely divided nation and populace. Rival factions with fierce visions for the country is not a new phenomenon.

To the Founding Fathers—the framers of the *Constitution of the United States*—political parties were thought to be a serious danger to the intrinsic values of the newborn republic. As the American Colonies had endured the dismal effects of partisan politics in England prior to the Revolutionary War, the Founding Fathers desired nothing similar for the new nation founded in liberty.

In his compelling book, *Founding Partisans: Hamilton, Madison, Jefferson, Adams and the Brawling Birth of American Politics*, historian and Pulitzer-Prize finalist, H.W. Brands conceives an engaging consideration of America's early political parties, their contentious behaviors, and their emergence, even prior to the ratification of the U.S. Constitution. Brands, early in his book, details the political partisanship—sculpted by the eminent Founding Fathers, Alexander Hamilton, James Madison, Thomas Jefferson, and John Adams—and allows the reader to better understand the fundamental differences between the two early American political parties, the Federalists and the Republicans, and how each demanded power and control when constructing the size, scope, and role of the new American government.

In 1776, as Brands absorbingly contends, the Declaration of Independence revealed the "same desire that had driven the first colonists from England to New England: the desire to separate themselves from the corruption of the mother country" (p. 192). The noteworthy contrasts between the values of the Federalists and Republicans by the American people at the time initiated sensational frustration, as Brands sharply illustrates: "and nothing so signaled republican virtue—nothing so demonstrated the difference between the old world of Britain and the new world of America—as the banishing of parties. Parties stood between citizens and their

government, placing party interest above the interests of the people" (p. 192). The Founding Fathers, during the time of the writing of the Declaration of Independence, "hoped and expected that parties would never take root in America" (p. 192).

James Madison, however, believed that "parties were inevitable" (p. 193) and that in political societies, "parties were unavoidable, even in republics" (p. 192). As Brands distinctly writes in his captivating style of blending skilled research and gifted prose, the outcome of partisanship was "splitting America" (p. 236), and the state of affairs produced a perception of despair among the masses, which John Adams thoughtfully depicted when he wrote: "the prospects of this country are gloomy" (as cited in Brands, p. 244). As the second President of the United States, Adams, sensing a loss of resolve openly associated with the persistent partisanship, wrote to his wife, Abigail, "as I can do neither good nor evil, I must be borne away by others

and meet the common fate" (as cited in Brands, p. 245); furthermore, Adams bemoaned the worst in regard to the partisan leadership, stating that "we have I fear very corrupt individuals in this country" (as cited in Brands, p. 246).

As Brands portrays in his polished tome, America's initial years were cultivated in contentiousness as the Founding Fathers engaged in fierce debates that tested their interpretations of government and the powers and limits of the *Constitution of the United States*. However, the emerging nation—against all odds and with its nascent partisanship—continued to transfer power peacefully and to forge itself into a "more perfect" republic and world power. Throughout his engrossing book, H.W. Brands reminds us that the rancorous partisanship that resounds in American politics today is an artifact and enigma that is as old as the republic itself.

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COURSE REVIEW:
AI FOR EDUCATION

AI For Education: An Essential Guide To AI For Educators
Instructor: Amanda Bickerstaff, Founder and CEO of AI For Education
Website: *https://www.aiforeducation.io/ai-course*

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Reviewer Note: Andrea Henne, Ed.D., Senior Professor, DeVry University

ABOUT THE COURSE

AI is rapidly transforming the educational landscape, and educators such as Amanda Bickerstaff are at the forefront of promoting these changes. Bickerstaff, who is recognized as a LinkedIn Top Voice in Education expert, leads professional development workshops for faculty in higher education. One of the free online courses Bickerstaff orchestrates is "An Essential Guide to AI for Educators." Because AI encompasses various technologies like machine learning and natural language processing that can personalize learning, automate tasks, and provide insights to educators, I was drawn to enroll in her free online course, which promised to provide the tools to better understand generative AI and its impact on teaching and learning. In just two hours with *An Essential Guide to AI for Educators*, I earned a Certificate of Completion for fulfilling these learning goals, which are especially relevant for all faculty:

1. Become familiar with AI and get started using ChatGPT (The focus is on ChatGPT since it is free and a great way to get started using AI).

2. Save time on teaching tasks, such as providing personalized feedback and automating simple grading, allowing more time to focus on teaching and supporting student learning.

3. Create personalized, engaging experiences for students, such as cultural exploration and personalized learning.

4. Develop strategies and activities for introducing AI to students.

Additionally, through my enrollment, I gained access on the website to another appealing feature: the Prompt Library, which is a resource designed and curated for educators.

According to more than 4,085 educator reviews reported on the AI for Education website, the course has received 4.8 stars out of a 5-star rating. A sample of posted reviews highly recommended this course as concise, yet comprehensive, well-structured, engaging, and accessible; the course, in fact, is considered appropriate for beginners and for those with prior knowledge of AI. My experience with *An Essential Guide to AI for Educators* yielded an equally favorable response.

MY EXPERIENCE
TAKING THE COURSE

What I especially enjoyed was the course's organization. The 39 short, focused lessons were ideal for completing the topics in each module whenever I found a convenient time to devote 10 or 15 minutes to the course. Although designed sequentially from lesson to lesson, the self-paced structure made it possible to skip ahead

to another module or to go back to review any of the seven modules:

- AI 101 for Educators
- Getting Started with ChatGPT
- Introduction to Prompt Engineering for ChatGPT (This module includes a video demo of Amanda creating a downloadable grading rubric for a writing assignment with instructions for students.)
- Strategies for Using ChatGPT in Your Practice
- The Ethical Implications of AI in Your Classroom
- Introducing Students to AI and ChatGPT
- Course Conclusion

Personally, I found the third module with its "7s Framework for Effective Prompt Engineering" lesson especially useful for learning how to get the most out of using ChatGPT as a "thought partner." In a short video, Bickerstaff explained seven steps for prompt engineering:

1. Set the scene.
2. Specify details.
3. Select keywords.
4. Simplify language.
5. Structure with bullets.
6. Set priorities.
7. Share feedback to help ChatGPT refine its responses.

Before being introduced to this protocol, I had been using a hit-or-miss approach to questioning ChatGPT. A key takeaway from this lesson for me was recognizing that my prior technique for writing ChatGPT prompts would become more productive whenever I applied all seven steps.

Productivity is only one benefit of adopting an effective and efficient strategy. Throughout the course, learners are given hands-on activities for practice. One useful exercise emphasized how to write prompts to generate accurate and relevant responses from ChatGPT. This lesson was facilitated by users who were given numerous prompt examples to try, such as "Develop a writing prompt for a persuasive essay on a current event," "How can teachers support students with diverse learning needs in the classroom?" and "What are the best practices for teaching critical thinking skills?"

These sample prompts are among a few that are found in the course's Generative AI Prompt Library for Educators, which offers an extensive variety of prompts to use with GenAI chatbots such as ChatGPT, Claude, Gemini (formerly Bard), and Perplexity. The prompts are well organized into relevant categories: Administrative, Assessment, Communication, For Students, Lesson Planning, Professional Development, Social/Emotional Learning, and Special Needs. The Search bar makes it convenient to drill down into these categories to find, for example, Reference Letters, Analyze Data, Email Response, Create Writing Assignments, Lesson Gamification, Discussion Topics, Cooperative Learning Activities, and dozens of additional prompt ideas!

Rather than just deliver the course as an onscreen "page turner" with the occasional video lesson, this course encourages hands-on practice with "Three Things You Can Try Right Now," which is quite motivating for persisting through the otherwise fully engaging lessons.

Another useful aspect of the course is its ease of navigation from module to module via a table of contents in the sidebar as well as the "bread crumb" links at the top of each page. This feature

makes it seamless to go back to previous lessons for review, repetition, and reinforcement.

OVERALL REVIEW

An Essential Guide to AI for Educators is highly recommended for faculty who are either new to the world of generative AI, or who want to broaden their familiarity. The course's structure is ideal for professional development; the content is very enjoyable and hands-on with a clever blend of short, focused text-based lessons and videos that engage and motivate. Throughout their own learning, educators are encouraged to stay open to new developments in the field of AI and to keep exploring AI's potential for enhancing education. Truly I found the guide quite satisfying and inspirational, and I will continue to find new ways to use AI technology to benefit my students and my colleagues.

OTHER OPTIONS TO LEARN ABOUT GENERATIVE AI

The availability of free, self-paced introductory online courses to learn about generative AI and to earn a certificate of completion continues to grow. However, none match the extensive Prompt Library, webinars, and downloadable free resources for educators found in AI for Education's Resource Hub. Nevertheless, you might want to explore other options, for example:

For a basic overview, Google Cloud Training offers a beginner-level course that takes one hour to complete, *Introduction to Generative AI*. This course has just one 22-minute video, one reading and a quiz. It is the first course in a 4-course Generative AI Learning Path Specialization series.

If you are looking for a comprehensive learning experience that goes more in depth about creating AI prompts and covers advanced LLM projects (large language models) with a focus on generative AI applications in business and society, DeepLearning AI offers a 5-hour *Generative AI for Everyone* course.

Innovative Teaching with ChatGPT is the first module in a program of study taught by a professor of computer science at Vanderbilt University that takes approximately 2 hours to complete and provides lesson plan ideas, interactive games and class activities that could be adapted to higher education, although the focus is mostly on K-12 teaching techniques.

What other learning resources should we consider to expand our knowledge of generative AI? Consider this an invitation to submit your own course review for the next edition of the DeVry University Journal of Scholarly Research.

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