January 2025

NASET Special Educator e-Journal

Exceptional Teachers Teaching Exceptional Children

Table of Contents

Special Education Legal Alert

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This month's update identifies two recent court decisions that respectively revisit the issues of identification (child find and eligibility) and FAPE (procedural and substantive) in varying fact patterns. For previous monthly updates and related publications, see **perryzirkel.com**

On September 26, 2024, a federal district court in Tennessee issued an officially published decision in *G.E. v. Williamson County Board of Education*. Based on the student's behavioral and attendance problems in grade 5, the counselor met with the parents, who explained that he was under treatment for anxiety and depression. Despite the student's continuing problems, including panic attacks, the district did not evaluate him until the end of grade 6. The evaluation encompassed multiple sources of information, including passing grades; private psychological and medical diagnoses; parent, student, and teacher interviews; various testing and checklist results; and attendance records. In grade 7, after determining that the student did not need special education, the district provided various best-practice interventions via homebound instruction starting in October, when the student was admitted to a partial hospitalization program. The parents filed for a due process hearing, raising child find and eligibility claims under the IDEA and Section 504 for grades 5–7.[1] First, after a 12-session hearing, the administrative law judge (ALJ) decided in the district's favor. Second, upon the parents' appeal, the federal district court sent the case back to the ALJ for "lifting almost verbatim" the core of her decision from the district's filings. Third, the ALJ issued a new decision that was in favor of the district. Finally, the parents again appealed to the federal district court, raising various challenges under the IDEA and Section 504.	
First, the parents challenged the failure to apply the difference between the IDEA and Sec. 504 for child find based on Sec. 504's broader definition of disability.	The court rejected this challenge because the parents' claims were limited to the overlap between the IDEA and Sec. 504 instead of extending to showing how the student's mental health impairment substantially limited a major life activity.

[1] Tennessee is one of a handful of states in which hearing officers also have jurisdiction for Sec. 504 claims.

Second, the parents challenged the overreliance on their child's academic performance in determining that the student was not eligible under the IDEA for emotional disturbance (ED) or other health impairment (OHI).	Rejecting this challenge, the court ruled that the ALJ did not solely rely on academic performance, but rather considered the student's social and behavioral circumstances in determining whether his mental health conditions adversely affected his educational performance, which is required for both ED and OHI.
Third, the parents argued that the district's provision of services resembling special education showed a violation of its IDEA identification obligation in grade 7.	Rejecting this challenge, the court ruled that this argument "shrinks the various elements needed to establish an IDEA child-find claim into a single-factor analysis" and does not per se establish the need prong for IDEA eligibility.
This case illustrates (a) the ultimately fuzzy boundaries of child find and eligibility, (b) the similarly fact-intensive interplay between the IDEA and Section 504/ADA, and (c) the ups and downs of the ponderous adjudicative process, which here included a state hearing officer system with concurrent jurisdiction for IDEA and Sec. 504 claims, a full-time panel of ALJs, and a problematic writing short-cut. Stay tuned, because the case is now on appeal to the Sixth Circuit.	

On October 31, 2024, the Eleventh Circuit Court of Appeals, which covers Alabama, Florida, and Georgia, issued an unofficially published decision in *I.S. v. Fulton County School District*. The student in this case is a teenager with an IEP for autism and ED and with a history of severe anxiety, school phobia, and self-harm. He has a high level of both academic capability and school refusal. In his first year of middle school, his parents enrolled him in a specialized private day school. His emotional and school-refusal challenges continued intermittently, leading to changes to three other private schools during the next two years. He returned to the original private school for grade 9, when he made significant progress in overcoming his anxiety and school refusal. He took a full load of classes and achieved an A average. At the end of that school year, his parents filed for a due process hearing, seeking reimbursement for his tuition there. The school district settled, agreeing to pay for his tuition for grade 9 and continuing in grade 10 unless he experienced a significant change in functioning, whereupon the IEP team would meet to consider revising his IEP and placement. Two weeks after the start of grade 10, he again refused to attend school. The IEP team met several times between September and December, with the goal of gradually returning him to the private school for continued success. The school district retained a behavior analyst to develop a gradual reentry plan that would take several weeks for full-time return. In the meantime, the school district offered to send a certified teacher to the home to help the student complete online coursework so that he could earn credits toward high school graduation. In the middle of the year, the parents notified the district of their intent to move him to an out-of-state residential therapeutic placement at district expense. The district opposed the move as premature and revised the IEP in January to provide the proposed home instruction and reintegration plan. Disagreeing, the parents proceeded with the unilateral placement, where the student was so successful that he transferred after six months to a standard boarding school for the duration of his high school education. They filed for a due

process hearing to seek reimbursement for the six months at the residential therapeutic placement. The ALJ ruled that the district's proposed homebound/reentry IEP was appropriate, thus denying the requested reimbursement. Upon the parents' appeal, the federal district court affirmed the ALJ's decision. The parents then sought review by the Eleventh Circuit based on several alternate grounds.	
First, the parents claimed denial of FAPE based on the alleged procedural violation of predetermining the child's home-instruction placement.	The appellate court rejected the predetermination claim based on the case record showing that (a) the IEP team only used home instruction as a stopgap as part of the systematic plan to restore the original agreed-upon placement at the private day school, and (b) the team duly considered the parents' proposed residential placement and its timing.
Second, the parents also alleged a procedural denial of FAPE due to the lack of a functional behavioral assessment (FBA) and behavior intervention plan (BIP).	The appellate court also rejected this claim, concluding that (a) the behavior analyst collected sufficient information for a gradual "demand-fading" reentry process with notable communication to and participation by the parents, and (b) the lack of an FBA-BIP did not result in requisite loss to the student or parents.
Third, the parents claimed that the January IEP did not meet the *Endrew F*. substantive standard for FAPE.	Disagreeing, the appellate court concluded that the IEP was reasonably calculated for appropriate progress under the circumstances, which included the parents' rejection of the district's offer of services and their delays in providing access for the behavior analyst.
Finally, the parents added to their substantive challenge the lack of counseling in the IEP.	Again drilling down to the record in this case, the appellate court pointed to the parents' rejection of the district's offer of counseling, opting instead to engage a private therapist.
This case illustrates the harmless-error approach for adjudication of procedural FAPE, the flexibility of the *Endrew F*. substantive standard, and the variation among courts as to examining only the contents of the IEP or also the balance of the equities in the parent-district conduct.	

Buzz from the Hub

Voluntary Self-assessment for States to Support Military-connected Children with Disabilities and Their Families Under the IDEA.

OSEP has released a two-part self-assessment as a voluntary technical assistance tool to assist States in supporting military-connected children with disabilities served under the Individuals with Disabilities Education Act.

https://sites.ed.gov/idea/idea-files/voluntary-self-assessment-for-state-to-support-military-connected-children-with-disabilities-and-their-families-under-the-idea/

Supporting Military Families

Being part of a military family can be filled with many surprises, challenges, and opportunities. Part of the military life is moving to new locations every few years or even more frequently. This can be a bit more challenging when there's a child in the family who has a disability. Fortunately, there is help available to make the family's transition from one location to another a bit more smoothly. On CPIR's *Supporting Military Families* page you will find organizations and resources that will be of help.

https://www.parentcenterhub.org/military/

Sesame Workshop Extends Partnership with Dicapta to Bring Plaza Sesamo in ASL to Children Across the U.S.

Sesame Workshop and Dicapta are thrilled to announce the expansion of their partnership with the official launch of American Sign Language (ASL) versions of Plaza Sésamo content. This collaboration, supported and funded by the U.S. Office of Special Education Programs-OSEP, aims to allow U.S. Hispanic children who are deaf or hard-of-hearing and their families enjoy the educational and entertaining content of Plaza Sésamo while practicing and improving their ASL skills.

https://www.dicapta.com/ver2022/en/blog/15-blog-news/646-sesame-workshop-extends-partnership-with-dicapta-to-bring-plaza-sesamo-in-asl-to-children-across-the-u-s

Using Functional Behavioral Assessments to Create Supportive Learning Environments

The Office of Special Education and Rehabilitative Services (OSERS) and the Office of Elementary and Secondary Education (OESE) have jointly released guidance on the use of functional behavioral assessments (FBAs) for all students whose behavior interferes with learning.

https://sites.ed.gov/idea/idea-files/using-functional-behavioral-assessments-to-create-supportive-learning-environments/

Compendium to the Delivery of Pre-employment Transition Services (Pre-ETS)

This guide from the National Technical Assistance Center on Transition (NTACT) highlights Pre-Employment Transition Services within the Continuum of VR Services. This resource was developed as a collaboration between Vocational Rehabilitation (VR) and Local Education Agencies (LEA).

https://transitionta.org/pre-ets-compendium/

Traveling with a Disability

The holiday season can be a time of joy, but for young adults with disabilities, it can also present unique challenges. Finding the right resources, like the sites listed below, to support them can make a big difference in ensuring they have an enjoyable and fulfilling experience.

https://accessiblego.com/home

https://wheelchairtravel.org/

Assessment Aligned with Alternate Academic Achievement Standards

This memorandum from the U.S. Department of Education outlines the requirements for states seeking a waiver of the 1% cap on the number of students who can take alternate assessments aligned with alternate academic achievement standards (AA-AAAS) in the school year (SY) 2024-25 assessment.

https://www.ed.gov/media/document/memo-states-regarding-requirements-waiver-of-10-percent-cap-alternate-assessments

The Pyramid Model for Promoting Social-Emotional Competence in Infants and Young Children (Pyramid Model)

The Pyramid Model is a framework of evidence-based practices for promoting young children's healthy social and emotional development and it works in conjunction with a program's curriculum, but is not a curriculum itself. The Pyramid Model provides guidance for: early childhood special education personnel, early intervention personnel, early educators, and families.

https://challengingbehavior.org/pyramid-model/overview/basics/

Empowering Education Leaders: A Toolkit for Safe, Ethical, and Equitable AI Integration

On October 24, 2024, the U.S. Department of Education Office of Educational Technology (OET) released a 74-page toolkit designed to help K-12 leaders integrate artificial intelligence into their districts.

https://tech.ed.gov/files/2024/10/ED-OET-EdLeaders-AI-Toolkit-10.24.24.pdf

IDEAs That Work Now on sites.ed.gov/IDEA

The Department's Office of Special Education Programs (OSEP) has moved the IDEAs That Work website content. Information and resources can now be found on the Individuals with Disabilities Education Act (IDEA) website.

https://sites.ed.gov/idea/

Intersection of Mental Illness and Disability During Transition

Students with disabilities can also experience co-occurring mental health issues. This is particularly true of children with developmental disabilities with ranges from almost 34% to 59% prevalence. This RAISE guide covers strategies to support students with disabilities and co-occurring mental health issues as they transition into adulthood.

https://raisecenter.org/wp-content/uploads/2024/10/RAISE-guide-on-disability-mental-illness-and-transition-revised.docx.pdf

How to Weigh the Risks of Disclosing a Disability. A guide to help you decide — and find support.

Disclosing a challenging health condition at work can be risky. You may get the accommodations you need, but you may also be met with suspicion, resentment, and accusations of making it all up. In this article, the author discusses why disclosure is challenging, how to decide whether the risk is worth taking, and how a network can support you.

https://www.parentcenterhub.org/buzz-november2024/

5 Culturally Responsive Family Engagement Strategies

Educators can strengthen the relationship between home and school by making families feel welcome and included. In this article five ways to strengthen the partnership with families are summarized.

https://www.edutopia.org/article/5-culturally-responsive-family-engagement-strategies

National Clearinghouse for English Language Acquisition (NCELA): Family Toolkit

The English Learner Family Toolkit was created to help families choose education services that meet their child's needs. U.S. educators, elementary and secondary school teachers, principals, and other school staff can also share the toolkit as a resource for English learners and their families.

https://ncela.ed.gov/educator-support/toolkits/family-toolkit

State of Early Childhood Education in Big Ten States

The Big Ten Early Learning Alliance (BTELA) has just published an inaugural brief on the state of early childhood education in Big 10 states. It emphasizes the importance of early education, highlights disparities in funding and access, and notes the impacts of these on children's development. The report also suggests policy changes to improve outcomes, such as increased investment and equitable resource distribution.

https://btela.osu.edu/our-work/state-of-early-childhood-education-in-big-ten-states/

Equity in Data: Where to Start!

Are you looking to address disparities in early intervention and early childhood special education systems and promote more equitable practices and outcomes? Knowing where to start can be challenging, but taking one step forward and starting is critical. The **DaSy Center** developed a guide, *DaSy Data Inquiry Cycle*, to support Part C and Part B 619 program staff in addressing equity considerations at each stage of the data inquiry cycle.

https://dasycenter.org/data-inquiry-cycle/

A Summary of the Research on the Effects of K–12 Test Accommodations: 2022

Research on test accommodations provides valuable information that informs policy and practice. The **National Center on Educational Outcomes (NCEO)** recently published *A Summary of the Research on the Effects of K-12 Test Accommodations: 2022*. This report presents research literature published in 2022 on testing accommodations for U.S. elementary and secondary students in kindergarten through 12th grade.

https://nceo.umn.edu/docs/OnlinePubs/NCEOReport444.pdf

Inclusive Occupations podcast

Episode: The Inclusive Education Roadmap- Part 1- Dr. Diane Ryndak

In this first part of the two-part series on the Inclusive Education Roadmap (IER) by the **TIES Center**, Dr. Diane Ryndak gives us a general overview of the work done for sustainable systemic change in inclusive education at the state, district, and school. After getting together a diverse Equitable Inclusive Leadership Team (EILT), the second step of the Inclusive Education Roadmap is called RISE (Reflecting on Inclusive Systems of Support). The school Leadership Team is led to deeply reflect and engage in critical discussions about their system's current use of inclusive educational practices for all students, including students with significant cognitive disabilities.

https://www.inclusiveoccupations.com/podcast/episode/1d9b4aca/the-inclusive-education-roadmap-part-1-dr-diane-ryndak

Groundbreaking Study: Anti-trans State Laws Increased Suicide Attempts By 72%

In a groundbreaking study published in Nature Human Behavior, researchers found that anti-trans bans lead to a 72% increase in suicide attempts among transgender individuals, compared to states without such legislation. The study is the first study of its kind and could have far-

reaching international implications as more countries face pressure to implement similar restrictions on transgender people.

https://www.erininthemorning.com/p/groundbreaking-study-anti-trans-state

Youth Engagement Now (YEN)

Explore resources developed by youth with disabilities across the country to access tools to successfully engage and involve youth partners in projects to support impactful change. The site features tools focused on foundational principles, leadership development, and effective collaboration. Key areas include disability training, advocacy, community building, and event planning. It also offers a podcast, YEN Talks, for further insights.

https://yen.transitionta.org/

Resources from the *National Research Center for Parents with Disabilities*

Serving Parents with Disabilities: **The National Research Center for Parents with Disabilities** has a range of resources for parents with disabilities and those who support them covering a variety of topics such as child welfare law and its effects on parents with disabilities, firsthand narratives from disabled parents about how they raise their children, and advice for professionals working with specific populations of parents with disabilities.

https://heller.brandeis.edu/parents-with-disabilities/

Best Practices for Adhering to Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) Requirements

The **Center for Medicaid and CHIP Services (CMCS)** released important guidance regarding the coverage requirements for eligible children and youth who are enrolled in Medicaid and the Children's Health Insurance Program (CHIP). The guidance, *Best Practices for Adhering to Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) Requirements*, is in the form of a State Health Official letter. This guidance is designed to help states strengthen their implementation of EPSDT requirements to improve health outcomes.

https://www.medicaid.gov/federal-policy-guidance/downloads/sho24005.pdf

A Practical Guide for State Teams to Increase Inclusion in Early Childhood Programs

This comprehensive resource, A Practical Guide for State Teams to Increase Inclusion in Early Childhood Programs, is designed to help state leaders and advocates use data to promote more inclusive policies for young children in early care and education settings. The guide emphasizes the importance of inclusion from both human rights and equity perspectives, advocating for all children, especially those with disabilities, to have access to high-quality, inclusive early education.

https://nieer.org/sites/default/files/2024-08/nieer_research_report_template_inclusionguide_august2024_ad_1_1.pdf

StopBullying.gov

When adults respond quickly and consistently to bullying behavior they send the message that it is not acceptable. Research shows this can stop bullying behavior over time. StopBullying.gov provides information from various government agencies on what bullying is, what cyberbullying is, who is at risk, and how you can prevent and respond to bullying. Check out their tip sheet, Bullying and Children and Youth with Disabilities and Special Health Needs, specifically for how to support youth with disabilities and special health needs.

https://www.stopbullying.gov/sites/default/files/2017-09/bullyingtipsheet.pdf

Want to Learn More About Technology & Youth Mental Health?

The Child Mind Institute's Technology and Youth Mental Health webinar series brings together researchers, advocates, and tech thinkers to explore crucial questions, such as: What is the relationship between social media and mental health? How can we advance research on this relationship using real world data? Click here to watch the webinars and interviews in the series

https://childmind.org/science/public-health-epidemiology/technology-youth-mental-health-series/

My Life is Worth Living
My Life is Worth Living includes five powerful stories told over 20 episodes. In each episode, relatable teen characters wrestle with challenges that are all too familiar for many viewers and discover strategies to cope when it feels like their own thoughts are against them. Over the course of each character's journey, they realize that life is worth living. Watch the videos here.
https://mylifeisworthliving.org/

MCH (Maternal and Child Health) Bridges: The official podcast of the Association of Maternal and Child Health Programs (AMCHP)

Episode #15: Youth Perspectives on Mental Health: Supporting the Next Generation

Three members of The Adolescent Champion Teen Advisory Council (TAC TAC), Melanie Avila, Fanta Guindo, and Yeina Han, share what adolescent and young adult mental health looks like in their communities, what they have experienced, and what needs to change. This episode talks about important concepts like positive youth development, youth-friendly services, and culturally competent care. It also identifies strategies for addressing barriers to youth seeking and accessing mental health services. Listen to this podcast episode here.

https://mchbridges.buzzsprout.com/1837581/episodes/12824655-episode-15-youth-perspectives-on-mental-health-supporting-the-next-generation

Parents Under Pressure: The U.S. Surgeon General's Advisory on the Mental Health & Well-Being of Parents

The Surgeon General released an Advisory regarding the mental health of parents/caregivers. This Advisory recognizes the critical role of parents and caregivers in our society and the importance of both reducing their stress and protecting their mental health and well-being. It explores the unique stressors that parents and caregivers face; the impact of these stressors on the mental health and well-being of parents, caregivers, and children; and the policies, programs, and cultural shifts we need to make to allow parents and caregivers to flourish and thrive. Read the Advisory here.

https://www.parentcenterhub.org/buzz-mental-health-and-bullying-resources/

Help Wanted: Early Intervention and Early Childhood Special Education Workforce Needs Findings from a National Survey

The ED-funded Early Childhood Personnel Center collaborated with the National Institute for Early Education Research and recently released report findings from a national survey of the early intervention and early childhood special education workforce. The goal was to obtain a national picture of the EI/ECSE workforce's education, credentials, pre- and in-service training, and knowledge about EI and ECSE. This report summarizes the main findings from the survey. Read More

https://nieer.org/sites/default/files/2024-05/may_2024_early_intervention_and_early_childhood_special_education_workforce_needs_findings_from_a_national_survey_.pdf

IEPs vs Service Plans: Everything You Need to Know!

Are you considering sending your child with special needs to a private school? More and more families are considering this as an option. However, many differences exist when it comes to sending your child with special needs to private schools. While public schools are required to offer special education services, private schools aren't. Public schools can provide learners with special needs supports and services to best meet the students' educational needs in their IEPs, whereas private schools may offer learners Service Plans. But what is the difference between the two? Read More

https://www.thetechedvocate.org/ieps-vs-service-plans-everything-you-need-to-know/

Youth Employment: A Foundation for Mental Health and Well-Being

In May, the department launched a new webpage (www.dol.gov/youthmentalhealth) devoted to young people's mental health needs. Whether you're a young person, part of the workforce system, an employer, or a policymaker, everyone has a role supporting young people's well-being by helping more young people access the mental health resources they need and get into good jobs that they can build a healthy life around and thrive. The Department of Labor encourages everyone to explore the content and share with the department what they are doing in their community on this important topic by submitting their stories through their new webpage. Compiling these stories and sharing them helps spread the word about youth mental health. Contribute today (https://www.dol.gov/general/mental-health-at-work/youth#wufoo-mc4aghb05xz2v0), and your story may be shared on a department platform.

Involving Teens and Young Adults in Selecting Assistive Technology

This 4-page resource helps families involve teens and young adults in learning about and selecting assistive technology (AT). An important goal for older students is to understand the areas in which technology can support them in their educational and employment goals. The tip sheet encourages students to advocate for themselves, and to take an active role in selecting assistive technology to address their needs. Read More

https://www.parentcenterhub.org/involving-youth-in-selecting-assistive-tech/

Six Global Lessons on How Family, School, and Community Engagement Can Transform Education

Stronger family, school, and community partnerships help ensure that relational trust is at the foundation of schools, and that all the actors can work together toward a shared vision of education in their communities. This shared vision of education is critical to education systems transformation.This report is the result of the participation of hundreds of students, families, school educators, and researchers who dedicated their time and energy to investigating the critical role that families and communities play in ensuring students and schools can flourish. Read More

https://www.brookings.edu/wp-content/uploads/2024/05/Final-Six-Global-Lessons_EN_24June2024_web.pdf

Frequently Asked Questions: Social Security Administration, Supplemental Security Income, and Social Security Disability Insurance – Can I work if I receive social security benefits?

This FAQ provides people with disabilities and their families an overview on social security benefits and answers common questions about these benefits and employment.

https://leadcenter.org/resources/financial-toolkit-frequently-asked-questions/

Summer Learning Tips to Go! Text Messaging Service

The Summer Slide is real! While we are all looking forward to the long days relaxing and making the best memories with our children, we must remember to sprinkle in some fun learning throughout our summer adventures. We found the perfect resource for families to do just that and avoid the summer learning loss! Sign up for summer learning tips sent right to your phone, in English or Spanish, from Start with a Book.

https://www.startwithabook.org/reading-tips-text-messages

Cartoons Available with American Sign Language

The ED-funded Bridge Multimedia now has some of children's favorite

Public Broadcasting Service cartoons available in American Sign Language, thanks to ED's Office of Special Education Programs funding. Check out full episodes of "Alma's Way," "Daniel Tiger's Neighborhood," and more.

https://pbskids.org/videos/american-sign-language-full-episodes

Unstuck: The Special Education Podcast

Discussions between two professionals related to current trends and topics affecting the world of special education. They pull from a combined 40 years in the field to share stories, insight and potential solutions.

https://podcasts.apple.com/us/podcast/unstuck-the-special-education-podcast/id1604000975

Special Education Inner Circle

The Special Education Inner Circle podcast is hosted by Catherine Whitcher, M.Ed., founder of the Master IEP Coach® Mentorship + Network. Get your notebook ready as Catherine brings you real-world strategies for everyone at the IEP table. With her family's experience in the disability community and her journey from Special Education classroom teacher to IEP expert, Catherine knows what it takes to prepare students and families for the future. Get ready to be inspired and learn actionable steps you can take immediately to change your special education experience.

https://podcasts.apple.com/ca/podcast/special-education-inner-circle/id1484686234

Commemorating the 25th Anniversary of Olmstead

ICYMI: On June 20th The U.S. Department of Justice and the U.S. Department of Health and Human Services' Administration for Community Living and Office for Civil Rights celebrated

the 25th anniversary of the landmark Olmstead v. L.C. Supreme Court decision, which ruled that unjustified segregation of people with disabilities is a form of unlawful discrimination under the Americans with Disabilities Act (ADA).

https://www.youtube.com/live/EYsDx5ogzLc?feature=shared

Ruby Bridges' Legacy: Bridging Community, Healing, Health, and Unity

By Dr. Marianne Infante, M.Ed., OTD

On November 14th, as I participated in Ruby Bridges Walk to School Day, I couldn't help but reflect on the deeper meaning behind this shared experience. The concept of the "walking school bus"—where parents and children walk together in a safe, organized group to school—felt more than just a way to get to class. It was a moment of connection, unity, and community building. Walking alongside other parents and children, I thought about how different Ruby Bridges' experience must have been. When Ruby bravely walked to school as the first African American student at William Frantz Elementary in 1960, she faced unimaginable isolation and trauma. She did not have the safety of a supportive, united community around her. Instead, she was met with hostility and hatred, all because of the color of her skin.

This contrast struck me deeply. The walking school bus is not just a physical act—it's a metaphor for what community can be. It fosters a sense of belonging, care, and shared purpose. It also promotes health, something that's especially significant in the wake of the trauma caused by the pandemic. But beyond just physical health, it's important to remember the concept of *whole child health*—the idea that health is not just about the physical body, but also about emotional, social, and mental well-being. The collective sense of support I felt that morning reminded me of how powerful it is to create spaces where students, parents, and teachers walk side by side—both literally and figuratively—towards healing and well-being. Ruby Bridges' legacy of courage and resilience adds even more weight to this concept. In many ways, Ruby's story is a reminder of the need for communities to be unified in their commitment to inclusion, support, and equality—values that are essential for the health and development of every child.

As we walked together, I had the opportunity to share Ruby Bridges' story with some of the other community members. It was inspiring to see the impact of her legacy on the students, teachers, and parents who participated in the walk. After learning more about Ruby and the powerful idea that one person can truly make a difference, we reflected on the need for inclusion in every aspect of our society. Ruby's fight for equality and justice was not just for herself, but for all of us. Her courage opened doors for many others, and as we honored her legacy, we realized how deeply relevant her story is today.

In a survey conducted after the event, every participant expressed how impactful it was to honor Ruby Bridges' legacy. One participant shared a particularly moving thought: "Seeing the students

and their teachers gather to honor the values that helped America do the right thing for all Americans those many years ago—equality for all—was inspiring." This quote resonated with me, as it reinforced the idea that Ruby's work and sacrifices still matter today. Her fight for equality helped shape the future, and honoring that history helps us move forward together.

Yet, as I reflected on Ruby's story, I also thought about another moment in history that deserves our attention—the Berwyn School fight in Pennsylvania. Much like Ruby, many children in Berwyn endured their own struggles with discrimination and trauma. Parents were even jailed as they fought for their children's right to an equal education. The stories of these children and families, while not as widely known as Ruby's, are also part of our collective history and deserve to be shared with students today. It's important to remember that the fight for justice and inclusion was not just limited to one person or one place; it was—and continues to be—a movement that spans generations.

There are multiple critical messages I hope to convey through Ruby Bridges Walk to School Day, especially for the next generation. One of the most important is the need for a *trauma-informed, inclusive educational environment* that prioritizes whole child health. Ruby faced unimaginable trauma during her integration into the school system, and her story highlights the importance of creating supportive environments for all children. We must work to prevent future harm by providing spaces that are not only inclusive but also safe and nurturing, where every child feels seen, heard, and valued. Whole child health means addressing the needs of children not just academically, but physically, emotionally, socially, and mentally.

In addition to the lessons on trauma and inclusion, it's important to educate students about the historical events that played a significant role in the development of special education during the 1970s. Key milestones in the state include the *Pennsylvania Association for Retarded Citizens (PARC) v. Commonwealth of Pennsylvania* case in 1971, which led to the landmark ruling that children with intellectual disabilities must be provided a free and appropriate public education. The struggle for the inclusion of students with disabilities was another vital fight for justice, one that parallels Ruby's journey. While these movements had different focal points, they shared a common thread: they were both about ensuring that all students, regardless of race, ability, or background, had access to the education they deserved.

These struggles, however, have left deep scars—health disparities, educational gaps, and an unhealthy culture of exclusion persist to this day. The trauma of the past still affects many in our communities, but it doesn't have to define our future. We have a unique opportunity to create a new culture of health, healing, and inclusion. It starts with moments like Ruby Bridges Walk to School Day, where we not only honor the past but also work toward a better future, together. By promoting *whole child health*—addressing physical, emotional, social, and mental well-being—we can ensure that every child is supported in their growth, development, and learning.

As we walked that day, I was reminded that we are all part of this journey. We are walking in the footsteps of those who fought for equality, inclusion, and justice—whether it was Ruby Bridges, the children and parents of the Berwyn School fight, or the countless others who have paved the way. It is up to us to continue that work, creating supportive, unified communities where every child can thrive. By addressing the whole health of every child, we create a foundation for long-term well-being and success.

By honoring Ruby Bridges' legacy and reflecting on our own history, we can help create the kind of world she fought for—a world where all children, regardless of their background or abilities, can walk to school with pride, safety, and the knowledge that they are valued and loved. This, I believe, is the true power of community—and the key to promoting health in all we do.

If you would like to have Ruby Bridges walk to school day at your school sign up here https://rubybridges.foundation/

If you would like additional help to organize the walk to have a walking school buses or additional information and resources on the Berwyn School fight and whole health resources in PA contact Healthycommunitylifespaces@gmail.com

Benefits of Resource Math Programs in Secondary Special Education Classes

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Abstract

Special Education Resource Mathematics is necessary for high school students with math disabilities, as they often struggle with high-stakes testing and may require additional support beyond regular classes. Special education resource math teachers face challenges in balancing individualized educational goals with testing demands and administrative policies. Utilizing best practices such as hands-on activities, visual aids, critical thinking strategies, and project-based learning enhances students' understanding of math concepts. These methodologies not only engage special needs learners but also promote self-efficacy, leading to improved academic performance. Ultimately, effective special education services must assist the unique needs of learners rather than serve as a political measure, ensuring equitable educational experiences and outcomes for all students.

Why is Special Education Resource Mathematics needed?

Mathematical comprehension presents an escalating challenge for students as they transition into high school, particularly for those diagnosed with learning disabilities. This struggle is exacerbated in environments where high-stakes assessments are integrated into the academic framework, often leaving students with special needs to lag behind their peers. Such disparities highlight the necessity for tailored educational interventions, particularly within the realm of mathematics, where students with disabilities frequently require more intensive support than what standard curricula offer.

The implications of these challenges necessitate a nuanced approach to instructional delivery. For students exhibiting varying degrees of mathematical disabilities, co-taught classrooms—integrating both general and special education teachers—may suffice. However, for those whose disabilities demand more specialized intervention, a dedicated resource mathematics class becomes essential. This model allows for individualized instruction tailored to the unique needs of these students, facilitating improved academic outcomes and fostering a sense of inclusion within the wider school community.

Research underscores the critical nature of such resource classes. For instance, (Hein, 2021) articulates the necessity for educational structures that support all students, which aligns with the urgent need for specialized mathematics resources that cater to students with disabilities. Furthermore, insights from (Hein, 2020) regarding factors influencing school administrators' decisions to adopt policies reflect the imperative for schools to prioritize inclusivity and

equitable educational practices. These insights serve as a call to action for public schools to reevaluate their mathematics programs, ensuring that they adequately address the diverse needs of their student populations.

Other studies corroborate the necessity of specialized mathematics education. Maccini and Gagnon (2000) emphasize best practices for teaching mathematics to secondary students with special needs, advocating for instructional strategies that enhance engagement and comprehension. Similarly, Calhoon & Fuchs (2003) illustrate the positive impact of peer-assisted learning strategies on the mathematical performance of students with disabilities, reinforcing the argument for resource mathematics classes that provide targeted support.

The establishment of Special Education Resource Mathematics is not merely beneficial; it is essential for fostering an equitable learning environment within public schools. By implementing specialized resource classes, educational institutions can offer the necessary support for students with disabilities, ensuring that they have the opportunity to thrive academically and socially. This approach not only aligns with current educational mandates but also affirms the commitment to inclusivity and the success of all learners.

Challenges Special Education Resource Math Teachers Face

Special education resource math teachers face increasing demands to meet the specific educational goals of learners with special needs while navigating a challenging and often skewed high-stakes testing environment. These educators are required to prepare students for state-mandated assessments while simultaneously providing the accommodations outlined in each student's Individualized Education Program (IEP) (Lasa et al., 2020; Billingsley et al., 2004). The complexity of these challenges is exacerbated by legislation designed to support special needs learners, which can inadvertently complicate teachers' workloads and diminish the educational experience of these students (Brownell et al., 2004; Swackhamer et al., 2009).

Since the enactment of various accountability laws, special education resource math teachers must diligently balance the increased workload with the limited time available during the school day (Maslow, 1943; Quigney, 2009). Furthermore, administrators may modify policies in a manner that provides them an advantage in meeting accountability standards, placing additional pressure on special education teachers (Hein, 2020; Schmidt et al., 2007). Consequently, these educators must concurrently prepare their students for high-stakes testing while accommodating their students' disabilities, which can create significant stress and hinder effective instructional practices (Kim & Seo, 2018; Maccini & Gagnon, 2000).

Using Best Practices to Overcome Challenges in Special Education

Special education resource teachers employ a diverse array of methodologies to enhance the comprehension of the curriculum among students with special needs. These methodologies serve as instructional frameworks aimed at improving students' understanding of educational content. Among these approaches are hands-on activities, visual aids, critical and strategic thinking strategies, and project-based learning. This discourse will examine these methodologies,

elucidating their specific benefits for learners with special needs, particularly in the domain of mathematics.

Hands-On Activities

Hands-on activities engage special education students in an active learning process, thereby fostering a deeper understanding of mathematical concepts. This instructional approach encompasses a broad spectrum of curriculum-centered mathematics education tailored for students with disabilities. Research indicates that such experiential learning is particularly advantageous for students diagnosed with Autism Spectrum Disorder (ASD), Intellectual Disabilities (ID), and Other Health Impairments (OHI) (Hein, 2021). By facilitating active engagement, hands-on activities promote not only conceptual understanding but also practical application of mathematical principles.

Visual Aids

Visual aids constitute essential tools that enhance cognitive retention and comprehension by providing tangible representations of mathematical concepts. These aids, which may include manipulatives such as math tiles, props, PowerPoint presentations, videos, whiteboards, charts, and graphs, are specifically designed to augment the productivity of students within resource mathematics classrooms. Research supports the notion that the integration of visual aids correlates with improved academic performance, enhanced student behavior, and positive interactions between students and educators (Hein, 2020). The strategic use of visual aids can significantly bolster the learning experience for students with special needs.

Critical and Strategic Thinking Strategies

Critical and strategic thinking strategies represent another pedagogical method that benefits special needs learners in mathematics. Critical thinking strategies focus on short-term analyses in activities related to problem-solving, objective evaluation of information, decision-making, and logical reasoning. Conversely, strategic thinking encompasses these critical competencies while extending them to long-term planning aimed at achieving overarching educational goals for learners with special needs. The deliberate incorporation of both critical and strategic thinking fosters deeper cognitive engagement and equips students with the skills necessary for future academic and practical challenges.

Project-Based Learning (PBL)

Project-based learning (PBL) is an instructional methodology that enables students to acquire academic skills through the exploration of challenging, real-world scenarios. For instance, a PBL initiative might involve students in the creation and management of a campus store, where they assess product offerings, calculate costs, analyze potential profits, and manage operational hours. This practical application of mathematical concepts is boundless, encompassing various mathematical skills essential for operating a school store. Through PBL, educators can facilitate

the integration of theoretical knowledge with practical application, thereby enhancing students' engagement and understanding of mathematics.

The implementation of these best practices has the potential to elevate the self-efficacy of special needs learners. Self-efficacy, as defined by Hein (2021), is intrinsically linked to an individual's learning capabilities and is a critical component of cognitive motivation. Students exhibiting heightened self-efficacy are inclined to achieve greater academic success, thereby attaining a clearer understanding of the educational curriculum.

Our Final Thoughts

The principal objective of special education services is to address the distinct needs of students with disabilities, particularly within the realm of mathematics education. It is imperative to recognize that these services were never intended to serve as a political instrument to critique local school districts based on their performance on state-wide assessments. The requirement for special needs students to participate in standardized exams poses significant questions regarding the appropriateness of such evaluations, as they may inadvertently compromise the educational experience tailored for these learners.

Special education resource math teachers encounter numerous challenges, including the necessity to reconcile accountability measures with the individualized educational goals delineated in each student's Individualized Education Program (IEP). Despite these hurdles, the integration of research-based methodologies into instructional practices has demonstrated a capacity for fostering measurable success within the classroom. By employing best practices, educators can markedly enhance the understanding of the secondary mathematics curriculum among students with disabilities. This enhanced comprehension not only promotes better academic outcomes but also contributes to cultivating an equitable learning environment within public schools.

The crucial need for specialized resource math programs underscores the importance of prioritizing inclusivity and ensuring that all students receive the requisite support to flourish academically and socially. Ultimately, it is essential to advocate for educational practices that genuinely reflect the needs of special education learners, thereby affirming their right to a meaningful and effective educational experience.

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From Research to Practice: Number Sense Through Numicons

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Number Sense with Numicons

Alicia is 14 years old and lives with her mother and three sisters (ages 10, 8, 6). Although three of the four children in the household have severe hearing, sight, and learning difficulties, they enjoy crafts with bright colors, games, and other social activities. With specialized glasses and cochlear implants, the girls try to navigate academic subjects in school as ESL students. Their mother works two jobs while attending to the children's needs.

Mathematically, Alicia and her sisters are in the early stages of numeracy. They exhibit specific counting strategies such as one-to-one correspondence, rote counting of numbers to 100, skip counting by 10s and 5s, recognizing the order of number words, and counting with a start from different numbers. However, they cannot count-on-larger, seeing five dots on one dice and two dots on the other, they start counting with the two dots. Because "counting on" is an essential prerequisite for addition (i.e., 9 + 2), games with dice and other dot configurations are helpful. Numicons allow children to "see" and "feel" numbers from a spatial perspective, thus developing an ability to work with number combinations.

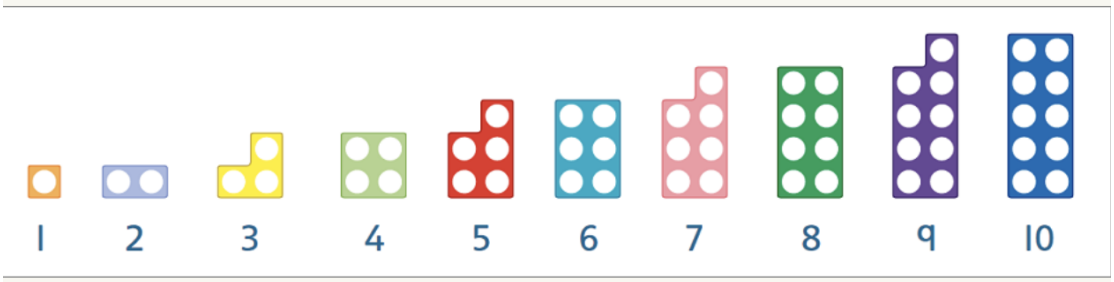
Teachers and researchers from the United Kingdom developed Numicons, a tool for visualizing mathematical concepts (Oxford University Press, 2018). This article provides background of Numicons and how they can be used to support students' number sense. Because Numicons support the concrete, pictorial, and symbolic approaches to teaching mathematics; they have been favored in classrooms worldwide and are accepted by teachers of children with exceptionalities (Bird & Buckley, 2001; Horner, 2003; & Uttley, 2004). Finally, the article will provide step-by-step directions for involving children in a game-like activity that provides opportunities for children to grow in creating number combinations, counting, and ordering of numbers.

What are Numicons?

The math manipulative, Numicon, came into existence after a classroom-based research project supported by the Teacher Training Agency of England (Atkinson, Tacon, & Wing, 1999-2003). These authors investigated whether using visually-structured imagery would support children's mathematical understanding (see Figure 1). This program has formed the basis of the Numicon teaching material found in Oxford University Press (2018). Numicons offer imagery of numbers. Children see the relationship between numbers, such as observing that each piece contains one hole more than the previous one. Numicons support many elements of early number sense: patterning, seriation (order), one-to-one correspondence, and relationships among numbers (Forder, 2019).

Figure 1

Numicons from the Oxford Press and an alternative set featuring five as foundation.



From Research to Practice: The Concrete, Representational, and Abstract

The Concrete, Pictorial, and Abstract (CPA) approach, originally articulated by Bruner in 1964, provides a structured framework for introducing mathematical concepts. It advocates for a cyclical progression from tangible, hands-on representations to more abstract forms of understanding. Numicons, with their distinctive, colorful shapes representing different numbers, are perfectly aligned with this model. They provide a tactile and visual base that enriches

mathematical exploration and understanding, particularly in enhancing number sense among learners.

In the concrete stage, Numicons enable direct interaction with numerical concepts through their distinct colors and shapes, which correspond to various numerical values. This design allows children to physically and visually explore the relationships between numbers. For example, to subtract four from nine, a child can place the 4-piece on top of the 9-piece and observe the uncovered portion of the 9-piece. Each piece is also associated with a specific color, enhancing the learning experience by aiding in the visual differentiation of numbers. Supporting this approach, the study by Rinaldi et al. (2020) found that the color coding in Numicon, when internalized by children, significantly improves their numerosity skills, indicating that the cross-modal (color and physical form) approach of Numicon is an effective support for numerical learning.

Physical experiences with Numicons are transformed into visual representations in the pictorial stage. Children can compare the sizes of different Numicon pieces to assess which represents a larger number visually. For example, they can easily see that the shape with six dots is larger than the one with three. This intuitive understanding can be confirmed by counting the dots on each piece. Additionally, Numicons can be visually presented similarly to a ten-frame. Like a ten-frame, the arrangement of dots can help children understand and remember numbers based on grouping dots into different sets (Losq, 2005). For instance, eight dots in a ten-frame can be visualized as a full row of five plus three additional dots.

Finally, the abstract stage challenges students to conceptualize mathematical content through symbols. Bruner (1964) highlighted the significant challenge of transitioning from pictorial to symbolic representation. He and Kenny (1965) observed that children skilled at using mathematical language are more likely to navigate this transition successfully. Using Numicons in the pictorial stage, where students compare numbers by assessing which pieces are bigger or smaller and associating these with specific numerical values, fosters the development of mathematical language. This practice enhances understanding and prepares students to recognize and use symbols more effectively, facilitating a smoother transition to abstract mathematical concepts.

Steps to Introducing Numicons

Wing and Tulcan (2007) initiated multiple studies showing the effectiveness of Numicons for students with disabilities. Emphasizing the sequence in the Foundational skills, the authors advocated the following sequence of actions:

1. Recognition of Numicon as representing a number (without naming the number--children count the holes).
2. Placing Numicons in order (without naming the number, often by stacking)
3. Naming the number when choosing a Numicon without counting
4. Ordering shapes AND numbers together.
5. Consolidation of the above stages: The activities are meant to have children confidently recognize Numicon shapes, use number names, recognize numerals, and make connections between their varied counting experiences and the Numicon shapes

6. Children begin to understand how place value can emerge. They recognize the value of ten and can count beyond ten to see that 13 is ten and three.
7. Addition and its properties are now introduced, helping children to "see" the two addends and the same results when commuting or associating different pieces.
8. Subtraction is finally introduced to help children visualize the difference between two numbers, which is what is left over or subtracted (Nye, 2006).

A Numicon Activity to Develop Number Sense: A Race to 100 (and Back)

A Race to 100 with Numicons from Stefansson (2015) illustrates important components of number sense. As defined by the National Council of Teachers of Mathematics (NCTM), a student possesses number sense when they "Understand numbers, ways of representing numbers, relationships among numbers, and our number system; (2) Understand meanings of operations and how they related to one another; (3) Compute fluently and make reasonable estimates (NCTM, 2000, p321). For children with disabilities, this definition may appear daunting based on difficulties processing multiple operations at one time (Brodsky et al., 2002).

Children play this game on a 100-board. Students are given a set of dice and a 100 Numicon board with nobs to place the Numicon pieces (see Figure 2). The number that comes up will be the Numicon piece the player places on the board. If, for example, they rolled a six and a three, they would put shapes on the board to fill up nine spaces, but not necessarily using only the nine-piece. The player could choose a nine-piece, a six and a three-piece, a five and a four-piece, four two-pieces and a one, or even nine-one pieces. They must be placed next to each other on the board without spaces. Children can trade pieces using different number combinations if this cannot be done. Play continues until the entire board is filled. The child who places the last Numicon exactly wins. When less than seven places are open, it may be necessary to play with one dice.

An important role of the teacher or adult playing along with children is utilizing prompts that assist Grindle, Hastings, and Wright (2020). The adults' prompts are essential to this educational game and include the following:

- Physical direct prompting is done by holding various Numicons and placing one on another to show equality--placing a 2 and 3 on top of a 5.
- Partial physical prompts include pointing to various Numicons.
- A full verbal prompt asks students which Numicon is most appropriate or if there are alternatives to the piece the child uses.
- Modeling Prompts include the adult taking a turn with complete explanations of the choices. "I need a five-piece, but I can't use this one (it won't fit), so I need to change it to a three and two." (Hayes et al., 2010)

Figure 2

Alicia and Sister Engaged in 'Race to 100' Numicon Game

Illustrating the Game:

To illustrate this game, an actual dialogue was recorded, during which the instructor can observe the children's associations and conceptualizations.

Alicia rolled the dice and counted each die (4 and 2), pointing to the die and starting with the 2.

Alicia: That is 6.

Teacher: Great. Would it be easier if you started with the four?

Alicia: Yes.

Teacher: Let's try counting with the four first. (Alicia does that.)

Alicia: Six! It's the same!

Alicia points to the six-pieces.

Teacher: Is there another way of saying the six-piece? Can you put other Numicons on top of the six-piece? Exactly.

Alicia: Yes. Five and one, or four and two, or three and three. (Alicia puts down three and three Numicon pieces.

Alicia: Because three and three is six! (Alicia knows a limited number of doubles"

Teacher: It is now my turn. I rolled an 11. I don't seem to have an 11-piece. What do you think I should do?

Alicia: (At first, she looks for an 11-piece.)

Teacher: Are there other ways that we can put down 11?

(Alicia pauses).

Alicia places the ten-piece down, then says," Ten, eleven," and looks for a one-piece.

Less than seven spaces can be covered, and only one die can be used.

Alicia: I rolled a five and can't cover all the spaces with five pieces.

Teacher: So, could other pieces be equal to the five pieces? Can you place other pieces on top of the five Numicon to equal five?

Alicia: Yes. (She places five one-pieces).

Teacher: So, can you now put the five one-pieces down?

Alicia: Yes.

Note: If the girl's attention to the game is short, the hundred board can be covered to include only 50 spaces.

This simple game can help students practice recognizing numbers up to six as they appear on the dice and work on adding sums up to 12. They also make choices about how to break down these numbers into parts to build other numbers on the game board. This substitution reinforces part-to-whole relationships and allows students to explore the addition process differently, including finding the missing addend (essentially subtraction). Throughout the game, students repeatedly see, recognize, build, and represent numbers in various ways.

For a challenge, children can investigate the operation of subtraction by rolling the dice on a filled board and removing Numicon pieces they have covered. If a particular Numicon piece is to be subtracted and is not on the board, children must "trade" pieces to obtain the correct difference. For example, suppose a ten-piece was on the board, and a seven was called after rolling two dice. The child could replace the ten-piece (if on the board) with a seven-piece and a three-piece, then remove the seven-piece.

Throughout the summer, Alicia and her sisters played A Race to 100 many times. Although they still counted all the dots in each Numicon when they played, they ordered the pieces, named the number of each piece, and saw patterns within the set ("this is 2 + 2" within the four pieces). Using the dice enabled them to "count on with the larger number" on the dice. If a "5" and a"3" were rolled, they would say "5--6, 7, 8. Instead of "counting all," they used the "one more than" and could see different number configurations when they would lay one piece on top of the other, such as if they rolled 4 and 3. They could make a 2 and 5 or a 1 and 6.

Obtaining Numicons to Use in Classrooms

Although Numicons may be purchased from various vendors, the authors have produced. Files on the Cricut and 3-D printers--with slightly different configurations. Files for these can be found online at https://www.thingiverse.com/thing:5897419.

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The Role of Technology and STEAM Education in Special Education: Enhancing Learning Outcomes for Students with Disabilities

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Abstract

This research explores the integration of technology and STEAM (Science, Technology, Engineering, Arts, and Mathematics) education in special education, focusing on its impact on learning outcomes for students with disabilities. By incorporating assistive devices, adaptive learning tools, and hands-on STEAM activities, educators can enhance accessibility, engagement, and academic success for students with diverse learning needs. The study synthesizes existing literature on the benefits and challenges of using technology in special education, including improvements in critical thinking, creativity, and problem-solving skills. Challenges such as the need for teacher training, equitable access to technology, and the time-consuming nature of individualized learning plans are addressed. Recommendations include professional development for educators, increased access to technology, the implementation of personalized learning plans, and collaboration with families to support student well-being. The findings underscore the transformative potential of technology and STEAM education in creating more inclusive and effective learning environments for students with disabilities.

Keywords: STEAM Education, Special Education, Assistive Technology, Inclusive Learning

Introduction

In recent years, the integration of technology in education has become increasingly prominent, particularly within special education. Technology has the potential to transform learning experiences for students with disabilities, offering tailored solutions that accommodate diverse learning needs. From assistive devices to adaptive learning software, technological tools can enhance accessibility, engagement, and communication, fostering a more inclusive educational environment.

In California public schools, students with disabilities benefit from a range of support options, including mainstreaming classes, resource classes, and special day classes. These programs are supported by government initiatives and corporations committed to inclusive education as part of their social responsibility. For instance, the widespread availability of Chromebooks in California schools, coupled with assistive technologies such as text-to-speech software and augmentative and alternative communication (AAC) devices, has significantly improved learning outcomes for individuals with special needs.

This research aims to synthesize existing literature to explore the impact of technology and STEAM (Science, Technology, Engineering, Arts, and Mathematics) education on learning outcomes for students with disabilities, identifying key trends, innovations, and challenges.

Aims of the Study

This study aims to explore the integration of technology and STEAM education within special education, with a focus on understanding how these tools impact learning outcomes for students with disabilities.

Specifically, the study seeks to:

1. Investigate how technology, including assistive devices and adaptive learning software, enhances accessibility and engagement in the classroom.

2. Examine the role of STEAM education in fostering critical thinking, creativity, and problem-solving skills among students with special needs.

3. Identify the challenges educators face in implementing technology and STEAM initiatives for students with disabilities.

4. Synthesize existing research to highlight trends and innovations in special education that promote inclusivity and academic success.

Methodology

This study is a literature review that synthesizes existing research on the integration of technology and STEAM education within special education. The review focuses on peer-reviewed journal articles, government reports, and case studies related to assistive technology, STEAM education, and their impacts on students with disabilities.

Sources are selected based on their relevance to the research aims and the population being studied—students with mild to moderate disabilities such as learning disabilities, speech or language impairments, autism, ADHD, emotional disturbance, physical disabilities, and vision and hearing impairments. The review examines key findings related to academic outcomes, student engagement, and the challenges of implementing technology in the classroom.

The data collection process involves identifying relevant academic journals and educational databases such as ERIC, JSTOR, and Google Scholar. Keywords used in the search include "STEAM education and special education," "technology in special education," "assistive devices in education," and "inclusive classrooms and technology."

The selected studies are analyzed to identify recurring themes and patterns. The analysis focuses on the benefits of technology and STEAM education, including improvements in accessibility, engagement, and academic performance, as well as challenges related to teacher training and accessibility. The findings are synthesized to provide a comprehensive overview of how these educational tools impact students with disabilities.

Expanded Research Insights

1. STEAM Education in Special Education

STEAM represents an interdisciplinary approach that integrates science, technology, engineering, arts, and mathematics to foster critical thinking, creativity, and problem-solving. The inclusion of the arts emphasizes creativity and design, which is particularly important for innovation in technology and science. For students with disabilities, STEAM provides experiential learning opportunities that accommodate diverse learning styles, making education more relevant and engaging.

The role of STEAM education is especially important in preparing students for future careers, where skills in science, technology, engineering, and creative fields such as graphic design and architecture are increasingly in demand. By integrating STEAM concepts into the curriculum, educators can foster these skills early on, providing students with a foundation for careers in industries like software development, coding, and engineering. Connecting these concepts to real-world applications helps make learning more relevant for students with special needs.

- **Interdisciplinary Learning**: STEAM connects multiple disciplines, allowing students to see how subjects relate to each other. This holistic approach can help students with disabilities apply their learning in real-world contexts, promoting deeper engagement.

- **Creativity and Innovation**: Incorporating the arts into traditional STEM subjects encourages students to express themselves creatively, leading to enhanced cognitive and emotional development (Bequette & Bequette, 2012). Programs that integrate digital art, music creation, and other forms of artistic expression through technology offer significant benefits for students with special needs.

2. Engaging Learning Experiences

In the context of implementing STEAM education, engaging students effectively has been a priority for the author. Various strategies have been adopted to make lessons more interactive and enjoyable. Virtual circles, community-building activities, and educational games foster a positive classroom environment, especially during remote learning. Utilizing engaging apps and websites like Peardeck, Padlet, Mentimeter, Flipgrid, Flippity, Blooket, and IXL enhances student participation and understanding. IXL, in particular, offers personalized practice and learning in math and language arts, providing immediate feedback and tailored resources that support individual learning needs. Continuous check-ins are integrated into lessons to gauge understanding and maintain connection. These methods, alongside a focus on social-emotional learning through check-in questions about students' current moods and calming exercises, demonstrate a holistic approach to teaching that prioritizes both academic success and students' well-being.

3. Simulations and Experiential Learning

Technology provides opportunities for simulations and hands-on experimentation that can be particularly beneficial for students with disabilities. Tools such as STEM simulations and virtual labs like Gizmos, Tinkercad, and Legends of Learning create immersive learning environments that allow students to explore complex scientific concepts in an accessible and engaging manner.

Interactive simulations create immersive experiences that cater to various learning styles. For instance, virtual labs allow students with physical disabilities to perform scientific experiments that would otherwise be challenging in a traditional classroom (Rogers & Simmonds, 2019).

- **Real-World Applications**: Simulations can help students grasp complex concepts, such as ecosystems or physics, by offering practical applications of their learning (Huang et al., 2020).
- **Social Skills Development**: Collaborative simulations also promote social interaction, as students work together to solve problems and share ideas, aiding in the development of communication and teamwork skills (Zhang et al., 2021).

4. Technology Integration in California Schools

In California public schools, the use of technology in special education has been transformative. The availability of devices like Chromebooks for each student (in most schools) has provided them with the means to access learning both at school and home. Assistive technologies such as text-to-speech software, screen readers, and voice typing tools have enhanced students' ability to read, write, and communicate effectively, making learning more accessible to those who struggle with traditional methods. AAC devices, such as tablets equipped with speech applications or picture symbols, have also proven invaluable for students with communication challenges, allowing them to engage more fully with peers and teachers.

For example, students with communication difficulties are often supported through tools like the Picture Exchange Communication System (PECS) on iPads, while those with visual impairments use specialized apps to assist in their learning. These resources ensure that all students, regardless of their disability, can participate in STEAM activities and access curriculum materials.

5. Impact on Academic Outcomes

Research has shown that technology-enhanced STEAM education can lead to significant improvements in academic outcomes for students with disabilities. Engaging in STEAM activities often leads to increased motivation and achievement in areas such as mathematics and science (Baker et al., 2020). Hands-on experimentation, facilitated through technology, allows students to manipulate variables and deepen their understanding of scientific concepts, leading to better retention (Wieman et al., 2010).

Activities that incorporate technology, such as math and problem-solving exercises alongside graphing tools like Desmos and IXL, help students develop critical thinking and analytical skills.

A student-centered and interactive approach, where learners work on group activities and projects, further enhances engagement and supports academic success.

6. Challenges in Implementation

Despite the clear benefits of integrating STEAM and technology in special education, several challenges remain.

- **Teacher Training**: Many educators, particularly those who have been in the profession for a long time, often rely on traditional teaching methods that emphasize paper and pencil tasks. While these methods may have worked in the past, they are often not effective for students with disabilities, who may require more interactive and technology-based approaches to engage and support their learning needs. Additionally, many educators lack the confidence and skills to effectively incorporate STEAM and assistive technologies into their classrooms (Mouza et al., 2016). Therefore, comprehensive professional development is necessary to equip teachers with the tools and strategies to create inclusive learning environments that cater to the diverse needs of students with disabilities.

- **Accessibility**: Ensuring all students have access to necessary technology is crucial for equitable education. While California benefits from being home to many major technology companies, the accessibility of resources remains an issue in other regions (Baker et al., 2020).

- **Tailored Approaches**: Given the diversity of disabilities, individualized learning plans are essential. A one-size-fits-all approach is not effective, and what works for one student may not work for another. While these individualized plans can be time-consuming for some educators, they are essential for ensuring appropriate accommodations and support are provided for student success.

Related Literature

Several studies have examined the benefits of technology and STEAM education for students with disabilities. Bequette and Bequette (2012) highlight the importance of integrating arts into STEM education, showing how creativity plays a critical role in problem-solving and innovation. Wieman et al. (2010) found that hands-on experimentation in STEAM activities improves student understanding and retention of scientific concepts.

Research by Baker et al. (2020) suggests that students engaged in STEAM activities tend to exhibit higher motivation and achievement, particularly in math and science subjects. Similarly, Huang et al. (2020) emphasized the importance of real-world applications in STEAM education, which help students with disabilities better grasp complex scientific and mathematical concepts.

However, several challenges exist. Mouza et al. (2016) point to the lack of teacher training as a significant barrier to the successful implementation of technology and STEAM education. Moreover, Rogers and Simmonds (2019) stress that accessibility to necessary technology

remains uneven, despite technological advances, and that individualized learning plans are critical for success in diverse classrooms.

Conclusion

The exploration of technology and STEAM education's role in special education highlights both significant benefits and notable challenges. By integrating interdisciplinary approaches and immersive learning experiences, educators can enhance engagement, communication, and academic performance for students with disabilities. The author's experiences highlight the importance of making lessons interactive and focusing on students' social-emotional learning, which is crucial for overall student well-being. However, addressing barriers such as teacher training, accessibility, and the need for individualized support is crucial. As technology continues to evolve, research and innovation will play an essential role in ensuring inclusive educational environments where all students can thrive.

Recommendations

1. Enhanced Professional Development:

Educators should receive opportunities for training in using assistive technology and STEAM education strategies tailored for students with disabilities. Professional development programs can provide teachers with the skills and confidence needed to effectively integrate these approaches into their classrooms.

2. Increased Access to Technology:

Schools should prioritize equitable access to technology for all students, including those with disabilities. This could involve providing necessary devices, software, and technical support to ensure that every student can participate fully in STEAM activities.

3. Individualized Learning Plans:

Implementing personalized learning plans for students with disabilities can enhance their educational experience. These plans should be based on individual strengths and needs, allowing for tailored instructional strategies that incorporate STEAM education effectively.

4. Collaboration with Families:

Building strong partnerships with families can support students' learning and emotional well-being. Schools should encourage family involvement in the educational process and provide resources to help parents support their children's learning at home.

5. Integration of Social-Emotional Learning:

Educators should incorporate social-emotional learning (SEL) into their curriculum alongside academic content. Activities that promote self-awareness, self-regulation, and social skills can enhance students' overall well-being and engagement in the learning process.

6. Utilization of Diverse Teaching Methods:

Teachers should employ a variety of instructional methods, including hands-on activities, collaborative projects, and technology-enhanced learning experiences. This diversity can cater to different learning styles and increase student engagement and understanding.

7. Supportive Learning Environment:

Creating a supportive and inclusive classroom environment is essential. Teachers should establish clear expectations and provide consistent feedback to encourage student participation and confidence.

By implementing these recommendations, educational stakeholders can better support individuals with special needs, enhancing their learning experiences through the effective integration of technology and STEAM education.

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Prader-Willi Syndrome

By Dr. Faye J. Jones

Prader-Willi Syndrome (PWS) is a rare genetic disorder that affects a child's metabolism, physical development, and behavior (Mayo Clinic, *Prader-Willi Syndrome - Symptoms and Causes*). This condition is characterized by persistent hunger, muscle weakness, and cognitive or behavioral challenges. Treatment typically involves a combination of therapy and strict dietary management to help manage symptoms and prevent complications (Bing search, *Prader-Willi Syndrome*).

The signs and symptoms of PWS can vary widely between individuals and may evolve gradually from childhood into adulthood (Mayo Clinic, *Prader-Willi Syndrome - Symptoms and Causes*).

Infant Symptoms of Prader-Willi Syndrome (PWS)

In infants with Prader-Willi Syndrome, several physical and developmental features may be present, including:

- **Poor Muscle Tone (Hypotonia):** Infants with PWS often exhibit low muscle tone, meaning they rest with their elbows and knees loosely extended rather than flexed. When held, they may feel limp, similar to a "rag doll."
- **Distinct Facial Features:** Newborns with PWS may have almond-shaped eyes, a narrowing of the head at the temples, and a downward-turned mouth with a thin upper lip.
- **Poor Sucking Reflex:** Due to reduced muscle tone, infants often struggle with feeding, which can lead to difficulties in sucking and swallowing. This can result in failure to thrive if not addressed.
- **Reduced Responsiveness:** Infants with PWS may appear unusually tired, have difficulty waking, respond inadequately to stimuli, and exhibit a weak or absent cry.
- **Underdeveloped Genitals:** Males may be born with a small penis and scrotum, and their testicles might be small or undescended (cryptorchidism). In females, the clitoris and labia may also be underdeveloped.

These early signs can vary in severity, and early intervention is crucial for supporting the child’s development.

Early childhood to adulthood

Food craving and weight gain – a definitive sign of PWS is a persistent craving for food, resulting in rapid weight gain, beginning around the age of 2 years. Constant hunger leads to eating more often and consuming large portions. Abnormal food-seeking behaviors, like hoarding food, eating frozen food or even garbage may develop Underdeveloped Sex Organs

Hypogonadism occurs when sex organs (testes in men and ovaries in women) produce very little to no sex hormones. This results in underdeveloped sex organs, delayed puberty, and in most cases, infertility. Lacking treatment, women may not begin menstruating until their 30s or may not have a cycle, and men may not have much facial hair and their voices might not fully deepen Poor Growth and Physical Development An underproduction of growth hormone may result in short adult heigh, low muscle mass and high body fat. Other endocrine problems may include underproduction of thyroid hormone (hypothyroidism) or central adrenal deficit, which prevents the body from responding appropriately during stress or infections. Cognitive Impairment – mild to moderate intellectual disability, issues with thinking, reasoning and problems solving. Some individuals may have learning disabilities Delayed Motor Development - Toddlers may often reach milestones in physical movement (sitting up, walking) much later than other children do Speech Problems – speech is generally delayed and poor articulation skills may be a constant problem in adulthood Behavioral Problems – children and as well as adults may be stubborn, angry, controlling or manipulative, have temper tantrums, especially when denied food and often not tolerate changes in routine. They may develop obsessive-compulsive and/or repetitive behaviors. Other mental health disorders, such as anxiety and skin picking may develop. Sleep Disorders – children and adults alike may have sleep disorders, including disruption of the normal sleep cycle and a problem with sleep apnea (breathing pauses during sleep. These disorders can result in excessive daytime sleepiness and worsen behavior problems. Other Signs and Symptoms – might include small hands and feet, curvature of the spine (scoliosis), hip problems, reduced saliva flow, nearsightedness along with other vision problems, difficulties regulating body temperature, high pain tolerance, and lack of pigment (hypopigmentation) causing hair, eyes and skin to be pale

According to the Individuals with Disabilities Act (IDEA), all children with a disability should have a written plan, Individuals Education Plan (IEP), that describes every area of educational need and enumerate how these educational needs will be met. Under Early Intervention: IDEA Part C, established in 1986, in response to a dire need to enhance the development of infants and toddlers with disabilities, to reduce educational costs, minimize institutionalization and increase independent living, and enhance the ability of families to meet their child's needs. For children under the age of 3, the Individualized Family Service Plan (IFSP) is developed. The law covers this age group and requires statewide, comprehensive, interagency service programs for all infants and toddlers with disabilities and their families. It outlines services that will be provided to meet the developmental needs of the infant or toddler (Early Intervention: IDEA Part C - Prader-Willi Syndrome Association | USA.). It is imperative that parents regularly schedule well-baby visits that can assist in identifying early signs of poor growth and development, which may be signs of Prader-Willi Syndrome or other disorders. And if the parents have any concerns, they should schedule an appointment with their child's pediatrician immediately.

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