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**AN INTERNATIONAL PEER-REVIEWED
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EDUCATIONAL PROFESSIONALS**

**A SCOPE Education Services
Research Publication**

Inside this issue:

- ◆ How Special Education Can Promote Adaptive Leadership
- ◆ Positive College Perception: The Impact of a Curriculum-Based Summer Camp's Transition
- ◆ A Single Case Pandemic Analysis:
Leadership in a Pandemic - The Response by Molloy College's School of Education
- ◆ Students with Disabilities and Suspension Rates:
A Cautionary Tale for School Districts
- ◆ Retention Strategies of a Successful Graduate Program
- ◆ From the Field: Concepts of the Cosmos
that High School Students Should Explore
- ◆ Book Review:
On Tyranny: Twenty Lessons from the Twentieth Century
by Timothy Snyder

Practical Research for the Educational Community

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National School Development Council

About NSDC

The National School Development Council (NSDC) was chartered in 1969 as a non-profit organization in the state of Massachusetts. The NSDC provides study councils and their executive directors with a national-level organization.

Guidance for Authors

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SCOPE Education Services is a not-for-profit, private, voluntary organization permanently chartered by the New York State Board of Regents to provide services to school districts. Founded in 1964 by school superintendents, it is a cooperative venture for sharing resources to deal with common concerns. It is governed by a Board of Directors of school superintendents and college representatives and serves as a regional School Study Council and School Board Institute.

The Editorial Board of the Journal for Leadership and Instruction has identified the following thematic interests for the 2022 issues:

1. Early Childhood Development
2. Social and Emotional Development and Mental Health
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Editor's Perspective



I wish to thank our Executive Director of SCOPE, George Duffy, for the opportunity to serve as Editor in Chief of the Journal for Leadership and Instruction from 2017 to June 2022. After we publish our journal in May 2022, I will step back to a volunteer position of Co-Editor. I have enjoyed working with so many fine editors since December 1, 2000, when SCOPE published the first edition of the Long Island Education Review,

the original rendition of this journal that became our ERIC registered international research Journal for Leadership and Instruction.

Dr. Richard Bernato will step forward to serve as Editor in Chief effective June 1, 2022. Dr. Bernato has served as a Co-Editor since 2018. He is the author of three educational related books published by Rowman and Littlefield: *Planning by Futuring*, *Futuring as Planning*; *Future Based Change Leadership*; and *The Collective Mindset: A Roadmap for Continuous Innovation and Mindful Change*. Dr. Bernato has worked closely as an editor for several potential authors during the last four years assisting them in revising their submissions for the peer review process.

Dr. Bernato will use his extensive skills in instructional technology and social media to advance the capacity of the journal to attract new authors. Also, he has demonstrated his willingness to dedicate extensive hours to the preparation and editing of submissions for this publication.

Also, I want to thank the SCOPE Editorial Board, our Co-Editors, and staff: Judy Coffey, Layout Editor, Christine Cosme, JLI Liaison Representative, Ann Nuzzo, Publication Reviewer, and Dr. Amy Eckelmann, Reference Editor, for their dedication and quality controls of the publication process. I also want to express my gratitude to colleagues who served as Editors-in-Chief during the ensuing years: Dr. Kevin McGuire, Dr. Carl Bonuso, Dr. Richard Swanby, and Dr. Rene Parmar.

With the extensive support of George Duffy, Dr. Swanby and Judy Coffey managed to successfully win acceptance of the Journal for Leadership and Instruction as an ERIC registered research journal. All of us are deeply indebted to them for the recognition this journal enjoys.

I believe with the quality of support the journal has, from the Editorial Board, the staff, authors and readers, it will continue to be a source of pride and valuable information for educators long into the future.

In this issue, we open with an article by Nancy Morris from Gannon University in Erie, Pennsylvania entitled:

How Special Education Can Promote Adaptive Leadership. The training and work educators in special education undergo is explored for its influence on leadership behaviors.

Our second article, *Positive College Perception: The Impact of a Curriculum-Based Summer Camp's Transition* examines how a transitional summer camp experience influences students. Researchers Richard Mocarski from San Jose State and members of the division of Graduate Studies at the University of Nebraska, Kearney: Matthew Bice, Tatiana Moore and Amy Nebesniak, join together to reveal how beneficial to students a summer transition program can be.

In our third article, Vicky Giouroukakis of Molloy College provides a case study of a college's leadership endeavors to successfully guide students, staff and faculty in a pandemic. This article is adapted and reprinted with permission as a case study that attempts to reveal leadership adaptations to challenges when faced with a dire set of circumstances never encountered before by the people in this work setting.

Our fourth article, *Students with Disabilities and Suspension Rates: A Cautionary Tale for School Districts* by Kenneth Forman and Craig Markson of Stony Brook University, New York examines the relationship between suspension rates and student disabilities and offers guidance that school leaders can apply in very practical ways.

The fifth article by Elsa Sofia Morote, Nalini Singh, and Judith Jeremie of John Jay College presents a qualitative study of one college and its faculty and administrative efforts to retain students in a Doctor of Educational Leadership graduate program. This article is entitled: *Retention Strategies of a Successful Graduate Program*.

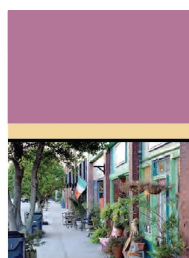
The sixth article appears in our section, From the Field. The author, Edward T. Lyons, former Chief Operating Officer for an international filtration system manufacturer and a biology and chemical engineer from Virginia Tech, shares with science educators these concepts of the cosmos along with outstanding illustrations that they can use to motivate their students to compare, contrast and explore the vast and seemingly orderly expansion of the universe.

Lastly, in our Book Review section, Timothy Snyder's timely book, *On Tyranny: Twenty Lessons from the Twentieth Century*, is reviewed.

My hope for our readers is that we continue to pursue knowledge for the benefit of the least fortunate as well as the most fortunate and by so doing, we expand the power to do good for one another.

Sincerely,

Robert J. Manley
Editor-in-Chief



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Call for Research Proposals Issues in Education from PreK, K-12, Undergraduate and Graduate

The Journal for Leadership and Instruction is a peer reviewed international journal of research in education listed in ERIC and published in May and November annually by SCOPE, a regional study council chartered by the New York State Board of Regents. The Editorial Board that oversees and provides guidance to the Editor-in-chief and Co-editors is comprised of accomplished researchers, school district leaders and college professors from New York and Massachusetts.

Previous publications of this journal are available at the website Scopeonline.us under the heading of Publications. All submissions should adhere to the requirements of the Professional Review Board or another agency's guidelines that protect the identity, safety, and privacy rights of respondents.

The general themes for which this journal holds a special interest are student rights, special needs of students, all aspects of leadership, quality instruction, assessment of learning, public policy issues, recruiting and sustaining a diverse workforce, equity and social justice, finance, and accountability.

The editors seek research based on action research principles, qualitative and quantitative methodologies. A review of the related literature should reveal how the article submitted adds to the body of previous research in ways that sustain or challenge previous findings. The review of related research should provide a deeper understanding of the issue under investigation and analysis. The references should include only the previous research cited in the body of the article.

Submissions of articles and letters of proposal may be submitted to Christine Cosme at her email ccosme@scopeonline.us. The deadline for spring submissions is February 15 and for fall submissions is September 15.

Submission Process

To be considered for publication, all submissions should be double spaced, in 12-point characters, sent by email as a Word document to ccosme@scopeonline.us. Authors should follow the current APA guidelines. The review of related literature should be written in the past tense. Maximum length is ten pages (double spaced) including Tables, Figures and excluding References.

Review of proposals

The submitted full manuscripts will be sent to external peer reviewers for consideration. Final decisions will be made after the review of full papers through *JLI*'s submission system and after review by the seven co-editors. The editors may choose to insert or delete elements in the manuscript for the purpose of publication. The final decision for all edits will be made within the publication process by the editors.

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A Case Observation and Insights

How Special Education Can Promote Adaptive Leadership

By Nancy Morris, Ed.D.

From the start of the Pandemic in March 2020 to now, educational leaders have been challenged more than anyone ever thought was possible. The sheer number of changes that they navigated and led their teachers and students through are astonishing. On the surface, there were daily changes in the Center for Disease Control guidelines that impacted enrollment, space utilization, instructional delivery, and classroom management. In addition to dealing with these operational issues, leaders supported their students and teachers' physical and mental health, as stress was and is at all-time highs. As an assistant professor in special education and leadership, I could never in a million years have dreamed up a case study based on the Pandemic's impact on schooling for one of my graduate courses. Every leader's skill, stamina, and ability to adapt to changes and effectively lead through these challenges have been tested.

In reflecting on the type of skills that leaders require in order to be prepared to lead through change, Northouse's (2016) definition of the adaptive leader provides us with a solid foundation. An adaptive leader mobilizes people to tackle tough challenges and thrive. They are able to motivate, organize, and orient people and focus attention on what's important. This is particularly critical in situations where there is no clear or defined answer to the problem. When problems are complex and situations unknown, adaptive leadership is required to get in front of the situation or issue, identify the path to resolution, regulate the distress, and give the work back to the people to continue (Northouse, 2016). This is what we have watched school leaders do every day since March 2020.

In my study of leadership, I have found distinct connections between the adaptive leader and my experience working as a K-12 special education teacher. These connections are even clearer now, as we reflect on navigating the complexities of educating students in a Pandemic impacted world. As a special education teacher, I taught students who did not fit into the standard educational box. Their needs were diverse; their thinking and learning processes did not always align with a typical student. I approached my

work each day assessing individual student needs, assessing the standards and curriculum presented for their grade, and recreating their "boxes" so that my instruction was an educational fit. This is the work of the special education teacher - to adapt. I lived it every day and now teach students how to do it in my special education courses.

The pandemic has demonstrated that leaders need to be adaptive in order to successfully lead through unknown changes and challenges. They are recreating the educational "boxes" daily. The pandemic has simply brought to light the need for all educational leaders to develop adaptive leadership skills that are core to effective special education instruction.

The Adaptive Leader and Innovation

The pandemic has opened opportunities for changes. So much has been learned regarding what we are capable of, what learning can look like, and best ways to reach students. Teachers learned how to transform instructional environments and how they teach, including instructing online, something unheard of prior to last March. Teachers learned that they have skills and mindsets they never realized before - they learned to be adaptive educators. We learned that students can thrive in a variety of environments, in fact, from in-person to remote, if instruction is adapted to individual needs and delivered skillfully. Adaptive leaders that are equity focused view the changes as evidence of growth and improvement, worthy of continuation.

Reflecting on the adaptive leader, a connection can be drawn between school leaders' actions and innovation. Characteristics representative of innovative behavior are the ability to embrace new challenges, being open to new things, willing to fail, demonstrating initiative, being collaborative, and engaging in the act of reflection (Amabile & Gryskiewicz, 1987; Warford, 2010; Bourrie, Cegielski, Jones-Farmer, & Sankar, 2014; Earl & Timperley, 2015). We can see that innovation is a core requirement for adaptive leadership, as well as it's an attribute that distinctly lives in special education teachers and leaders.

Adaptive Leadership and Special Education

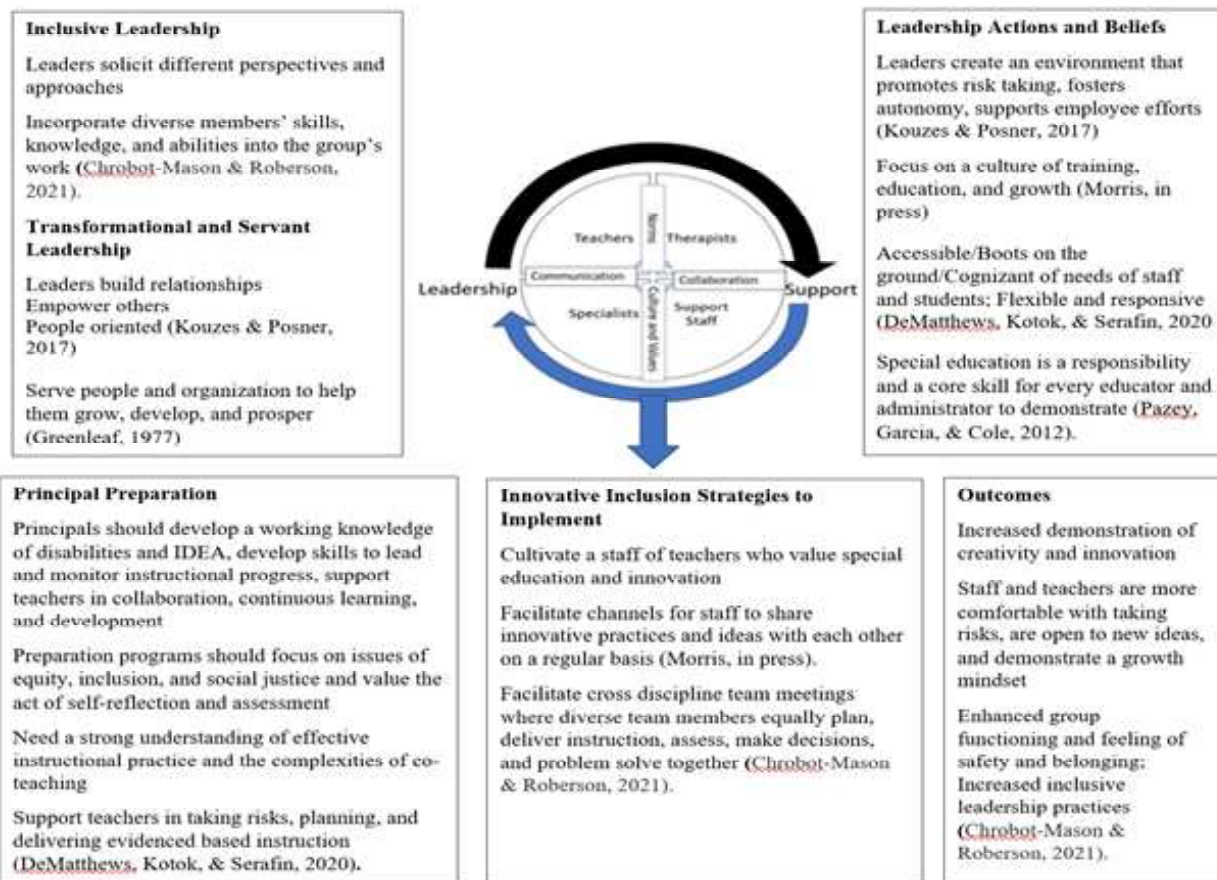
In studying a specific special education school in a Northeast state, I found that innovation lived within the intersection of teacher's attributes, the environment, and in the leadership practices and support. Teachers adopted growth mindsets from working in this school's environment, learned to embrace mistakes, and become open to change. Administration was able to achieve innovation through the building of relationships, demonstrating trust, and promoting autonomy. If schools wish to continue to grow and persevere through the challenges and changes that not only special education service delivery brings, but unknown changes like a world-wide pandemic, teachers and leaders must take on an innovative mindset (Paxton & Stralen, 2015).

This particular school's administration exemplified balance between being visionary and staying true to the core values of the school. Using the vision of the school as the driving force for change, innovation cata-

pulted the organization and its members forward. The drive for progress was a shared piece of the school's culture. A core value of the school was to provide the best possible education for the students and was embedded in the actions of every school personnel. Connected to this value was a drive for change, improvement, and innovation. Collins and Porras (1997) categorize this behavior as "preserving the core, stimulating progress" (p. 82). This behavior allows an organization to explore, experiment, and change. Instructional staff can remain true to their values but still be visionary.

In interviews with teachers and leaders in this district, I found that all lived a shared purpose and passion that drove individual actions and programming. This purpose was rooted in a commitment to the students and was the core driver for innovation at the school. The teachers and administrators did not set out to be "innovative." They set out to make their students' instructional lives better. Through these actions, innovative ideas and practices emerged, and ultimately, educational equity.

Figure 1: A Framework for Leadership Support in Special Education in an Inclusive School



Inclusive Leadership: Leading Equity Through Change

The administration at this special education school demonstrated inclusive leadership (Chrobot-Mason and Roberson, 2021) which involves behaviors like sharing decision making, soliciting different perspectives and approaches, and incorporating different members' skills, knowledge, and abilities into the group's work. Leaders must hold pro-diversity beliefs as well as the school needs to have policies and practices in place that facilitates the participation of all group members. These antecedents can lead to higher group performance, feelings of safety and belonging, and increased creativity and innovation. This will produce an environment where members feel safe to take risks and learn from mistakes (Kouzes & Posner, 2017).

This conversation on adaptive leadership and innovative mindsets requires leaders approaching educational decisions to use special education individualized instructional paradigm. It supports the need for stronger preparation in adaptive leadership for leaders in special education (Crockett, 2002; Praisner, 2003; Garrison-Wade, Sobel, & Fulmer, 2007; DeMatthews, Kotok, & Serafini (2020)). There has been recent research and guidance emphasizing the need for increased focus and rigor on principal preparation in special education law, practices, and pedagogy (Crockett, 2002; Pazey & Cole, 2012; DeMatthews, Kotok, & Serafini, 2020). Principals are responsible for the instruction and growth for all students in their school. The roles and responsibilities of the school principal and special education supervisor consistently intersect and overlap at increasingly higher rates (Lashley & Boscardin, 2003; Crockett, 2007). Principals' responsibilities are concentrating more and more on special education, prevention, and intervention, and leading an inclusive school, which suggests that preparation programs should adjust to meet this need. Across grade levels students are at divergent skill levels, skill gaps are widening, and personalization and differentiation are essential for all students. A special education knowledge and mindset supports administrators' abilities to adapt to changing environment, students, and situations. We can reframe adaptive leadership as an inclusive mindset, and ultimately, an innovative mindset.

A Framework for Leadership Support of Special Education in an Inclusive School

The research demonstrates that special education and inclusive leadership practices should be a driving force in education and administration preparation. The created framework (**Figure 1**) illustrates how specific leadership actions and beliefs, leadership theory, and the power of diverse, collaborative teaming inform leadership preparation and a school's innovative inclusion strategies. Together, these elements produce the outcomes of increased innovation, creativity, intrinsic motivation, and feelings of teacher satisfaction and safety in a school environment. This framework guides admin-

istrators through leading special education service delivery, supporting teacher training, collaboration, and instruction. More importantly, this framework is a guide for leading and adapting through change.

In Theoharis's (2007) definition of social justice, he states that principals should make working to eliminate marginalization in schools central to their advocacy, leadership practice, and vision. This includes inclusive schooling practices for students with disabilities. He builds upon the work on Sapon-Shevin (2003) who asserted that, "Inclusion is not about disability...Inclusion is about social justice. By embracing inclusion as a model of social justice, we can create a world fit for all of us" (pp. 26, 28). Innovation is special education and it's what every adaptive leader needs to embrace and live every day.

References

- Amabile, T. M. & Gryskiewicz, S. S. (1987). Creativity in the R&D laboratory (Technical Report No. 30). Center for Creative Leadership. <https://doi.org/10.35613/ccl.1987.1088>
- Bourrie, D., Cegielski, C., Jones-Farmer, A., Sankar, C. (2014). Identifying characteristics of dissemination success using an expert panel. *Decision Sciences Journal of Innovative Education*, 12(4), 357-380. <https://doi.org/10.1111/dsji.12049>
- Chrobot-Mason, D., Roberson, Q. M. (2021). Inclusive leadership. In P. G. Northouse (Ed.), *Leadership: Theory and Practice* (9th ed.). Sage.
- Collins, J. & Porras, J. (1997). *Built to last: Successful habits of visionary companies*. Harper Business.
- Crockett, J. B. (2002). Special education's role in preparing responsive leaders for inclusive schools. *Remedial and Special Education*, 23(3), 157-168. <https://doi.org/10.1177/07419325020230030401>
- Crockett, J. B. (2007). The changing landscape of special education administration. *Exceptionality*, 15(3), 139-142. <https://doi.org/10.1080/09362830701503487>
- DeMatthews, D., Kotok, S., & Serafini, A (2020). Leadership preparation for special education and inclusive schools: Beliefs and recommendations from successful principals. *Journal of Research on Leadership Education*, 15(4) 303-329. <https://doi.org/10.1177/1942775119838308>
- Earl, L., & Timperley, L. (2015). *Evaluative thinking for successful educational innovation*. OECD Education Working Papers, No. 122. OECD Publishing. https://www.oecd-ilibrary.org/education/evaluative-thinking-for-successful-educational-innovation_5jrxtk1jtdwf-en
- Garrison-Wade, D., Sobel, D., & Fulmer, L. C. (2007). Inclusive leadership: Preparing principals for the role that awaits them. *Educational Leadership and Administration*, 19, 117-132.

Kouzes & Posner (2017). *The leadership challenge*. Wiley and Sons.

Lashley, C.L., & Boscardin, M. (2003). Special education administration at a crossroad. *Journal of Special Education Leadership*, 16, 63-75.

Morris, N. (2021). Leadership and innovation in a special education school. *Exceptional Leadership and Administration: Teaching and Program Development*, 33, 56-69.

Northouse, P. G. (2016). *Leadership: Theory and practice*. SAGE.

Paxton, D. E., & Stralen, S. S. (2015). Developing collaborative and innovative leadership: Practices for fostering a new mindset. *The Journal of Leadership Education*, 14, 11-25. <http://doi.org/10.12806/V14/I4/I1>

Pazey, B., Garcia, S., & Cole, H. (2012). Toward a framework for an inclusive model of social justice leadership preparation: Equity-oriented leadership for students with disabilities. *Advances in Educational Administration*, 14, 193-216. [http://doi.org/10.1108/S1479-3660\(2012\)0000014015](http://doi.org/10.1108/S1479-3660(2012)0000014015)

Praisner, C. L. (2003). Attitudes of elementary school principals toward the inclusion of students with disabilities. *Council for Exceptional Children*, 69(2), 135-145. <http://doi.org/https://doi.org/10.1177/001440290306900201>

Sagnak, M., Kuruoz, M., Polat, B., & Soylu, A. (2015). Transformational leadership and innovative climate: An examination of the mediating effect of psychological empowerment. *Eurasian Journal of Educational Research*, 60, 149-162. <http://doi.org/10.14689/ejer.2015.60.9>

Sapon-Shevin, M. (2003). Inclusion: A matter of social justice. *Educational Leadership*, 61, 25-28.

Theoharis, G. (2007). Social justice educational leaders and resistance: Toward a theory of social justice leadership. *Educational Administration Quarterly*, 43(2), 221-258. <https://doi.org/10.1177/0013161X06293717>

Warford, M (2010). Testing a diffusion of innovations in education model (DIEM). *The Innovation Journal: The Public Sector Innovation Journal*, 10(3).

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Positive College Perception: The Impact of a Curriculum-Based Summer Camp's Transition

By Dr. Richard Mocarski, Tatiana Moore,
Dr. Matthew Bice, and Dr. Amy Nebesniak

Abstract

Due to financial strain, a local school district in the Central Great Plains abandoned a curriculum-based summer camp and the local university adopted it, providing opportunities for growth and educational expansion. Additionally, a research component was added to the camp to understand better the impact of the primarily experiential learning activities on parental and student perception. This study of the first year of a curriculum-based summer camp for students in first through sixth grades aims to evaluate the effectiveness of the transition in terms of students' perceptions of college, educational experiences within the camp, and potential pitfalls of the transition from the public school system. An open-ended questionnaire was completed by 95 parents and 72 student participants, which included pre- and post-camp evaluations. Qualitative responses reported in this manuscript, were analyzed for common themes. Though concerned about participant safety, parents had an overall positive response to the transition of the camp and placed value on early college exposure for students. Student responses indicated positive reactions to participation in experiential learning activities. The data support that the transition to a local university was successful in that students and parents perceived the camps positively. Additionally, unique aspects of the college campus were leveraged to enhance experiential learning opportunities, which the data suggests were appreciated by students.

Introduction

Evidence suggests the phenomenon known as the summer slide accounts for "80% of the difference in achievement for students between low and high socioeconomic families over their elementary schooling" (Vale et al., 2012, p. 1). Curriculum-based summer camps have been shown to reduce or erase the slide (Garst & Ozier, 2015; Borman et al., 2009; Shideler, Scanduto, & Wivell, 2020). Despite this evidence, funding for curriculum-based summer programs is often limited due to the high per-pupil cost associated with impactful programs (Reed, Cook, & Aloe, 2020). For example, the local school district of a micropolitan rural hub (population ~ 35,000) in the Central Great Plains has offered a curriculum-based summer camp annually for twenty

years for approximately 450 first through sixth-grade students. Due to financial issues, the school district abandoned the camp after 2018, leaving the city and surrounding area with no curriculum-based summer activities. As a result of the potential negative impacts of this absence on the community, the local university adopted the camp in 2019. This manuscript details the transition from the local school district to the university, including the key elements of (a) making the camp more accessible to lower-socioeconomic students, (b) increasing the rigor of curriculum by linking activities to outcomes while maintaining an experiential learning foundation, and (c) infusing the camp with exposure to university resources. The qualitative findings from pre-camp and post-camp parental surveys are reported, demonstrating the impact of the changes on the perceptions of camper families.

Review of Literature and Camp Transition Description

Impact of Summer Programming

Meta-analysis of thirteen different studies found that summer learning loss was the equivalent of one month of grade-level learning or one-tenth loss of a standard deviation on spring test scores (Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996). Other studies have found that lower-income students incurred more learning loss than their middle-income peers (McCombs et al., 2011). Summer camps have been shown to have positive impacts on participants (Hedrick, Homan, & Dick, 2009). In a comprehensive study of 2,300 parents' perceptions of the camp experience on their children's development, there were significant gains from pre-camp to post-camp across ten different youth development constructs, including independence, positive identity, and peer relationships (Henderson, Whitaker, Bialeschki, Scanlin, & Thurber, 2007). Findings from camp attendees have also shown growth in leadership, self-confidence, and college readiness (Yilmaz, Ren, Custer, & Coleman, 2009; Pollock, McCoy, Carberry, Hundigopal, & You, 2004; Whittington & Garst, 2018). Summer programming is also very effective in reducing the summer slide gap for youth from disadvantaged backgrounds

(Green et al., 2011). In short, summer programming is an effective tool to keep youth engaged and increase self-confidence and academic achievement. Yet districts are often faced with budgetary limits that reduce their ability to offer these important programs.

Description of the Camp and Transition

The summer programming offered by the public school district for over twenty years employed select district teachers and had a goal of engaging district students in thematic camps with educational value. The week-long camps were offered in both the morning (9:00-11:30 am) and the afternoon (12:30-3:00pm) throughout June. They were divided by age (1st-2nd graders, 3rd-4th graders, and 5th-6th graders) and themed based on the district teachers' class proposals. Class themes ranged from arts and humanities to science, math, and physical activities. These structural aspects remained consistent through the transition to the university, with a significant change occurring in class offering selection and identifying curricular expectations.

Previously, a school district staff member vetted class proposals, determined class offerings, and acted as the camp director. Teachers provided her with a brief description of what activities would be implemented during the week. As part of the transition to the university, classes were selected by a committee based on educational camp goals. Class proposals required prospective teachers to list learning outcomes and an example of how educational aspects would be attained through hands-on activities. The new selection process put a strong emphasis on teaching and learning. After the committee selected classes and the camp schedule was set, teachers had six weeks to submit a detailed curriculum that linked intended outcomes and learning activities. The Camp Director and Assistant Director reviewed each curriculum to ensure the proposed activities worked toward both the stated intended outcomes and the overall intended outcomes of the camp (e.g. increase self-efficacy in learning). In addition, classes were examined to ensure the planned activities promoted an experiential learning atmosphere, with the learning being hands-on, active, and reflective.

Two major participation obstacles were identified and addressed during the transition. First, the cost of each camp session was viewed as a hindrance (between \$60-85 per week per session) for low-income families, which is consistent with literature on low-income student engagement in experiential learning opportunities (Coker & Porter, 2015). The camp's costs were normalized and capped at \$60 per week per session for non-free-and-reduced-lunch-eligible participants. Furthermore, a second rate of \$40 per week per session was established for free-and-reduced-lunch-eligible participants to address this issue. While the university taking over the camp had sufficient resources to run the camps and would be able to do so solvently, where the local school district was not, reducing fees for every student and further reducing them for lower-income students

meant an influx of funds was needed. To achieve this goal, the team sought external funding and was able to secure roughly 25% of the costs of the camps through four small state and local grants.

The aspects of family scheduling needs became the second obstacle. In its previous iteration, the camp ran from 9:00 a.m. to 3:30 p.m. The committee felt that this excluded many lower to middle income students who might live in two-income households since the camps could not provide all-day care. Therefore, the camp was extended to 7:45 a.m. to 5:00 p.m.. Hosted by the university library, the hour from 7:45 to 8:45 a.m. was dubbed "Library Hour" and made free to all free-and-reduced-lunch participants. The additional art or Spanish classes from 3:00 to 5:00 p.m. provided an all-day care option for families.

Method

In addition to describing part of the transition process, this manuscript reports on parents' perceptions on the inaugural year of the camp on the university campus. The collection of qualitative data was approved by the host home Institutional Review Board and included a pre-camp survey for parents to identify their perceptions of the camp and its transition to the university campus, as well as to understand their motivations and goals for registering their children for the camp. Parents/guardians were given a camp registration packet, which included a consent form for their participation in the research component of the camp. Participation in the research was voluntary and not a requirement to participate in the camp.

Eligible participants had to have completed a consent form and have an enrolled child in the summer camp. A total of 191 parents had a 1st-6th grader participate in the summer camp, and 95 chose to participate in the study yielding a response rate of 49.7%.

Assessments

Participants completed a short survey including questions addressing demographics, household information, educational achievement, and their perception of the camp's transition from a school district to a university campus. The survey consisted of twenty questions, including Likert-type items and open-ended responses, and could be completed in less than five minutes. Qualitative data from the open-ended questions are reported below. Quantitative data collected were not significant due to the nature of the demographic and program-evaluation nature of the questions.

Data Analysis

Qualitative data was analyzed following the principles outlined in Merriam (2009). Researchers conducted open coding, with ideas being analyzed and sorted to identify emergent, overarching themes. Themes were noted by frequency count, then combined, narrowed, and adjusted to

determine the final themes to best represent the data. Triangulating analysts contributed to the trustworthiness of this study, as multiple researchers were involved in the data analysis (Merriam, 2009; Patton, 2002, p.560). In addition, member checking techniques were utilized to ensure theme reliability among the research team. The common themes expressed by the majority of the participants were generated to represent results.

Results

Three specific themes emerged from parent responses: (a) the change of environment was exciting, (b) early college exposure was beneficial, and (c) continuation of the program was viewed as valuable for the community.

The Change of Environment was Exciting: Parents (n = 21) reported excitement for the environmental change. One parent stated, "My kids are excited to be in a new environment. They are excited to meet their teachers and begin their classes." Furthermore, a parent said, "I'm excited for them to see campus." Another parent mentioned, "My son and I are excited for his learning opportunities." A few parents reported they were pleased the university had taken over the camp, stating the change would create a different dynamic for an already-existing successful program. The excitement expressed by these parents demonstrates both the importance of the program and the impact the university can have to improve the program. The reported excitement is in contrast to other indicators that demonstrate potential pitfalls of moving the camp, in which attendance dropped 45% from the year prior. Anecdotally, this drop seems to be due to the transition and trepidation about potential safety issues with having young children on a college campus.¹ Some participating parents voiced the later concern. For example, one parent stated, "Worried about the size of campus and keeping the kids together and organized. Don't lose my kids." Despite these concerns, the data suggest the overall view of the move to campus was positive. One parent stated, "Involving the university in [the camp] was a positive, collaborative effort to continue the program. We love these workshops!" Overall, the transition generated excitement among parents, which demonstrates the importance of continuing summer programming.

Early College Exposure was Beneficial: A large group of parents (n = 14) reported they valued the early college exposure, as one parent stated, "It's an incredible opportunity to expose the children to learning opportunities and resources outside [the local public school district] while familiarizing them with the college setting. I expect the kids will enjoy the experience and have a newfound interest in all things [related to the university]." One parent stated, "It will be nice for him to be exposed to a college setting so that he will become more comfortable

in the future being on campus." While another parent commented, "It's a great facility. I like that the students (campers) get familiar with campus. Hope this is a positive experience and push[es] them to attend college." Lastly, a parent noted, "I think it's a great opportunity to expose children early to what [a] college campus looks like." Parents identified the contextual factors the team believed made the move a natural fit for the camp, specifically, the early college exposure is viewed as a potential gateway to a future with college for the students, and the expansive and highly innovative facilities allow the students to broaden their horizons.

Continuation of the Program was Viewed as Valuable: The transition to a university campus was a complex task; however, many parents were pleased with the continuation of the camp due to the direct and indirect benefits.

One parent stated:

I was thrilled when I found out [this camp] was going to continue. My boys have attended for years... and [it is] such an engaging, positive program. It was great to know the university was involved. It shows how they are investing in the community and local youth. Giving my son an opportunity to participate in something on the college campus is a great experience for him.

Another parent mentioned, "I am grateful the program will continue. Looking forward to the educational level of instructors my child will have." Another parent reported, "I'm just thankful you're having it all, location doesn't matter!" These responses demonstrate just how valued the program is in the community. From these responses, it can be inferred that the feeling of the program as a vital institution for the community that had been shared among the transition team is shared by participating parents.

Discussion

The transition of a children's summer camp from a school district to a university was perceived to be important and positive to camper parents and was equally beneficial to the university campus landscape. The inclusive collaboration within a micropolitan rural community resulted in students' multidisciplinary, experiential educational experience. For the university, the transition of the program provided significant insight to learning the important characteristics of future college students, as well as the educational confidence and collegiate vision for elementary-aged students. For the community, the continuation of the program ensured there were options to combat the summer slide and leveraged resources beyond the local school district's stressed budget. The transition to campus provided additional outlets for university employees to extend their educational reach and impact. Depending on the relationship between a campus and

¹ Camp was run virtually in 2020 with 750 participants and in-person in 2021 with 452 participants, demonstrating that the drop in attendance was temporary.

community, events, accomplishments, and even research successes can be lost because individuals may not see the links between university campuses and community members. Bringing the camp to a college site strengthened the connection between the campus and community. The conception of campus connections strengthened the relationship between the campus and community by allowing university faculty to showcase their expertise, which may only be present on a university campus. Parents support this notion as they reported the move was positive for both the health of the camp and the development of their children, helping, potentially, to prevent the educational summer slide through fun, structured classes.

In many cases, the first time children may be introduced to a university occurs in their secondary education. Earlier exposure can help build self-efficacy among elementary-aged students in their ability to succeed in higher education. This was prevalent among the parents of the current study as they valued the exposure their children obtained. Furthermore, children were in contact with current undergraduate students. This dynamic of exposure has the potential to be effective in building self-efficacy as undergraduate students can seem more relatable and serve as role models for success. Additionally, camps were designed to be fun and rewarding through experiential learning, and the fact that children were on a campus means these rewarding experiences potentially will be linked to what the concept of college means to them. This dynamic was appreciated by parents and supported within the literature as an effective means for building college self-efficacy (Pulliam & Bartek, 2018; Mariani et al., 2016).

Conclusion

The transition of a curriculum-based summer camp from a public school district to a local university was not without its challenges; however, the results of this research show the positive reactions to the change. The reported data in this manuscript demonstrates the importance of curriculum-based camps to parents. For future cohorts, given more lead-time, access to norm-referenced achievement test data from the academic year prior and the academic year following the camp will be requested to better understand the impacts on the summer slide. Having more lead-time for future camps will further reduce the cost for free-and-reduced-lunch-eligible students through more grant awards. In 2020, all camp activities (virtual) were offered for free, and the camp teamed up with the school district to send kits home to those students participating in the summer free-lunch program. In 2021, full scholarships were granted to 105 students who were low-income through the increase in grant funding. In short, when presented with a budget short-fall that may impact summer programming, school districts have options to leverage other community resources to ensure these programs do not disappear.

References

- Allen, L. R., Cox, J., & Cooper, N. L. (2006). The impact of a summer day camp on the resiliency of disadvantaged youths. *Journal of Physical Education, Recreation & Dance*, 1(1), 17-23. <https://doi.org/10.1080/07303084.2006.10597808>.
- Beer, G., Le Blanc, M., & Miller, M. J. (2008). Summer learning camps: Helping students to prepare for college. *College Student Journal*, 42(3), 930-939.
- Borman, G. D., Goetz, M. E., & Dowling, N. M. (2009). Halting the summer achievement slide: A randomized field trial of the KindergARTen summer camp. *Journal of Education for Students Placed at Risk*, 14(2), 133-147. <https://doi.org/10.1080/10824660802427652>.
- Coker, J. S., & Porter, D. J. (2015). Maximizing experiential learning for student success. *Change: The Magazine of Higher Learning*, 47, 66-72. <https://doi.org/10.1080/00091383.2015.996101>.
- Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of Educational Research*, 66(3), 227-268. <https://doi.org/10.3102/00346543066003227>.
- George, G. L., Schneider, C., & Kaiser, L. (2016). Healthy lifestyle fitness camp: A summer approach to prevent obesity in low-income youth. *Journal of Nutrition Education and Behavior*, 48(3), 208-212. <https://doi.org/10.1016/j.jneb.2015.12.010>.
- Gosen, J., & Washbush, J. (2004). A review of scholarship on assessing experiential learning effectiveness. *Simulation & Gaming*, 35(2), 270-293. <https://doi.org/10.1177/1046878104263544>.
- Green, A. M., Lewis, J., Kent, A., Feldman, P., Motley, M., Baggett, P., Shaw, E., Byrd, K., Simpson, J., Jackson, T., & Lewis, W. (2011). Limiting the Academic Summer Slide for Urban Elementary School Students. *National Teacher Education Journal*, 4(2), 87-92.
- Hedrick, J., Homan, G., & Dick, J. (2009). Exploring the positive impact of 4-H camp on youth: Identifying differences based on a camper's gender, years of attendance, and age. *Journal of Extension*, 47(6), 6-13.
- Henderson, K. A., Whitaker, L. S., Bialeschki, M. D., Scanlin, M. M., & Thurber, C. (2007). Summer camp experiences: Parental perceptions of youth development outcomes. *Journal of Family Issues*, 28(8), 987-1007. <https://doi.org/10.1177/0192513X07301428>.
- Jefferson, R. E., Grant, C. E., Rye, L., Bassette, L. A., Stuve, M., & Heneisen, R. (2018). University students' perceptions of social justice: The impact of implementing a summer

camp for children with disabilities. *Journal of Special Education Apprenticeship*, 7(1), 1-21.

Jose, S., Patrick, P. G., & Moseley, C. (2017). Experiential learning theory: The importance of outdoor classrooms in environmental education. *International Journal of Science Education, Part B*, 7(3), 269-284. <https://doi.org/10.1080/21548455.2016.1272144>.

Kwon, H., Kang, H., Seong, H., Gen, S., Kwon, N., & Shin, Y. (2018). Analysis of the difficulties faced by elementary school teachers in science experiential learning using focus group interview. *Journal of Science Education*, 42(2), 182-197. <https://doi.org/10.21796/jse.2018.42.2.182>.

Lawton, R. C. (2016). *Let's go camping!: Understanding the positive psychosocial impact of summer camp for children and adolescents with pediatric inflammatory bowel disease* (Publication No. 10160434) [Doctoral dissertation, Northwestern University]. Retrieved from ProQuest Dissertations & Theses Global Database.

Mainieri, T. L., & Anderson, D. M. (2015). Exploring the "black box" of programming: Applying systematic implementation evaluation to a structured camp curriculum. *Journal of Experiential Education*, 38(2), 144-161. <https://doi.org/10.1177/1053825914524056>

Mariani, M., Berger, C. Koerner, K., & Sandlin, C. (2016). Operation occupation: A college and career readiness intervention for elementary students. *Professional School Counseling*, 20(1), 65-76. <https://doi.org/10.5330/1096-2409-20.1.65>

McCombs, J. S., Augustine, C. H., Schwartz, H. L., Bodilly, S. J., McInnis, B., Lichter, D. S., & Cross, A. B. (2011). *Making summer count: How summer programs can boost students' learning*. Rand. <https://www.wallacefoundation.org/knowledge-center/Documents/Making-Summer-Count-How-Summer-Programs-Can-Boost-Childrens-Learning.pdf>

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. Jossey- Bass.

Moon, J.A. (2004). *A handbook of reflection and experiential learning: Theory and practice*. Kogan Page.

Patton, M.Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage.

Pollock, L., McCoy, K., Carberry, S., Hundigopal, N., & You, X. (2004). Increasing high school girls' self-confidence and awareness of CS through a positive summer experience. *ACM SIGCSE Bulletin*, 36(1), 185-189. <https://doi.org/10.1145/1028174.971369>.

Powell, K., & Wells, M. (2002). The effectiveness of three experiential teaching approaches on student science learning in fifth-grade public school classrooms. *The Journal of Environmental Education*, 33(2), 33-38. <https://doi.org/10.1080/00958960209600806>.

Pulliam, N. & Bartek, S. (2018). College and career readiness in elementary schools. *International Journal of Elementary Education*, 10(3), 355-360. <https://doi.org/10.26822/iejee.2018336193>.

Reed, D. K., Cook, K. M., & Aloe, A. M. (2020). A cost-benefit analysis of summer reading programs implemented under state guidelines. *Educational Policy*, 34(4), 594-618.

Shideler, A., Scaduto, E., & Wivell, G. B. (2020). One District's Strategy to Curb Summer Slide among Elementary School Students. *Journal for Leadership and Instruction*, 19(2), 19-23.

Sibthorp, J., Paisley, K., & Gookin, J. (2007). Exploring participant development through adventure-based programming: A model from the National Outdoor Leadership School. *Leisure Sciences*, 29(1), 1-18. <https://doi.org/10.1080/01490400600851346>.

Vale, C., Weaven, M., Davies, A., Hooley, N., Davidson, K., & Loton, D. (2013). Growth in literacy and numeracy achievement: Evidence and explanations of a summer slowdown in low socioeconomic schools. *The Australian Educational Researcher*, 40(1), 1-25. <https://doi.org/10.1007/s13384-012-0065-9>.

Wallace, C. S., & Brooks, L. (2015). Learning to teach elementary science in an experiential, informal context: Culture, learning, and identity. *Science Education*, 99(1), 174-198. <https://doi.org/10.1002/sce.21138>.

Weissberg-Benchell, J., Hessler, D., Polonsky, W. H., & Fisher, L. (2016). Psychosocial impact of the bionic pancreas during summer camp. *Journal of Diabetes Science and Technology*, 10(4), 840-844. <https://doi.org/10.1177/1932296816640289>.

Whittington, A., & Garst, B. A. (2018). The role of camp in shaping college readiness and building a pathway to the future for camp alumni. *Journal of Youth Development*, 13(1-2), 105-125. <https://doi.org/10.5195/jyd.2018.519>.

Yilmaz, M., Ren, J., Custer, S., & Coleman, J. (2009). Hands-on summer camp to attract K-12 students to engineering fields. *IEEE Transactions on Education*, 53(1), 144-151. <https://doi.org/10.1109/te.2009.2026366>.

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A Single Case Pandemic Analysis:

Leadership in a Pandemic - The Response by Molloy College's School of Education

by Dr. Vicky Giouroukakis

In mid-March 2020, all schools in NYC, Long Island and the entire education community closed and had to move to a remote teaching format due to the COVID-19 situation. That was the last time teachers and students were physically in their classrooms and the last time they saw each other. At that time, teachers and staff were asked to do extraordinary things regarding course delivery and learning and to engage in what is now called "pandemic pedagogy."

Pandemic pedagogy required Long Island teachers to provide opportunities for student engagement and much-needed connection to students who need learning continuity but also social emotional support. Most districts implemented three phases of online learning: Phase 1 allowed teachers and students time to plan for remote teaching. Phase 2 focused on increasing delivery of instruction, while phase 3, in effect until the end of June, provided more access to direct instruction and supports.

Schools had several challenges when going remote. Balancing synchronous and asynchronous teaching methods while maintaining flexibility was one educational challenge. Another challenge for our schools was providing emotional support to students and staff who were in situations where they suffered loss or illness, were taking care of loved ones, or were feeling overwhelmed, anxious, or uncertain about the present and/or the future. Support staff, such as school social workers and psychologists, worked around the clock to make available that necessary care. Most schools also ran day care centers for essential workers and provided free meals to students in need. Access to computers and the internet was also the focus to enable students to engage in the remote learning.

The Molloy College teachers in the field and alumni, who were in line with the college's mission joined teachers in their respective Long Island districts to transform education and provide service and leadership. Michael Ferretti, an alumnus and administrator in

a high-needs LI school district expressed some of the challenges experienced by other leaders: "Our greatest challenge was getting the appropriate technology to our homeless families and making sure they had the capability to utilize it. In a low income community, you are also dealing with families that don't have WIFI, so the initial challenge easily became a multi-phase process for us that included making initial contact, setting up the technology with instructions, and a follow up visit to ensure the technology was fully operational."

A recent graduate of the School of Education and Human Services, Noel King, works as a teacher during the day in one school and early mornings at another school serving as a translator for their free lunch program. She stated, "The team I work with is incredible; on our busiest days we give out 3000 meals. The work of teachers has changed in appearance in the last couple of weeks, but at its core it is the same - we're just here to help the kids, any way we can." Another alumnus, Laurie Bocca, despite managing in this pandemic, said she "missed the kids so much."

The COVID-19 experience taught our alumni and all educators a few things about online teaching that informed the planning for when schools reopened in that fall:

1. Shared Vision:

Leaders need to develop a vision for the future that reflects a reimagining of schools and that is shared by the stakeholders, i.e., parents, families, administrators, teachers, staff members, students, administrators, and the local community. They need to consider what effective schooling in an epidemic situation that includes an online environment looks like. Attention must be given to educating the whole child and addressing the physical, social, emotional, and academic needs of all students, including those from privileged and disadvantaged backgrounds who will need access to support.

2. **Safety:**
Schools need to create safe environments for children and staff. This requires sanitization and social distancing protocols. It also means promoting testing, tracing, and isolation to ensure the virus is contained and those who are infected get the proper treatment. Only then will parents feel safe sending their kids to school and only then will teachers and staff trust that they can return to work.
3. **Pandemic Pedagogy vs. Online Teaching:**
Pandemic pedagogy is not the same as online teaching. This emergency pedagogy was different from a robust online environment, the design and implementation of which requires time and effort. All schools must plan for online or hybrid pedagogy in the future. We don't know when waves of the virus will hit again forcing schools to go remote. However, effective online pedagogy is possible but requires a range of collaboration efforts and engagement methods that take into consideration learners' individual needs and situations.
4. **Community Building:** Community building should be a priority in this environment as a successful learning environment cannot be cultivated without the collaboration of all the stakeholders.

Parents homeschooling in the pandemic will need schools to help address their needs by providing childcare, access to information, support, and guidance in facilitating learning for their children.

5. **Perseverance:** This pandemic has brought out the best in teachers and other stakeholders as they have come together to work for the good of the students. Students have risen to the occasion as they have persevered through this crisis and, as a result, will be stronger in the future.

This article is dedicated to the community of educators out there, including our Molloy alumni, who showed great resilience, strength, leadership, and service in this global crisis. Molloy is grateful for your work!

This article was published in Molloy's Magazine, adapted and reprinted with permission.

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Students with Disabilities and Suspension Rates: A Cautionary Tale for School Districts

By Kenneth Forman, Ph.D. and Craig Markson, Ed.D.

Abstract

The purpose of this study was to examine the relationships among K-12 student attendance rates, English language learners, poverty, suspension rates, and students with disabilities. The setting of this study was 94 school districts from New York State's Nassau and Suffolk counties, a suburban region adjacent to New York City. The results of this study showed that suspension rates had statistically significant and positive correlations with students with disabilities, accounting for 68.89 percent of the variance. As students with disabilities populations increased so did suspension rates by school district. If the results of this study remain consistent with future studies, school district leaders should develop strategies linked with diversity, equity, and inclusion as well as restorative justice practices or other alternatives to suspension to ensure that their students with disabilities, who require additional resources from K-12 school stakeholders to succeed, are not being disproportionately suspended from schools.

I. Purpose

There has been ongoing debate in the research literature regarding the degree to which K-12 school district-wide variables impact students with disabilities (SWDs) populations and how those variables contribute to or impede the student success of such populations. For example, prior research by Forman and Markson (2018) has shown that student attendance rates had positive relationships with student achievement. As attendance rates increased, so did student achievement. However, Fancsali et al. (2019) found that SWDs populations have inverse relationships with attendance rates. As SWDs populations increased in school districts, attendance rates went down. SWDs typically required additional time and resources from school district stakeholders, so that poor attendance rates among this population were detrimental to their success in school. Similarly, SWDs were disproportionately suspended from school, when compared with the overall student population. As was the case with lower attendance rates, suspension from school removed SWDs from instructional time and resources required for their academic success (Fancsali et al., 2019).

Hulse (2021) found that English language learners (ELLs) were overrepresented in SWDs populations in the K-12 schools among several U.S. States, including New York. If ELLs were being wrongfully classified as SWDs, Hulse argued that this became both a civil rights issue and an academic issue. ELLs, who did not demonstrate any mental disabilities, were being treated as SWDs when their barriers to learning were based on language (Hulse, 2021). Royal (2020) also studied why certain populations of students were being overly classified as SWDs. Royal suggested that poverty had a negative impact on brain development which could be detrimental to students' achievement throughout their academic careers. However, Royal found that students living in poverty were disproportionately classified as SWDs due to school psychologists' inability to distinguish economic disadvantages to academic achievement from mental abilities among the students they evaluated (Royal, 2020).

To be sure, there have been ongoing controversies surrounding the various school district-wide variables on populations related to SWDs in the research literature. As a result, the purpose of this study was to examine the relationships among K-12 student attendance rates, English language learners, poverty, suspension rates, and students with disabilities. The strength and directions of these relationships were examined in this study.

II. Theoretical Framework

Anderson (2021) found SWDs were more likely to be suspended or expelled than their general education peers and more likely to be chronically absent. This study used five years of student-level data for all Michigan special education students to examine the relationship between educational setting, absenteeism, and disciplinary outcomes. The researcher suggested that moving students from one setting to a more inclusive setting would not necessarily reduce their likelihood of disciplinary referrals and suspensions.

Morgan et al. (2019) examined whether U.S. schools systemically discriminate when suspending or otherwise disciplining students with disabilities (SWD). This meta-analysis examined 18 prior studies to find relationships of suspension from school and SWDs. The researchers found no strong evidence of any relationship and therefore empirical evidence regarding whether U.S. schools discriminate when disciplining SWDs. Of studies using only individual-level covariates, 65 of 100 estimates (i.e., 65%) indicated that SWDs were more likely to be suspended than students without disabilities. Six of 25 (24%) of the estimates indicated that SWDs were more likely to experience exclusionary discipline. Seven of 25 (28%) of the estimates indicated that SWDs were less likely to experience exclusionary discipline. Descriptive evidence of disparities was insufficient to infer that U.S. schools systemically discriminated when suspending or otherwise disciplining students based on their disability status or, for SWD of color, based on their race or ethnicity.

Cruz and Rodl (2018) investigated student demographics, school context, and school practice factors that were predictors of out-of-school suspension in a diverse school district in California to determine if there were disparities across demographic groups over time. This study examined students' suspension risk over time and confirmed that student-level predictors such as gender, race, and grade level were consistent predictors of suspension, and that school context factors such as suspension rate impacted risk. Results indicated that school practices meant to reduce suspensions were not necessarily ameliorative across time for most demographic groups, but some school practices that academically engaged students at a young age would be more impactful at reducing suspension risk over time.

Anderson and Ritter (2017) found that marginalized students were more likely to receive exclusionary discipline (suspensions/expulsions), even after controlling for the nature and number of disciplinary referrals across Arkansas. Within schools, the disproportionalities in exclusionary discipline (suspensions/expulsions) were driven primarily by non-race factors such as free- and reduced-price lunch eligibility and special education status.

Sullivan et al. (2014) explored patterns and predictors of suspension in a sample of 2,750 students with disabilities in 39 schools in a Midwestern district in Wisconsin. The researchers demonstrated that disability type, gender, race/ethnicity, and free/reduced lunch status were significant predictors of suspension among students with disabilities. The study supported that disability type, gender, race/ethnicity, and free/reduced lunch status were significant predictors of suspension among students with disabilities. Results of this study added to the evidence that students with disabilities may be overexposed to exclusionary discipline.

Krezmien et al. (2006) found through an analysis of Maryland suspension data from 1995 to 2003, a disproportionate number of suspensions of minority students and students with disabilities. The researchers found substantial increases in overall rates of suspensions, as well as disproportionate rates of suspensions for African American students, American Indian students, and students with disabilities. Moreover, students with disabilities had higher suspension ratios than students without disabilities. Students with emotional and behavioral disorders had the highest rates for suspensions, especially for African American students. The data reported by the researchers raised a number of issues about changes in the overall rates of suspension and in the offenses for which students were suspended and the disproportionate impact of suspensions on African American students, American Indian students, and students with disabilities. The researchers questioned whether the costs associated with increases in suspensions were worth the personal costs to students. The researchers also questioned whether zero-tolerance policies in the state have mitigated or exacerbated serious offending.

Skiba et al. (2005) found rates of suspension and expulsion consistently predict district rates of special education disproportionality. The research group confirmed the view that ethnic disproportionality in special education was due in large measure to the impact of poverty. Yet these results joined other researchers' results in suggesting that relationships among poverty, race, achievement, and special education eligibility were complex. The research group also found that district rate of school suspension and expulsion, proved to be the most robust predictor of special education disproportionality. A relationship between racial or ethnic disparities in discipline and special education referral may be further evidence of a general inability on the part of schools to accommodate cultural differences in behavior. Even if it were possible to demonstrate statistically that individual poverty status completely accounted for the variance previously attributed to race in special education disproportionality, that demonstration would still be insufficient to disentangle the fundamental complexity of race, poverty, and special education referral. Clearly, students living in poverty begin school with disadvantages that diminish educational readiness.

Townsend (2000) found that school disciplinary practices for students with disabilities and their peers without disabilities have long been questioned. Moreover, the school discipline of both dominant culture and ethnic minority students have raised concerns. While suspect discipline practices have been used with students across ethnic backgrounds, they have been found to be disproportionately meted out to African American students. Townsend suggested that culturally responsive instructional and management strategies mitigate school suspensions and expulsions of African American

children and youth. The researcher further indicated that school discipline practices disproportionately excluded African American students from opportunities to learn. Townsend recommended that schools address this phenomenon by examining their discipline data, their discipline policies, and their instructional practices incorporating culturally responsive experiences for those students and their families. Townsend concluded that reducing the cultural discontinuity students experienced in school settings represented a culturally responsive approach to preventing school exclusion and improving the success of African American children and youth.

III. Data Sources

The New York State Education Department's Data Site for the 2018-2019 school year was the primary source of data for this study. Ninety-four school districts from Long Island's Nassau and Suffolk counties, New York, were included in this study. There were more than 94 school districts in this region. Several school districts were excluded for having unusually small populations of students. For example, those school districts that had less than 100 students in either their high schools or their elementary schools were excluded from this study. Also, some of the school districts in this region were not full K-12 school districts and were also excluded from this study. The 94 school districts in this study only included K-12 school districts because it was the researchers' intentions to keep consistency on full K-12 school district reporting on data that related to attendance rates, ELLs, poverty, suspension rates, and SWDs.

IV. Method

The researchers purposefully chose a pre-pandemic reporting year out of concern that data reporting during the pandemic would skew the data on student attendance and suspension rates as many school districts engaged in remote learning during the pandemic. SWDs were measured by the percent of students classified as such by school district on the New York State Education Department's Data Site (NYSED Data Site, n.d.). SWDs were defined by the New York State Education Department's Data website as the following:

Students with disabilities are those who have been identified as such by the Committee on Special Education and are receiving services under the Individuals with Disabilities Education Act (IDEA). Students with disabilities include those having an intellectual disability; hearing impairment, including deafness; speech or language impairment; visual impairment, including blindness; serious emotional disturbance; orthopedic impairment; autism; traumatic brain injury; developmental delay; other health impairment;

specific learning disability; deaf-blindness; or multiple disabilities and who, by reason thereof, receive special education and related services under the IDEA according to an Individualized Education Program (IEP), Individualized Family Service Plan (IFSP), or a services plan. (Report Cards Glossary | NYSED Data Site, n.d.)

SWDs, from the 2018-2019 reporting year, were the dependent variable in this study.

Attendance rates, ELLs, poverty, and suspension rates were the independent variables in this study. Attendance was reported as the percent of average daily student attendance by school district. The suspension rate was the number of students suspended (not including in-school suspensions) divided by the number of enrollments in a given school year. English language learners (ELLs) were defined by NYSED as the following:

[T]hose who, by reason of foreign birth or ancestry, speak or understand a language other than English and speak or understand little or no English, and require support in order to become proficient in English and are identified pursuant to Section 154.3 of Commissioner's Regulations. These students are also referred to as Limited English Proficient. (Report Cards Glossary | NYSED Data Site, n.d.)

ELLs were recorded as a percent by school district.

Poverty was measured by the percent of students classified as "economically disadvantaged" by school district. "Economically disadvantaged" was defined by the New York State Education Department's Data website as the following:

those who participate in, or whose family participates in, economic assistance programs, such as the free or reduced-price lunch programs, Social Security Insurance (SSI), Food Stamps, Foster Care, Refugee Assistance (cash or medical assistance), Earned Income Tax Credit (EITC), Home Energy Assistance Program (HEAP), Safety Net Assistance (SNA), Bureau of Indian Affairs (BIA), or Family Assistance: Temporary Assistance for Needy Families (TANF). If one student in a family is identified as low income, all students from that household (economic unit) may be identified as low income. (Report Cards Glossary | NYSED Data Site, n.d.)

A Pearson Product-Moment correlation analysis, with a two-tailed test of significance with alpha set at .05, was used to analyze the relationships between the variables.

V. Results

Table 1 illustrated the relationships between K-12 student attendance rates, ELLs, poverty, suspension rates, and SWDs.

Attendance did not have a statistically significant relationship with SWDs, $p > .05$. ELLs also did not have a statistically significant relationship with SWDs, $p > .05$. Similarly, Poverty did not have a statistically significant relationship with SWDs, $p > .05$.

Suspensions had a statistically significant relationship and positive correlation with SWDs, accounting for 68.89 percent of the variance, $p < .05$. As SWDs went up by school district, so did suspension rates.

VI. Conclusion

School District Leaders, School Building Leaders, university researchers, and educators must develop ways to keep schools safe without compromising the quality of education services. Comprehensive and preventive approaches for maintaining school safety which have taken the forefront

over the past few years must become universal to replace punitive and exclusionary procedures. By targeting all students, not just "problem students," comprehensive approaches encourage positive alternatives to maladaptive behavior. Accurate collection and reporting of suspension data can be used by the states, counties, and school districts to track suspension practices, monitor school suspension practices, and evaluate interventions to reduce disproportionate suspensions.

Additionally, it is vital that special educators must be more involved in the development of school disciplinary policies along with alternatives to suspension from school. Special educators at the school, administrative, and state levels should become more proactive in the development of disciplinary policies that promote school safety and limit the influence of inflexible zero-tolerance practices on students in special education whose problem behaviors may be related to their disability.

VII. Implications of the Research

The SWDs within the school districts in this region of the country were not disproportionately represented among

Table 1

Correlations with SWDs (N = 94)

		SWDs	Attendance	ELLs	Poverty
Attendance	r	0.05			
	r ²	0.25%			
	p	0.636			
	N	94			
ELLs	r	-0.168	-0.609**		
	r ²	2.82%	37.09%		
	p	0.106	0.000		
	N	94	94		
Poverty	r	-0.088	-0.653**	0.871**	
	r ²	0.77%	42.64%	75.86%	
	p	0.402	0.000	0.000	
	N	94	94	94	
Suspensions	r	0.830**	-0.128	0.064	0.116
	r ²	68.89%	1.64%	0.41%	1.35%
	p	0.000	0.221	0.542	0.267
	N	94	94	94	94

** Correlation is significant at the 0.01 level (2-tailed).

the low attendance, ELLs, and children living in poverty populations. As a result, future research should be qualitative in nature, to be highly descriptive on the types of programs or strategies in this region that have prevented SWDs from not being overly represented among these populations. The results of these future studies could potentially better inform educational policies and practices as they relate to SWDs.

Finally, If the results of this study remain consistent with future studies, school district leaders should develop strategies aligned with diversity, equity, and inclusion as well as restorative justice practices and/or other alternatives to suspension to ensure that their students with disabilities, who require additional resources from K-12 school stakeholders to succeed, are not being disproportionately suspended from school.

References

- Anderson, K. P. (2021). The relationship between inclusion, absenteeism, and disciplinary outcomes for students with disabilities. *Educational Evaluation and Policy Analysis*, 43(1), 32-59.
- Anderson, K. P., & Ritter, G. W. (2017). Disparate use of exclusionary discipline: Evidence on inequities in school discipline from a U.S. state. *Education Policy Analysis Archives*, 25(49). <http://dx.doi.org/10.14507/epaa.25.2787>
- Cruz, R. A., & Rodl, J. E. (2018). Crime and punishment: An examination of school context and student characteristics that predict out-of-school suspension. *Children and Youth Services Review*, 95, 226-234.
- Fancsali, C. (2019). Special education in New York City: Understanding the landscape. *Research Alliance for New York City Schools*.
- Forman, K., & Markson, C. (2018). What are the relationships between poverty, attendance, teacher evaluations, and high school graduation rates? In *Maximizing Social Science Research Through Publicly Accessible Data Sets* (pp. 229-246). <http://dx.doi.org/10.4018/978-1-5225-3616-1.ch010>
- Hulse, E. C. D. (2021). Disabling language: The overrepresentation of emergent bilingual students in special education in New York and Arizona. *Fordham Urban Law Journal*, 48(2), 381-448. <https://ir.lawnet.fordham.edu/ulj/vol48/iss2/2>
- Krezmien, M. P., Leone, P. E., & Achilles, G. M. (2006). Suspension, race, and disability: Analysis of statewide practices and reporting. *Journal of Emotional and Behavioral Disorders*, 14(4), 217-226. <https://doi.org/10.1177/10634266060140040501>
- Morgan, P. L., Farkas, G., Hillemeier, M. M., Wang, Y., Mandel, Z., DeJarnett, C., & Maczuga, S. (2019). Are students with disabilities suspended more frequently than otherwise similar students without disabilities? *Journal of School Psychology*, 72, 1-13. <https://doi.org/10.1016/j.jsp.2018.11.001>
- New York State Education Department. (2021a). [Data set]. <http://data.nysed.gov/>
- New York State Education Department. (2021b). *Report cards glossary*. <https://data.nysed.gov/glossary.php?report=reportcards>
- Royal, A. S. (2020). *Evaluating the impact of economic disadvantage on specific learning disability identification in elementary school students: A grounded theory study* (Publication No. 13902341) [Doctoral dissertation, Drexel University]. ProQuest Dissertation Publishing.
- Skiba, R. J., Poloni-Staudinger, L., Simmons, A. B., Renae Feggins-Azziz, L., & Chung, C. G. (2005). Unproven links: Can poverty explain ethnic disproportionality in special education? *The Journal of Special Education*, 39(3), 130-144. <https://doi.org/10.1177/00224669050390030101>
- Sullivan, A. L., Klingbeil, D. A., & Van Norman, E. R. (2013). Beyond behavior: Multilevel analysis of the influence of sociodemographic and school characteristics on students' risk of suspension. *School Psychology Review*, 42(1), 99-114. <https://doi.org/10.1080/02796015.2013.12087493>
- Sullivan, A. L., Van Norman, E. R., & Klingbeil, D. A. (2014). Exclusionary discipline of students with disabilities: Student and school characteristics predicting suspension. *Remedial & Special Education*, 35(4), 199-210. <https://doi.org.proxy.library.stonybrook.edu/10.1177/0741932513519825>
- Townsend, B. L. (2000). The disproportionate discipline of African American learners: Reducing school suspensions and expulsions. *Exceptional children*, 66(3), 381-391. <https://doi.org/10.1177/001440290006600308>

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Retention Strategies of a Successful Graduate Program

By Dr. Elsa Sofia Morote, Dr. Nalini Singh,
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Abstract

This case study analyzed a unique doctoral program in education at Dowling College, Long Island, NY that had an 88% graduation rate within seven years that included 60% of students of color in contrast with doctoral graduation rates in the United States that are an average of 38% within seven years with only 24% students of color graduating. This study used a qualitative analysis to learn about their retention. It included documents analyses, pre-survey to alumni, in-depth interviews with thirty-two alumni and three faculty/administrators. Three major themes emerged: a sense of belonging, cooperative learning, faculty-administration support, and students' purpose, and competence. Recommendations to make a graduate program successful are presented.

Introduction

Most of the studies concerning retention and attrition come from undergraduate studies. Tinto's Student Integration Model (1975) and Beans' Student Attrition Model (1985) were the most cited models. Both models are based on undergraduate students, where students' academic and socioeconomic backgrounds are presented as strong variables. However, few studies focus on doctoral programs (Ampaw & Jaeger, 2012).

In 1988, Girves and Wemmerus suggested there is little information on graduate student retention, degree progress, or those motives contributing to some students succeeding in graduate school while others drop out. In 2016, Okahana, Allum, Felder, and Tull presented an extensive study at the Council of Graduate Studies that included 21 universities' doctoral programs. The study showed that the average completion rate for a doctoral program in seven years is 42%, and in 10 years, 50% (Okahana et al., 2016).

This study is focused on a unique case of an Ed.D. doctoral program in the Department of Educational Administration, Leadership and Technology at Dowling College, New York. Within seven years, the doctoral program completion rate was 88% (Manley & Perry, 2014). The doctoral program was serving an average of 135 students per year. This program increased student diversity from 24% in 2008 to 60% in 2016 (Morote, 2016). This study sought to answer the following research question:

1. What themes emerge from crucial insights of alumni and administrators regarding how the doctoral program challenges or influences their retention?

Doctoral program background

As of 2019, the Council of Graduate Studies (GGS) reported that doctoral programs in the USA had 1.8 million students: 59% were women, 24% students of color, and 18% were international students (GSS, 2018; National Center for Education Statistics, 2017). In contrast, Dowling's doctoral program increased the share of students of color from 24% in 2008, 35% in 2011, to 60% in 2016 (Morote, 2016). This is higher than the national diversity average of 24% in 2019.

Dowling College was a non-profit, private higher education institution on Long Island. In 1996 a Doctor of Education (Ed.D.) program was registered in the New York State Office of Higher Education. The initial foundation for the Program was a proposal of "most progressive thinking in the fields of higher education and administration and k-12 leadership" (Smith & Ruhl-Smith, 2000, p.1). At the time of the college closing (in 2016), the doctoral program had three major concentrations: Higher Education, K-12, and Health Care.

The Dowling doctoral program was designed with a cohort model, intensive technological infusion process, a single fee payment plan, a portfolio documentation of successful learning outcomes, and the use of field-relevant topics for student dissertations. Smith and Ruhl-Smith (2000) noted that the doctoral program increased attention to the relationship between technology and leadership (Smith & Ruhl-Smith, 2000).

The most crucial decision of student admission was made in an interview with a group of faculty members. The purpose of the interview was to learn if prospective students had a vision of their future and would be comfortable working in a cooperative learning model with their cohort members. It was essential to know that the student understood the work and effort that the doctoral degree required (R. Manley, personal communication, January 4, 2021).

Faculty were typically seven to nine full-time professors, half of them were retired superintendents who served as mentors for future k-12 leaders. Typically, four were professors with experience in higher education and social agencies. Faculty expertise varied from qualitative researchers, quantitative researchers, and mixed methodologies researchers. The health care students and other students were attracted to the Ed.D. program because of its emphasis on technology applications, leadership, research skills, and encouragement to focus one's coursework research on topics of one's own personal and professional interests. Health-care experts were often invited as guest lecturers.

Students typically collaborated with faculty in writing articles and often, they traveled to present their research at national and international conferences. Ninety percent of the students had the opportunity to present and achieve a peer-reviewed publication or conference paper before graduation. Prestigious conferences, such as the American Educational Research Association (AERA), blind-reviewed doctoral candidates' research and accepted them to present at their annual conference. Dowling College doctoral students were consistently selected by this AERA Conference during these years.

The doctoral program completion rate at five years had an average of 85% and at seven years was 88%. This rate was consistent during its 18 years (Manley & Perry, 2014). This doctoral program produced college presidents, superintendents, principals, professors, hospital directors, and leaders in social agencies (A. Inserra, personal communication, December 12, 2020).

Theoretical framework: Retention in doctoral programs

Tinto (1975) explained that students enter university or college with different intentions, goals, commitments, and expectations. These differences can mainly be traced to students' characteristics (e.g., gender, study skills), prior schooling performance, and family background (e.g., socioeconomic status). Tinto (1975) differentiated between the academic (performance) and social systems (peer relationships) that students are a part of and should be integrated into efforts to prevent attrition. Bean and Metzner (1985) studied attrition on older nontraditional students and found that there were four factors: academic (study habits, course availability), student background (gender, ethnicity, high school performance); environmental (family responsibilities, finances), and psychological (utility, satisfaction, outcome).

In 2012, Ampaw and Jaeger presented a conceptual framework to explain the drop-off rate of doctoral students. They presented three stages of successful persistence-transition, development, and research (Ampaw & Jaeger, 2012, p. 644). Ampaw and Jarger show that although financial aid as a whole is important, the type of financial aid received is even more significant and has differential impacts on doctoral students' retention at

each stage. Doctoral student retention with higher expected earnings motivates doctoral students (Ampaw & Jaeger, 2012).

In 1985, Noel, Levitz, and Saluri explained the importance of college personnel's caring attitude as the most potent retention force on campus. While not the only way to promote a sense of belonging in adult education, group learning (cohorts) has been found to foster it and studies indicate that adult learners benefited greatly from a group learning environment. Drago-Severson et al. (2001), who studied adult learner retention, concluded that participants demonstrate that cohort experiences seem to facilitate academic learning, increased feelings of belonging, broadened perspectives, and, at least by participants' reports, learner persistence. Financial advisement is also crucial. Ehrenberg and Mavros (1995) found that completion rates are sensitive to the types of financial support available to the students.

The most important relationship for a doctoral student is with an advisor, faculty, or chairperson, and this relationship is identified as a critical element for retention (Holley & Caldwell, 2012). However, an advisor, or chairperson who is a good instructor may not be a good mentor (Mullen, 2007; Mullen et al., 1999). Graduate students often worry about the range of permissible dissertation topics (and methods) becoming restricted or where faculty considered suitable for mentorship becomes fewer (Mullen et al., 1999). Minority female mentors, or those practicing alternative forms of research, may experience their mentoring status and efforts diminished during such times by other faculty (Mullen et al., 1999).

Underrepresented students in doctoral programs experienced isolation, marginalization, and less effective interactions with program faculty and tend to drop the program (Ellis, 2005; Jaeger et al., 2009). Developing a collegial relationship with their faculty contributes to success for doctoral students of color (Isik-Ercan, 2012).

This study uses a theoretical framework from Andy Nash and Silja Kallenbach (2009). Nash and Kallenbach analyzed 18 adult programs in New England, USA, and identified the persistence strategies that derived their power from the fact that they met six affective needs of adults (Nash & Kallenbach, 2009). The six affective needs are described as: *Sense of belonging & community of learners*: This is referred to how students experience the sense of belonging to a community at the program or class. *Clarity of purpose*: This is referred to as that learner should have concrete and measurable goals. *Agency*: Learners feel capable of initiating actions to benefit themselves. Human agency is the capacity for human beings to make things happen through their actions. *Competence*: Learners want to build competence in areas that more schooling can address. Learners believe their efforts will lead to success. *Relevance*: The instructional program is meaningful to the learners' needs and interests; and *Stability*: The program offers

the structure, predictability, and sense of safety that learners need to feel confident about their progress.

In 2015, Bollia, Agasistc, and Johnes did a quantitative study analyzing several independent variables correlated with the doctoral graduation rate. The following variables were evaluated - entrance tests such as GRE, assistantships, grants for students, student support activities such as writing support, statistics support, annual review, workspace, on-campus research conferences, and travel support. Also considered were program-based statistics on the share of female faculty, female students, international students, faculty research, faculty tenure. Of all the variables mentioned, they found to be relevant the following variables for doctoral programs: small universities tend to have a higher graduation doctoral rate, an international student body, presence of female students, students focused (full-time) on their research interests (and the presence of financial support), high-quality (and recently trained) academic staff in addition to an on-campus conference at which students could present their work appeared to be related significantly to completion rates.

Methodology

A short survey was posted to an alumni social media group. Thirty-two people answered that survey. Alumni were asked if they were willing to be interviewed. Of those willing, the researchers divided participants among race, ethnicity, gender, place of work (k-12 or higher education or social agency) and then randomly sampled the respondents according to the group to which they were assigned. Three researchers created an interview guide after the pre-survey, making minor changes to the open-ended questions. Researchers conducted semi-structured interviews of twelve individuals: nine alumni and three professors/administrators.

All data was stored in a password-protected Dropbox cloud (dropbox.com). The researchers maintained a comprehensive case-study database in Microsoft Word to include interview schedules and interviewees' demographics (Yin, 2018). Multiple methods to collect data facilitated its triangulation during the analysis phase and contributed to the credibility, dependability, and quality of the collected data (Billups, 2014; Creswell, 2017; Tracy, 2010; Yin, 2018). A two-step process (Mayring, 2008) was applied to analyze the data. The first step was to analyze the single cases using thematic analysis. The researchers engaged in a cross-case analysis (Cruzes et al., 2015). The first step in analyzing the recorded data consisted of a complete transcription of the recordings. The zoom transcripts were immediately subjected to find critical themes of the interview. A cross-sectional analysis was performed by the three researchers who sequenced and coded the data independently. The researchers then triangulated the data, sharing the coding they had done independently, one interview after another. In addition, the researchers shared with the interviewees thematic findings to get feedback on whether the results represent their lived experiences. Their comments were used to refine the findings.

Description of the participants

Thirty-two alumni spanning over two decades of the program responded to the pre-test. Seventy-eight percent were female and 21% male. Fifty percent were Caucasian, and fifty percent were from underrepresented groups. Fifty percent are currently working in K-12, 25% in higher education, and 25% in social agencies. Sixty-two percent were over 50-year-old, and 38% were between 30-49 years old. From these participants, nine alumni volunteers were invited to in-depth interviews. Alumni were coded (K= working in k-12 environment, S = working in social agency or higher education institution, C = Caucasian, M = Minority, F = Female), and three faculty/administrators were coded as A1, A2, and A3. The following three themes emerged:

Theme 1. Sense of belonging & cooperative learning

This theme reflects that doctoral students need to feel part of a group and desire connections with their peers, professors, and administrators. This was reinforced by the comments of respondents that the program was organized in cohorts between 9-15 students creating a doctoral family. In addition, students felt comfortable seeing the diverse faculty. The following comments support this: KC2: "...that sense of community has never really gone away"; SMF1: "I appreciated the environment, after a while, I think they created a good learning environment"; SMF2: "There was a sense of belonging as we had the largest group of our cohort...we ended up writing a book together." Students of color mentioned that having professors of color was essential for them.

Three categories were highlighted on this theme: people create sense of belonging, cooperative learning through cohorts, and diversity.

- *Students, faculty, and administration* create sense of belonging: KC2: "100%, I would say that you felt like part of a family, I think the support you know within the cohort and also from the faculty was tremendous"

- *Cooperative learning through cohorts.* The doctoral program created a community of learners. The comments were very positive towards cohorts: KSCF: "You know, with the cohort model we felt that we belong to each other."; A3: "At the open house we say, you are going to join a diverse community of scholars; you are going to join a community of professional leaders."

- *Diversity.* Most of the students celebrated being in a diverse group and the faculty diversity. Some students pointed out some differences between faculty diversity and cohort diversity. Diversity was understood differently from the interviewee's background. Comments such as: KCF1: "The diversity amongst the staff ... had such different views, allow us as students to go in with eyes wide open and if you were the sponge that wanted to soak it in, they let you."

Theme 2. Faculty-administration support

Students explained that they felt faculty support and mentorship during the process and after the process. They developed close ties with their professors specially with their methodologist and chair of the dissertation. Administrators often played the role of counselor and supported the students with a personal interest in their well-being. Professors often ended up co-authoring articles and travelling to conferences with students. The following comments support this theme: KCF1: "I was drawn to the professors, which was a blend of those who were current practitioners and those who were full time professors. I did not want a program that was 100% theory or 100% practical. I wanted the combination". SMF1: "...the biggest factor was my referral (to the doctoral program) from my mentor"

Theme 3. Clear purpose & competence

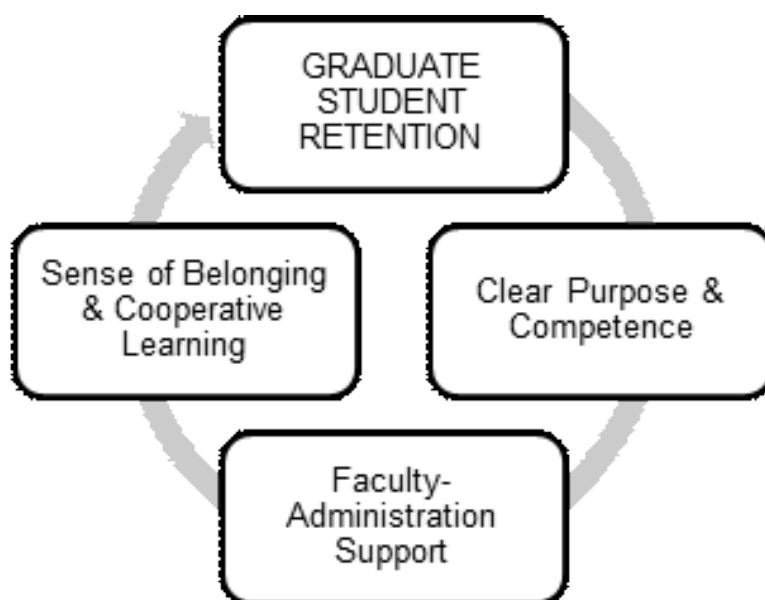
Students, faculty, and administration had one purpose- Student graduation and success. This purpose comes from the administration's desire to see the students succeed. Students reported that the faculty created a culture of success. The students also felt the information provided in the doctoral programs was relevant and increased their competence level, assuring themselves that they were employable after graduation. A2 commented: "one of the things we had decided early on is if

we accepted someone into the program they were going to be successful, and we were going to make that happen" and the same for students as commented by KCF1: "...what Dowling offered in their program matched up to what my personal and professional goals were" and SMF3: "Education was always the priority in my family". Comments that show confidence in their competence were KCF1: "You know I think it helped me grow personally and professionally. I don't think that I would have been here as easily as a superintendent of a medium-sized school district or a female who had never been in the K 12 classroom, the doctorate helped me." Quotes that show confidence and competence were: KC2: "...I was fortunate enough to have an opportunity to apply for Superintendent. I entered the Superintendent's role probably somewhat ahead of the curve at the time"; SMF3: "I'm a Vice President of a hospital!"

In sum, retention is supported by three major themes: sense of belonging and cooperative learning, faculty-administration support, and clear purpose & competence (**Figure 1**).

These themes are consistent with the literature (**Table 1**). However, variables such as background (race, previous academic performance) mentioned by Tinto (1975) and Bean and Metzner (1985) were not retention factors in this case study. *The sense of belonging & cooperative learning* was discussed by Nash and Kallenbach (2009) when they analyzed the retention of adult students.

Figure 1. Graduate student retention's themes



This sense of belonging was also promoted for the cohort model that Dowling doctoral program followed. This is consistent with several studies such as Drago-Severson (2016); social systems (Tinto, 1975), and Mullen et al. (1999), who found that cohort models supported a sense of belonging and included peer support. Bollia, Agasistc, and Johnes (2015) mentioned the role of international students in retention. However, few studies mentioned student and faculty diversity as part of creating a sense of belonging, as was found in this case study.

Faculty-administration support was a key theme that supported retention. Several studies support this, such as (Nash & Kallenbach, 2009; Girves & Wemmerus, 1988; and Bollia et al., 2015). These studies discuss faculty training, faculty mentorship, and caring administration (Nash & Kallenbach, 2009; Girves & Wemmerus, 1988; Bollia et al., 2015).

The last theme was *clear purpose & competence*. This theme is aligned with Nash and Kallenbach (2009) when they pointed out "purpose" as one of their six components of adult retention and goals (Bean and Metzner,

1985). At the same time, Nash and Kallenbach (2009) highlighted the importance of students feeling their learning is relevant and leads to competence. Competence is related with the goal of getting higher earnings as Ampaw and Jaeger (2012) indicated.

Recommendations

In summary, the purpose of the doctoral program for some is their personal growth, personally and professionally, and for others it is to expand their confidence level and the skills and aptitude that will help them in opening doors to career advancement.

The following recommendations summarize the aspects of doctoral programs that increase graduate student retention and graduation rates.

Sense of belonging & cooperative learning: create cohorts as they have been proven to increase retention; create peer mentorship activities and support social networking activities.

Table 1	
Themes	Topic / Literature aligned
<i>Sense of Belonging & Cooperative Learning</i>	<ul style="list-style-type: none"> • Group learning (Noel, Levitz & Saluri, 1985); cohorts (Drago-Severson et al., 2001). • Sense of belonging & community of learners (Nash & Kallenbach, 2009) • International students (Bollia, Agasistc & Johnes, 2015) • Research conference on campus (Bollia, Agasistc & Johnes, 2015) • Social systems (Tinto, 1975)
<i>Faculty-Administration Support</i>	<ul style="list-style-type: none"> • Financial advisement (Ampaw & Jaeger, 2012) • College caring attitude (Noel, Levitz and Saluri, 1985) • Advisor (mentor) key element of retention (Holley & Caldwell, 2012; Mullen, 2007; Mullen et al., 1999). • Collegial relationship with faculty (Zeynep Isik-Ercan, 2012). • Stability (Nash & Kallenbach, 2009)
<i>Clear Purpose & Competence</i>	<ul style="list-style-type: none"> • Expected earnings (Ampaw & Jaeger, 2012, p. 644). • Clarity of purpose (Nash & Kallenbach, 2009) • Competence (Nash & Kallenbach, 2009) • Relevance (Nash & Kallenbach, 2009) • Psychological – outcomes, goals (Bean and Metzner, 1985).

Faculty and administration support: increase diversity in the student body and faculty body; have an administrator or counselor on-site that provides individualized counseling and follow-up with students, and create on-site research activities such as symposiums or conferences

Clear purpose & competence: provide engagement activities to support student perseverance and review curricula to align with current market needs.

Adult learners require a clear purpose, a caring faculty and administration, relevance and participation in the learning process, a sense of belonging and collegiality in their studies and research efforts. Small group seminars at the stage of writing a dissertation can expand peer and faculty support as well as task commitments of students.

References

Ampaw, F., & Jaeger, A. (2012). Completing the three stages of doctoral education: An event history analysis. *Research in higher education*, 53(6), 640-660. <http://doi.org/10.1007/s11162-011-9250-3>

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, 55(4), 485-540. <http://doi.org/10.3102/00346543055004485>

Billups, F. D. (2014). Trustworthiness and the quest for rigor in qualitative studies. *The NERA Researcher*, 52, 10-12. https://www.nera-education.org/docs/TNR_Fall_2014_Color_Final.pdf

Bollia, T., Agasistib, T., & Johnes, G. (2015). The impact of institutional student support on graduation rates in US Ph.D. programmes. *Education Economics*, 23(4), 396-418. <https://doi.org/10.1080/09645292.2013.842541>

Council of Graduate Schools (2019). *The total graduate enrollment by citizenship, race and gender* (B-19). [Data set]. https://cgsnet.org/wp-content/uploads/2022/02/CGS_GED20_Report_Apx-B.pdf

Council of Graduate Schools in the United States. (2020). *Graduate education in 2020: What does the future hold?* Council of Graduate Schools. https://cgsnet.org/sites/default/files/Grad_Ed_2020.pdf

Creswell, J. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publishing.

Cruzes, D. S., Dybå, T., Runeson, P. & Höst, M. (2015). Case studies synthesis: A thematic, cross-case, and narrative synthesis worked example. *Empirical Software Engineering*, 20, 1634-1665 <https://doi.org/10.1007/s10664-014-9326-8>

Drago-Severson, E., Helsing, D., Kegan, R., Popp, N., Broderick, M. & Portnow, K. (2001). The power of a cohort and of collaborative groups. *Focus on Basics: Connecting Research and Practice*, 5(B). <https://www.ncsall.net/index.html?id=254.html>

Ebert, K., Axelsson, L., & Harbor, J. (2015). Opportunities and challenges for building alumni networks in Sweden: A case study of Stockholm University. *Journal of Higher Education Policy and Management*, 37(2), 252-262. <http://doi.org/10.1080/1360080X>

Ehrenberg, R. & Mavros, P. (1995). Do doctoral students' financial support patterns affect their times-to-degree and completion probabilities? *Journal of Human Resources*, 30(3), 581-609.

Ellis, A. K. (2005). *Research on educational innovations* (4th ed.). Routledge. <https://doi.org/10.4324/9781614420484>

Girves, J. E., & Wemmerus, V. (1988). Developing models of graduate student degree progress. *The Journal of Higher Education*, 59(2), 163-189. <https://doi.org/10.1080/00221546.1988.11778320>

Holley, K., & Caldwell, M. L. (2012). The challenges of designing and implementing a doctoral student mentoring program. *Innovative Higher Education*, 37(1), 243-253.

Isik-Ercan, Z. (2012). [Review of the book *Standing on the outside looking in*, by M. F. Howard-Hamilton, C. L. Morelon-Quainoo, S. D. Johnson, R. Winkle-Wagner, & L. Santiago (Eds.)] *Diaspora, Indigenous, and Minority Education*, 6(2), 124-126. <http://doi.org/10.1080/15595692.2012.662554>

Jaeger, P., Subramaniam, M., Jones, C., & Bertot, J. (2009). Diversity and LIS education: Inclusion and the age of information. *Journal of Education for Library and Information Science*, 52(2), 166-183.

Manley, R., & Perry, M. (2014). *Dowling college middle states self-assessment* (Report).

Mayring, P. (2008). *Qualitative content analysis*. Julius Beltz.

Morote, E. S. (2016). Dowling College middle states self-assessment standard 4: Diversity. Dowling College.

Mullen, C. A. (2010). Naturally occurring student-faculty mentoring relationships: A literature review. In T. Allen & L. Eby (Eds.) *Blackwell Handbook of Mentoring. A Multiple Perspectives Approach* (pp. 119-138). Wiley-Blackwell.

Mullen, C. A., Whatley, A., & Kealy, W. A. (1999). *Co-mentoring support groups in higher education*. <https://files.eric.ed.gov/fulltext/ED429494.pdf>

Nash, A., & Kallenbach, S. (2009). *Making it worth the stay: Findings from the New England adult learner persistence project*. New England Literacy Resource Center. <https://nelrc.org/persist/pdfs/Making%20it%20worth%20the%20stay.pdf>

National Center for Education Statistics. (2017). *Certificates and degrees conferred by race and ethnicity*. The Condition of Education 2017. https://nces.ed.gov/programs/coe/pdf/coe_svc.pdf

Noel, L. (1985). Increasing student retention: New challenges and potential. In L. Noel, R. Levitz, & D. Saluri (Eds.) *Increasing Student Retention*. Jossey-Bass.

Okahana, H., Allum, J., Felder, P. P., & Tull, R. G. (2016). Implications for practice and research from Doctoral Initiative on Minority Attrition and Completion (CGS Data Sources PLUS #16-01). Council of Graduate Schools.

Smith, J. M., & Ruhl-Smith, C. (2000). *Program evaluation report*. Department of Educational Leadership and Technology, Dowling College.

Sowell, R., Allum, J., & Okahama, H. (2015). Doctoral initiative on minority attrition and completion. Council of

Graduate Studies. https://cgsnet.org/wp-content/uploads/2022/01/Doctoral_Initiative_on_Minority_Attrition_and_Completion-2015.pdf

Tinto V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45(1), 89–125. <https://doi.org/10.3102/00346543045001089>

Tracy, S. (2010). Qualitative quality: Eight “big-ten” criteria for excellent qualitative research. *Qualitative Inquiry*, 16, 837–851. <https://doi.org/10.1177/1077800410383121>

Yin, R. (2018). *Case study research and applications*. Sage Publishing

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From the Field: Practical Applications of Research

Concepts of the Cosmos that High School Students Should Explore

By Edward Lyons, Ph.D.

Abstract

The purpose of this article is to provide teachers of science scientific definitions and illustrations to facilitate the teaching of cosmology. Secondary school science teachers can use the illustrations and their citations to pose questions to their students and to guide their students to accessible digital sites where the students can explore these concepts further. This article presents complex topics about the cosmos with illustrations that teachers of science can use to help their students to explore further. The purpose of this article is to provide teachers of science with a unified set of definitions related to elements of the cosmos that they can use as tools to motivate their students to engage in further investigations.

Introduction

The Cosmos is so enormous it is difficult to understand and appreciate. An analogy is to pick up a single grain of sand. That single grain represents our Earth; all other grains in Florida represent a small percentage of the celestial bodies in the Cosmos. The Cosmos is the 21st century's new FRONTIER.

Below are discussions concerning particle physics, subatomic particles, dark matter and dark energy. They are the building blocks of the universe. However, this description is a brief overview of very complex subject. There are fabulous resources from NASA and many other sources that provide more detailed descriptions of these topics. The definitions and illustrations in this document are meant to establish a baseline of understandings that teachers can use to excite students to learn about and explore the cosmos.

1. DEFINITIONS

A. Cosmos and universe - all existing material/matter in space; cosmos is an ordered or patterned universe following the laws of physics.

B. Galaxy - a system of billions of stars and their satellites, dark matter, dust, gas and other materials held together by gravitational force. The Earth is in the Milky Way galaxy.

C. Solar system - a star and related satellites.

D. Constellation - a number of stars that form a pattern that might be recognized - a scorpion for example. The patterns aid in navigation and locating a specific star.

2. DISTANCE & SPEED OF LIGHT

We are familiar with the concept of distance. A mile can be walked in 20 minutes or so. The circumference of our Earth is about 25,000 miles. Our moon is our closest natural planetary body; it is approximately 384,400 kilometers or 238,900 miles from the Earth. An Astronomical Unit (AU) is about 93 million miles approximating the distance between the Sun and the Earth. It takes about 8 minutes for the Sun's rays to reach Earth.

Here is a quick diversion to metric system. A meter is 39.37 inches in length. The prefix kilo means 1,000; the 'centi' prefix means 100. Although almost every other country in the world uses the metric system, this paper will use the imperial system we use in the USA. Thomas Jefferson promoted the metric system to no avail. It may be time for the USA to move to metric.

The light and warmth we feel at a point in time was emitted by the Sun 8 minutes earlier; it is an important realization that when we view distant celestial bodies what we are seeing today existed many years or centuries earlier.

The universe is so enormous that the concept of light year was conceived to explain this. A light year is the distance that a light ray travels in a year. Light travels in a vacuum at 300,000 kilometers/second equal to 186,282 miles/second. The symbol for the speed of light in a vacuum is 'c'.

A little math: $186,282 \text{ miles/second} \times 60 \text{ seconds/minute} \times 60 \text{ minutes/hour} \times 24 \text{ hours/day} \times 365 \text{ days/year}$. A light year is about 6 trillion miles (5.879 followed by 12 zeros) traveled in one Earth year.

Nothing in the visible world moves faster than the speed of light (the exception being dark energy, that is space itself and may expand faster than the speed of light.

This may also represent a concept known as tunneling). Of course, the same thing was said of the speed of sound until 1947 when U.S. Air Force Captain Chuck Yeager broke the sound barrier of about 770 mph.

3. ASTEROIDS, COMETS, METEORS

In the beginning of our solar system, about 4.6 billion years ago, there was just dust and gasses. Accumulation of the dust formed rocks and eventually planets. Many rocks (perhaps more than 1.5 million) became boulders which we now define as asteroids. Like a planet, they orbit the Sun.

Asteroids are irregularly shaped resembling a potato. Between Mars and Jupiter is the 'which is the home of most but not all asteroids. About 66 million years ago an asteroid impacted the Yucatan in Mexico creating the Chicxulub crater. It is estimated that 75% of all plant and animal life on Earth was destroyed and resulted in the extinction of non-avian dinosaurs (Wei-Haas. September 9, 2019. National Geographic). More recently, in 2013, a 7,000-ton asteroid crashed into Siberia with a force 30 times greater than the force of the atomic bomb dropped on Hiroshima.

There is an ongoing concern that an asteroid may either hit Earth or be destroyed miles above Earth that would create dangerous 'airblasts' or shock waves. NASA and the international community have defense programs underway, and they are examining different methods to either destroy or deflect asteroids in space. In 2021, NASA launched a spacecraft (about 1,200 pounds) as part of the Double Asteroid Redirection Test (DART) to determine if an asteroid can be diverted from its path.

36 million years ago an asteroid landed in what is now Maryland. The blast opened a gap 50 miles wide. Eventually, melted glaciers filled the hole and today we have the Chesapeake Bay.

A comet is an icy satellite (called a dirty snowball) composed of dust particles formed into a rock and gases. Gases include methane, ammonia, and water (hydrogen and oxygen). The comet heats up as it passes close to the Sun and releases gases. This produces a visible water trail or coma. The nucleus can be several miles across and the tail



can be thousands of miles in length. It is speculated that comets crashing into the earth may be the source of our water and amino acids. Those compounds are the source of life as we know it.

Halley's Comet is named after Edmund Halley who in 1705 realized that the same comet was visible on Earth at 75-76 years intervals. The next time Halley's Comet can be observed on Earth is 2061.

A meteoroid is a small rock found in outer space. They vary in size from a dust particle to a small asteroid of perhaps a meter in diameter.

When a meteoroid enters the earth's atmosphere it burns resulting in a meteor and what we describe as a shooting star. When a meteoroid hits the ground, it is called a meteorite. The study of meteorites gives us clues about the early universe. These space rocks, unlike the Earth, have not been altered by weather, plate movements and volcanoes.

NASA's web site provides outstanding descriptions, photos of the three 'space' rocks.

4. MOONS (NATURAL SATELLITES)

Moons are satellites that circumnavigate planets and other celestial bodies.



Image of Earth's moon
Credit: NASA/GSFC/Arizona State University

Earth has just one moon, although at one point there were two moons that combined to form our current moon. It is almost 245,000 miles from earth. It follows a 27 day orbit about the earth.

Moons of our solar system (provisional moons refer to observed satellite bodies whose orbits have not been fully documented):

Planet	Confirmed Moons	Provisional Moons	Total
Mercury	0	0	0
Venus	0	0	0
Earth	1	0	1
Mars	2	0	2
Jupiter	53	26	79
Saturn	53	29	82
Uranus	27	0	27
Neptune	14	0	14
Dwarf Planets			
Pluto	5	0	5
Eris	1	0	1
Haumea	2	0	2
Makemake	0	1	1
Ceres	0	0	0
Totals	158	56	214*

SOURCE: <https://solarsystem.nasa.gov/moons/in-depth/>

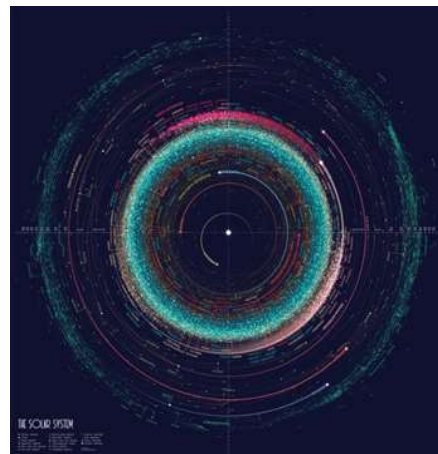


This image of Jupiter's enormous moon Ganymede was obtained by the JunoCam imager during the Juno spacecraft's flyby on June 7, 2021. Credit: [NASA, JPL-Caltech, SwRI and MSSS](#)

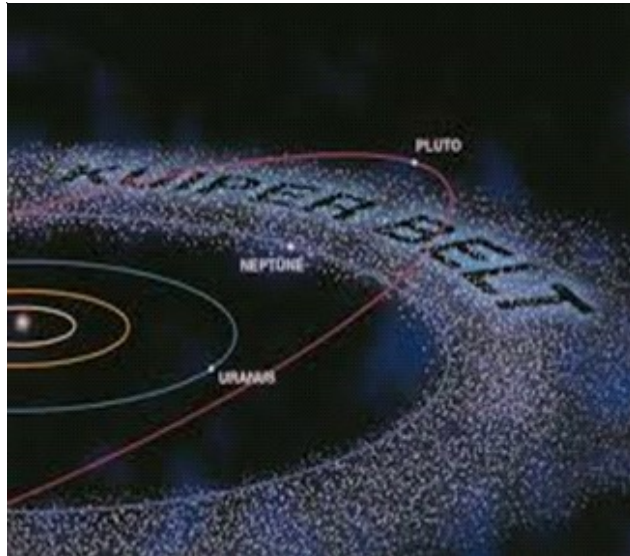
The Earth's moon is discussed later in this treatise.

5. **BELTS: Kuiper, asteroid, and van Allen belt**

A belt refers to an accumulation of asteroids and other outer space materials traveling in a defined orbit. Within and surrounding our solar system there are countless objects circling the Sun. Most can be defined as asteroids. Eleanor Lutz mapped out every known object in Earth's solar system (>10km in diameter) shown below. Source: output.com.



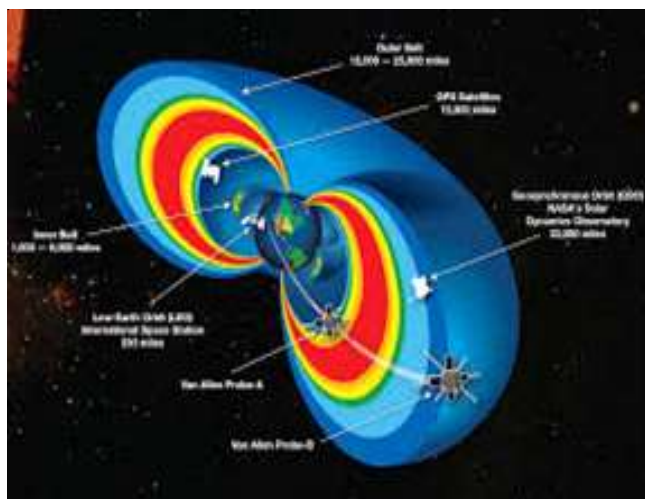
In 1951, Gerard Kuiper discovered a disc like belt of materials beyond Jupiter. Belt material takes 300 years to orbit the sun compared to 1 year for the Earth.



NASA Solar System Exploration

There are numerous asteroid belts. The so-called main belt asteroid (a different version of MBA) lies between Mars and Jupiter. It extends nearly 600 miles and contains more than a million pieces of debris.

In 1958 James Van Allen, a physicist at the University of Iowa, discovered a high energy field of charged particles (ions and electrons) that surround the earth. The belts are named for Van Allen; they protect the earth from radiation. The donut shaped belts are controlled or trapped by the magnetic field surrounding the earth.



Credit: NASA

6. GRAVITY

Gravity is that force that pulls things toward each other. It is invisible but we would be in big trouble without it. The amount of force is determined by two factors:

1. The mass of the objects; the greater the mass the greater the gravitational pull.
2. The distance between the objects, the closer they are to each other the greater the gravitational pull.

Isaac Newton is credited with the gravitational force formula: $F = G(M1 \times M2)/R^2$ where G =gravitational constant = $6.67 \times 10^{-11} \text{ m}^3\text{kg}^{-1} \text{ s}^{-2}$, a very, very tiny number; $M1$ and $M2$ are masses of the bodies and R^2 is the squared distance between the bodies. Supposedly Newton was curious why an apple falling from a tree fell straight down. Gravity is why the earth circles in an orbit around the sun. It is why you come back to land after you jump up. Viewing the formula, if your weight is Mass1 and a planet or moon is Mass2 your weight is given in the following table.

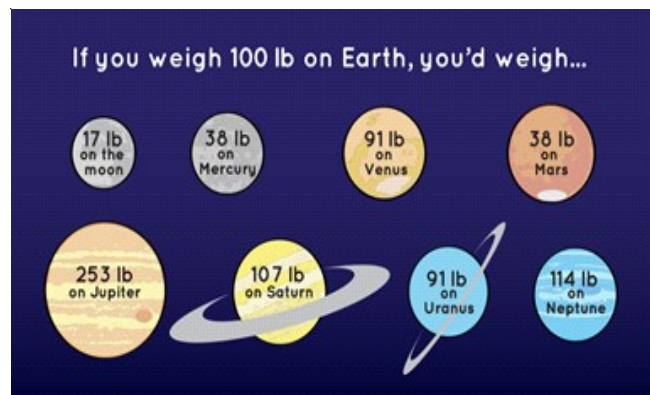


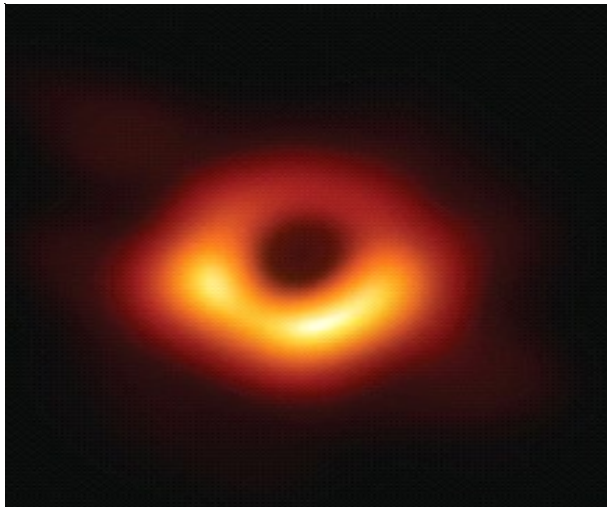
Image credit: NASA

We also experience the effects of gravity with the moon's gravity pulling on the oceans creating tides. Most intriguing is the role of gravity in forming stars and planets by pulling small materials together to form enormous planetary bodies.

In contrast to attractive gravity, Einstein and others) postulated that there is 'repulsive' gravity that pushes bodies away from each other. It is given as an explanation of an increasingly expanding universe due to repulsion of dark energy.

7. BLACK HOLES

When there are insufficient elements to sustain the fusion reaction*, a star dies. Smaller stars are transformed into white dwarfs or neutron stars. Larger stars, five times larger than our sun and larger, collapse and form a black hole.



<https://creativecommons.org/licenses/by/4.0>
 Simulated view of a black hole
 (Image: © Alain R. | Wikimedia Commons)

While nuclear fission is the splitting of atoms used in nuclear power plants and bombs, nuclear fusion is the combining/fusion of two atoms (hydrogen isotopes) with the resulting release of energy. Fusion is the source of the Sun's power. In 2022 we may be close to commercial reality with the reaction producing more energy than it consumes. Advantages of fusion: clear, plentiful supply of raw materials, no waste and safe.

The term 'black hole' was coined in 1967 to describe a cosmic donut hole. This hole is not empty, on the contrary, it is an extreme concentration of matter. Can you imagine 10 suns compacted into an area the size of Chicago? The density, and therefore gravity, within the hole is so great that we believe nothing can escape the BLACK HOLE even light. The term 'event horizon' defines the outer boundary of a black hole. Any object, including light, that passes the event horizon into a black hole cannot return; it is the point of no return.

The concept of a black hole was theorized by Einstein in 1916. He conceived the idea of 'SPACETIME' defined as the combination of the three dimensions of matter (length, width and depth) with time. The four dimensions interactions were first developed in 1907 by Hermann Minkowski.

The theory of relativity suggests that when very large stars die, the remnant is a dense core that becomes a black hole. Steven Hawking in the 1970s stated that black holes emit radiation. Accepting that fact allows indirect observation of black holes. The other rationale for black holes is gravitational pull (accretion) on planetary bodies. It is speculated that a black hole is at the center of every galaxy.

Black holes emit radiation and over billions of years evaporation (decay) results in the disappearance of a black

hole. It is speculated that 'worm holes' exist. That is a story for a future volume. A description can be found: <https://www.scientificamerican.com/video/decoded-what-are-black-holes/?utm>

8. ANTIMATTER

Let's start with matter. We know of solids, gases and liquids. There are also exotic materials such as superconductors, topological insulators and other forms of matter. You can see, feel, and touch matter. So, antimatter is the opposite. At the atomic level each constituent of the atom has its opposite. For example, a negatively charged electron has an opposite charge, an anti-matter positron also referred to as an antielectron.

Antimatter theory was first introduced in 1927 by Paul Dirac. Today, the structure of atoms is studied at physics facilities around the world such as Fermi in the USA and CERN's (the Organization for Nuclear Research) Large Hadron Collider on the Switzerland/France border.

The author only mentions antimatter in this tutorial because it is believed to be produced at the same level as matter at the time of the Big Bang. Where is it today? The Standard Model, discussed later, does not explain antimatter. The future is a moving target with respect to anti matter; there is much to learn.

9. DARK (nonluminous) MATTER

Dark matter (DM), also referred to as the missing mass, is so dark it cannot be seen visually. It emits neither energy nor light. We know it is there because of its gravitational pull. OK, roughly the mix of matters (precise but not necessarily accurate; the figures vary by source; note the pie charts in the next section):

Dark Matter	30.1%
Dark Energy	69.4%
Visual matter	0.5%

A distinction between dark matter and dark energy is that dark matter restrains expansion of the universe while dark energy is responsible for the expansion.

In 1933, Swiss/American astronomer Fritz Zwicky discovered that analyzing a system of stars and galaxies that visual matter represented only 1% (0.5% today's estimate) of the mass required to keep the galaxy together.

There are two types of Dark Matter:

1. Baryons - neutrons, protons and atomic nuclei. What we see in the heavens.

2. Non-Baryons are heavy particles that are not well understood. Weakly Interacting Massive Particles (WIMPs) are particles accounting for the bulk of DM. This is an area under investigation.



galaxy cluster 1E0657-56 (cdn.britanica.com) Composite image showing the galaxy cluster 1E0657-56, the Bullet cluster.

The only constant is change and that is true of matter-energy as shown below.

"Don't shoot for the stars, we already know what's there," she once said. "Shoot for the space in between because that's where the real mystery lies." Vera Rubin (Yeager, A. August 17, 2021. Scientific American).

10. DARK ENERGY

Dark matter pulls 'things' together while Dark Energy (DE) pushes them apart which is referred to as cosmic inflation. It is credited with the expansion* of the universe. The universe is expanding today. The theory is that DE consists of neutrinos and other subatomic particles. It is a

topic not well understood by physicists and certainly not by me. Any interest beyond this please check sources such as NASA.

The Hubble constant measures this expansion, about 46,200 mph per million light-years, or 67.4 kilometers per second per megaparsec in cosmologists' units. (A megaparsec is equal to 3.26 million light years. (Source: Mann, A. July 7, 2021. New measurement may resolve cosmological crisis. Live Science)

11. BOSONS

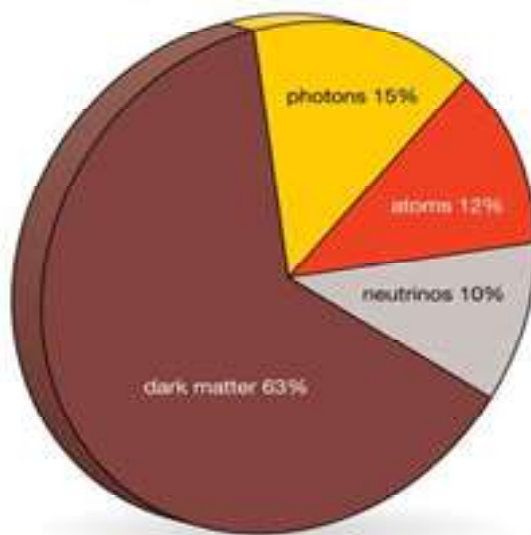
Named after Indian physicist S. N. Bose, Bosons are a family of particles that carry a charge. The family includes photons (an element of electromagnetism), gluons (strong force elements), w and z (weak force elements) and the now famous Higgs. The existence of Higgs was postulated by Peter Higgs in 1964 and confirmed in 2103 at CERN (discussed further under Section 16, Standard Model).

The Higgs boson is associated with the Higgs field that gives mass to other particles such as electrons and quarks. This is a complex topic.

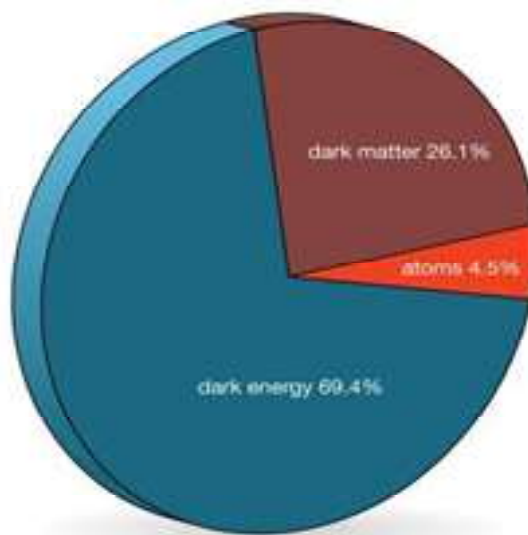
12. NEBULA (NEBULAE)

Nebulae are made of dust and gases. They are particles left from a dying star. In turn, as they aggregate because of gravity, they begin to form satellites that includes new stars.

Matter-energy content of the universe



13.8 billion years ago,
when the universe was 380,000 years old



today

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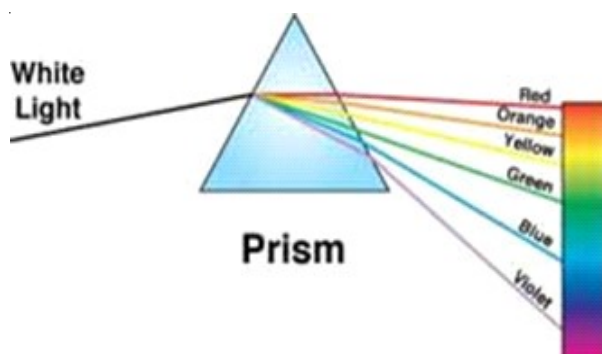
The Eagle Nebula is called the Pillar of Creation.
Credits: NASA, ESA and the Hubble Heritage Team (STScI/AURA)



13. LIGHT

We think of light as a continuous wave or beam. Alternatively, light consists of photons that are light energy particles.

The sun emits 'white' light that is composed of all the colors of the rainbow. When the sun's light passes through a prism or rain drop the light is refracted (bent). The light components are released at different wavelengths separating into different colors.



Source: NOAA SciJinks - All About Weather" <https://scijinks.gov/blue-sky/>

What is a wave? Envision a series of the letter VVVVV...as a wave, the wavelength is the distance between like points on adjoining waves (example, peak to peak). Red components of light have long wavelengths

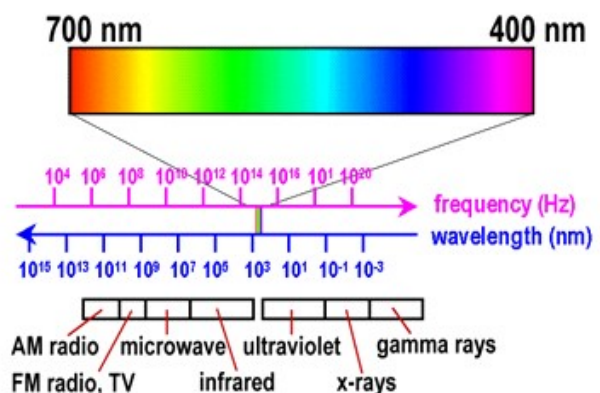
(long distance between peaks) while the blue component is much shorter (about half the wavelength of the red).

In contrast to the extraordinarily large numbers when discussing the cosmos, wavelength is extraordinarily small. Wavelength is measured in nanometers, a nm symbol. A nanometer is one billionth of a meter; a meter is 39.37 inches in length (one inch is equal to 25.4 million nanometers).

Frequency is proportionally the inverse of wavelength. Frequency is a measure of the cycles per second and the measure is the Hertz, named after Heinrich Hertz who in the late 1800s proved the existence of electromagnetic waves. Short wavelengths have high frequency and long wavelengths have low frequencies.

Red sky in the morning or evening is the result of sun light traveling further in the atmosphere. In that passage there are contaminants in the air - water vapor, dust and particulate that scatter the blue light and allow the reds to pass through to a human's eyes.

Earlier we discussed the speed of light, but there is more to understand. First, light is an electromagnetic wave moving at 186,282 miles/second. Second, light consists of a broad range of wavelengths. Humans see only a narrow window of the wavelength - visible light (chart below) from about 400nm to 700nm. Some animals have a broader range of sight than humans. Third, we humans utilize other wavelength ranges (non-visual) such as ultraviolet light for disinfection, lasers and X-Rays for medical examinations. Fourth, astronomers and cosmologists use light to examine the expansion of the universe and the chemical composition of the universe.



www.graphics.lcs.mit.edu/classes/6.837/F01/Lecture01/index.html

Both UV light and visual light are examples of radiant energy (energy from high temperatures to receiving body without the use of an intermediate material). The regions of the electromagnetic wave that are not visual are extremely important such as X-Rays for assessing

medical bone damage, radio waves for communication, microwaves for cooking and UV light for disinfection. In addition to optical telescopes that we use, there are telescopes using other electromagnetic waves such as radio, UV, gamma and X-Ray.

14. **FORCES**

We can't feel forces. We do not feel the force when we drop an apple; we do not see or feel the magnetic field.

GRAVITY is discussed above. In summary, gravity is force that attracts or pulls two objects to each other. The greater the mass of the objects and the shorter the distance between the objects the higher the gravitational force. It keeps us from falling off the Earth as well as keeping planets and satellites in orbit.

ELECTROMAGNETISM is the combination of electricity (the flow of electrons and protons) and a magnetic field. Fundamentally, this force is the key to all chemistry; it is the force that ties all the components of an atom together. It is used in both generating electricity and driving motors. A generator creates electricity that we use in our home. The motor uses electricity in running an electric vehicle, like a Tesla, or a sewing machine.

For our purposes, know that light is a form of electromagnetic radiation and is a fundamental force in understanding the cosmos. Visible light to humans is an electromagnetic radiation wave with a very narrow range. Electromagnetic radiation is analyzed by astronomers to deduce the composition of the early universe, determine the expansion of the universe and to define the chemical composition of cosmic objects.

Number 3 is the WEAK NUCLEAR FORCE. It is enough to state that the weak force, consisting of Z and W bosons, is responsible for radioactive decay, fusion in the sun and in general, the decomposition of atoms

Number 4 is the STRONG NUCLEAR FORCE. Not surprising, its role is to keep the atomic structure together; a gluon is the force particle serving that function. It is considered the strongest of the four forces.

The relative strengths of the forces are extreme, with gravity being a minute fraction of other forces.

(Source: <https://courses.lumenlearning.com/physics/chapter/33-2-the-four-basic-forces/>)

- Strong force 1
- Electromagnetic force 1/100
- Weak force 1/10,.....(13 zeroes)
- Gravity 1/10,.....(38 zeroes)

Gravity is an extremely weak force as masses increase and distance between the two objects decrease the Force of Gravity increases (refer to Gravity section below).

There are discussions suggesting a fifth force - force carrier particles. The discussion concerns decay of the 'beauty' or 'bottom' quark into electrons and muons at differing rates. This is the area of bosons, gluons and other subatomic particles. Accepting this force would aid us in better understanding the universe.

15. **PARTICLE ACCELERATOR**

Particle accelerators generate a beam of charged particles such as electrons, protons and ions to study nuclear forces and the structure and interactions of subatomic particles. By understanding the fundamental elements of atoms, we understand the universe because the universe is composed of these fundamental particles.

Force	Approximate relative strength	Range	Carrier particle
Gravity	10^{-38}	∞	Graviton (conjectured)
Electromagnetic	10^{-2}	∞	Photon (observed)
Weak force	10^{-13}	$<10^{-18}$ m	W^+ , W^- , Z^0 (observed ^[2])
Strong force	1	$<10^{-15}$ m	Gluons (conjectured ^[3])

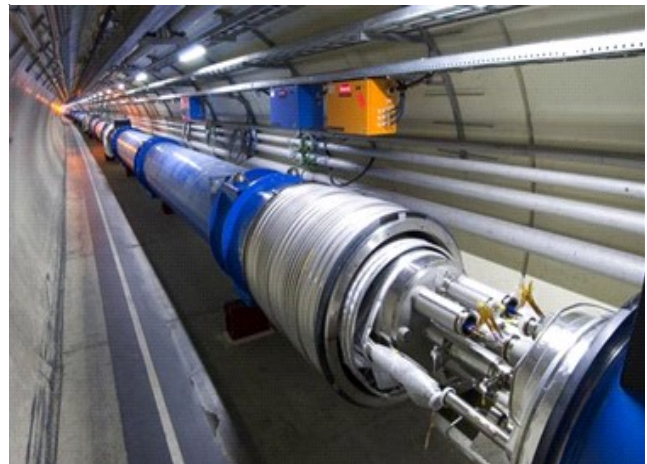
Reference: OPENSTAX.ORG, "23.1 The Four Fundamental Forces"

The components of an accelerator include:

- a tubular enclosure to encase the particles with very little air or particles, in a vacuum environment;
- a generator that produces a beam of charged particles;
- an accelerator that is an electric field that moves the particles at close to the speed of light;
- a magnetic field that manages the path of the particles. They can bend a beam in a circular accelerator;
- Instruments that measure the particle components, mass, energy levels, etc.;
- a detector that is either a target the beam hits and displays an image of subatomic particles or an image when two particles collide.

There are two basic types of accelerators: circular and linear. Fermilab National Laboratory in Batavia, IL (near Chicago) is home to the circular Tevatron accelerator. Fermi scientists discovered two leptons and a quark (discussed below in the Standard model). Fermi is also home to a linear accelerator as well as research on neutrinos, muons and much more. Circular colliders are generally used to analyze heavy proton and ion structures and can be curved by magnets. Linear colliders analyze very light weight electrons.

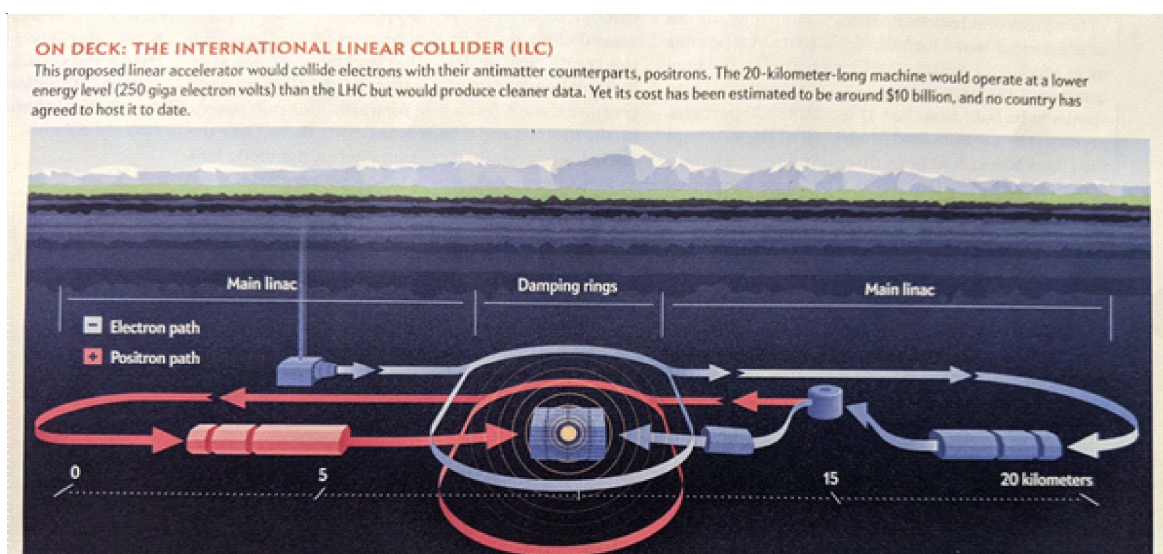
A few miles from Fermilab is Argonne National Lab. It is the home of a 'synchrotron' that generates electrons at extremely high speed - close to the speed of light. Electrons enter a ring and generate X-Ray light (photons) to be investigated. X-Ray diffraction is applied in analyzing the structure of materials, biological elements from toxins to amino acids and many other applications.



<https://cds.cern.ch/images/CERN-EX-0510029-03>

The current state of the art accelerator is the Large Hadron Collider (LHC) in CERN on the Swiss French border (mentioned above under anti-matter). The LHC has a circumference of 27 kms (almost 17 miles) and is the largest and highest energy collider.

In 2012, the LHC collided two proton and discovered the Higgs Boson (see Standard Model section). On the planning table is the future Circular Collider at CERN; it is a 100 km (62 miles) circular accelerator handling proton-proton and electron-positron (the antimatter counter to an electron) particles. In addition, the International Linear Collider, a linear accelerator (most likely located in Japan) is under consideration to analyze electrons and positrons. A plasma collider is also being planned.



16. STANDARD MODEL

The Standard Model (SM) generally refers to particle physics and the formation of the universe. In doing so, its function is to explain the forces noted above. There is one glaring problem, the current model does NOT explain gravity.

It is believed that dark matter accounts for 25% of the universe and dark energy 70%. The remaining 5% concerns particles.

For centuries it was assumed that the atom was the ultimate structure of all matter including a blade of grass, the human body, the stars and planets. The word atom was proposed by the Greek Democritus in 400BC; it means indivisible and it defines the unique chemical properties of elements. Of the 118 elements, 92 are naturally occurring elements such as hydrogen, helium, oxygen and nitrogen.

There are also, to date, 26 synthetic or artificial elements that are not found in nature. They are formed by human intervention by adding protons to an atom via nuclear reactions or using particle accelerators.

In 1869, Dimitri Mendeleev developed the periodic table of elements based on an element's mass and recurring properties. Today the table includes many more elements and isotopes of elements and is based on the atomic number - the number of protons in an atom - not mass.

Backtracking a bit, in 1897 a Cambridge physicist and Nobel laureate Sir Joseph Thomson discovered electrons. Negatively charged electrons are the mechanism to combine elements to produce molecules. In 1911 the nucleus, the core of the atom, was discovered followed in 1932 by discovering the neutron followed by the proton. In basic chemistry class we learned that the negatively charged electron represented a tiny fraction of an atom's mass. The positively charged proton and uncharged neutron represent the mass of the atom. All matter is composed of combinations of atoms including us (humans).

The current SM enters another layer of depth with respect to subatomic particles (17 have thus been defined). In the mid-1960s quarks were described as the ingredients in making protons and neutrons; the six quarks are: up, down, charm, strange, top and bottom. There are six leptons, three of which carry a charge; they are electron, muon and tau. The remaining three are neutral: electron neutrino, muon neutrino and tau neutrino.

A diagram of the standard model would show 6 leptons and 6 quarks surrounding the 4 forces and the bull's eye is the Higgs boson (also known as the 'God Particle'). Peter Higgs, Nobel laureate, predicted an unknown particle in the 1960s; it was only confirmed in 2012. The theory is that the Higgs boson promotes the joining of particles to form stars and other celestial bodies. A decaying Higgs forms charm quarks.

The Standard Model defines the relationships among the elementary particles and the forces (Section 13 discussed above) that influence them. In summary:

- The elementary particles of matter (called Fermion particles) are: electron, a proton consisting of 2 up and 1 down quark; neutron consisting of one up and 2 down quarks. A caveat is that a neutrino, a near massless particle, is also a component of matter.
- The other 4 quarks are: top, bottom, charm and strange.
- There are 3 charged leptons: electron, muon and tau.
- The neutral leptons are: electron neutrino, muon neutrino and tau neutrino.
- The Standard Model consists of three forces with four elementary particles:
 - o Electromagnetism - a photon is the elementary particle producing light and radio waves.
 - o Strong force - gluon is the elementary particle that reacts with quarks and keeps them together. It is the particle that controls nuclear fission.
 - o Weak force - W and Z bosons are the elementary particles that transmit the weak force. It is the force of radioactive decay.
- Last but not least is the Higgs Boson discussed earlier.
- 17 elementary particles: 6 quarks, 6 leptons, 4 force particles (photons, gluons, W & Z bosons) and Higgs.

There is this alphabet soup of particles including mesons, baryons, bosons, gluons, gravitons, W & Z bosons and how many others yet to be defined.

In summary, there is a sublime simplicity in the relationships among the essential particles and the forces that influence them. There remain puzzles. The Standard Model is incomplete in that it does not address gravity, dark matter and the mass of neutrinos.

17. THEORY OF EVERYTHING OR UNIFIED THEORY

It has long been sought and discussed that there should be a theory, a grand unifying theory (GUT), that brings together to explain all physical elements of the universe. We are NOT there yet. An issue is reconciling quantum theory (focus on the atomic level) and relativity (focus on gravitational influences). String theory and M-theory of 11 dimensions perhaps will provide the answer. As has so often been the case, mother nature has her own timetable and methods of discovery.

18. RED AND BLUE SHIFTS

The Doppler effect or shift is named after Christian Doppler who in 1842 referred to the change in frequency and pitch of sound (and light) as an emitted sound wave from a source such as a train or ambulance when it approaches a person and then passes. As the train approaches you the sound increases in pitch and as it passes you the pitch decreases. In approaching a person or object, the waves are compressed - the blue shift- as the train passes the waves are lengthened - the red shift.

That same red shift is used by astronomers to estimate the expansion speed of the universe.

In our daily lives we often see red skies in the morning and evening. Light from the sun travels further those times of the day. The sun's blue rays are scattered and the red rays can penetrate the atmosphere.

There are many other topics for you to ponder such as: worm holes, singularity, string theory, event horizon, beauty quarks, odderons (tripe glue balls), muons, cosmic waves, fifth force (<https://www.livescience.com/fifth-force-could-exist.html>), gravitational waves, swirlons (<https://www.livescience.com/swirlonic-matter-unusual-behavior.html>), matter-antimatter symmetry, gravitons and many others. Another question is whether the laws of physics as we understand them apply to anti-matter and dark holes.

19. THE EARTH'S MAGNETIC FIELD

The magnetic field is a shield against extreme radiation from the Sun. The shield disperses solar winds.

The winds contain charged particles, electrons, that would destroy the ozone layer. That is significant because the ozone layer protects 'us' from harmful ultraviolet rays. Aurora Borealis (northern lights) and Aurora Australis (the southern lights) are a result of the electrons hitting the upper atmosphere as they approach the Earth's magnetic fields.

The magnetic field is created by the heat induced movement of molten iron and nickel in the Earth's outer core. The core is approximately 1,800 miles below the surface, and the magnetic field extends into the outer atmosphere.

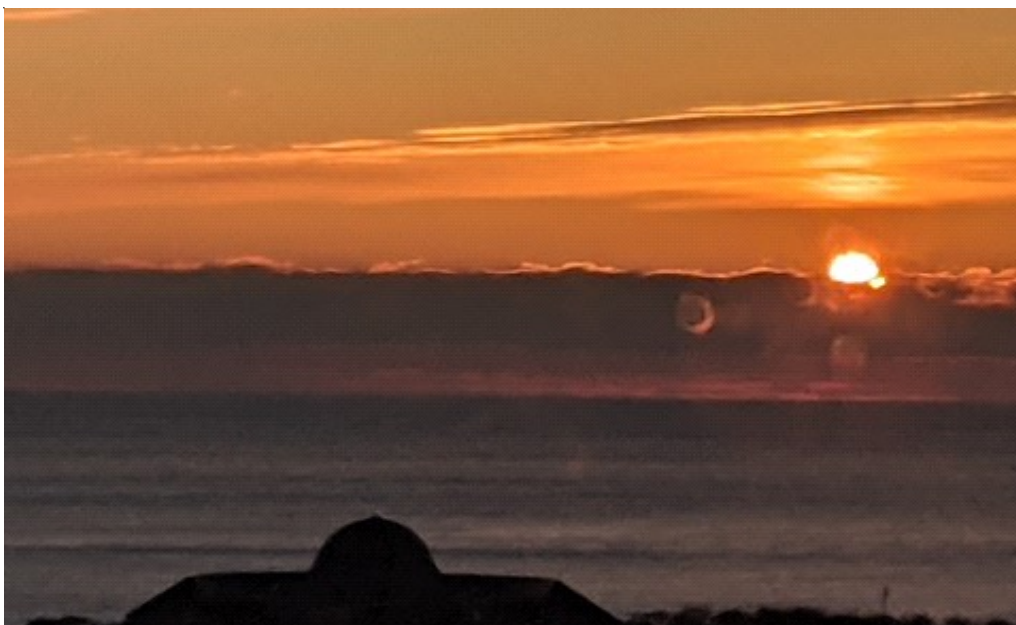
The magnetic field is not fixed; every several thousand years the poles reverse where north becomes south and south becomes north.

CONCLUSION:

It is the author's hope that this exploration of the cosmos and the concepts examined in this article will promote a deeper understanding of science. In addition, this explanation enables teachers to have another tool that offers them ways to motivate their students to explore the cosmos, biology, physics and chemistry.

The awe the study of the cosmos engenders, explorations of human existence, and the pursuit of scientific knowledge are aspects of our education that we should cherish. Our teachers are guides who work every day to show us what we do not know already.

Edward Lyons, Ph.D., is a graduate of Virginia Tech.



Book Review:

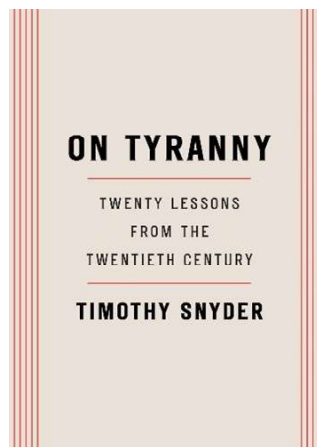
On Tyranny: Twenty Lessons from the Twentieth Century

By Timothy Snyder

Reviewed by Dr. Robert J. Manley

Timothy Snyder is the Levin Professor of History at Yale University who has studied and written extensively about 20th Century democracies and their rise and decline in central and eastern Europe. In his book *On Tyranny* (2017), he presents twenty lessons regarding tyranny and the fall of democracies.

As the world imposes economic sanctions in response to Putin's attack on the people of the Ukraine (February 2022) and Ukrainians fight back to defend their nation and its emerging democracy, educators, historians, teachers, and students of history need to reflect on how democracies are corrupted. In Chapter One, Professor Snyder details how a tendency in some people to accept anticipatory obedience gives an authoritarian the power to motivate people to compromise values. He describes how some people are open to authority figures and willingly sign onto an authoritarian's movement to suppress other people. He presents an analysis of the rise of Hitler and the Nazi regime in the 1930s to illustrate his warnings against authoritarian movements in the 21st Century.



Teachers of history would benefit from the clarity that Professor Snyder's stark language in this small book reveals about the dangers all democracies face in the present time. He observes "...people and parties who wish to undermine democracy and the rule of law create and fund violent organizations that involve themselves in politics" (p. 43).

In Chapter 10, Professor Snyder outlines Victor Klemperer's modes of how truth dies in totalitarian regimes under the influence of: 1. Open hostility to verifiable reality; 2. Incantation of repeatable slogans designed to make lies acceptable; 3. Embrace of contradictions that destroy objective truth and; 4. Misplaced faith where belief replaces rational thinking.

Why is this book, *On Tyranny*, so important for teachers of history to read? Because Professor Snyder shows how the internet is used to create misinformation and private information to form a "mob" and how easily it is for citizens to trade real freedom for false safety (pp. 75-101).

Towards the end of the book, Professor Snyder discusses the difference between a nationalist and a patriot. He uses the words of Orwell in his book *Nineteen Eighty-Four* to teach us that a nationalist broods about power, victory, defeat, revenge and is uninterested in universal values, aesthetics, and ethics.


Professor Snyder declares that democracies fail when citizens declare "it can't happen here" instead of recognizing "it can happen here" and have the courage to stand against the loss of freedom and democracy.

Professor Snyder's book helps history teachers and other educators recognize that we are not any wiser than the Europeans who saw democracy yield to fascism. He shows us how we can learn from the experiences and the history of those who came before us.

Author: Timothy Snyder

Publisher: Crown; 1st edition (February 28, 2017)

Reviewed by Dr. Robert J. Manley, Dean, Dowling College, School of Education (Ret.)



The advertisement features a photograph of four diverse professionals (three men and one woman) standing outdoors in front of a building. A large red banner is overlaid on the photo with the text "ENHANCE YOUR CAREER WITH A LEADERSHIP DEGREE". To the right of the photo, the URL "stmarys-ca.edu/leadership" is written vertically. Below the banner, the text reads: "Master's, Credential, and Doctoral Programs designed for working professionals. Come Change The World With Us". At the bottom, contact information for the Kalmanovitz School of Education is provided, along with the college's logo and the motto "INSPIRE LEAD EDUCATE".

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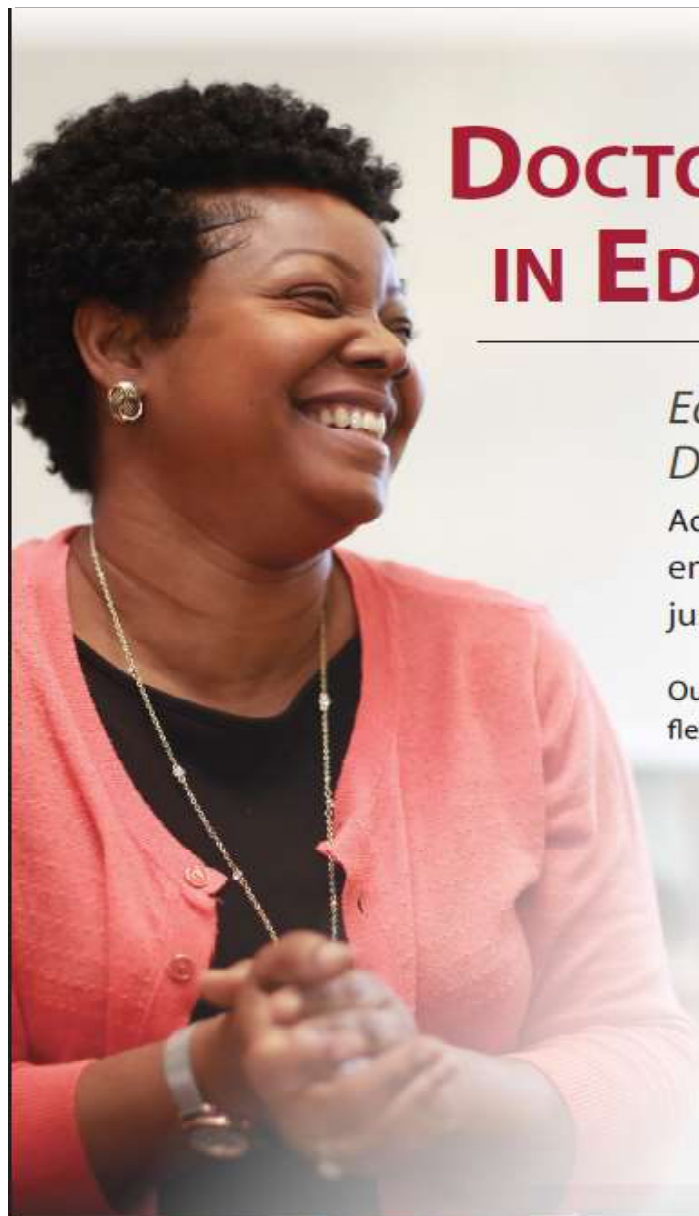
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