7-1-2024

The Incorporation of Universal Design for Learning and Sensory Support in a School Setting

Hailey Houck
University of the Pacific

The Incorporation of Universal Design for Learning and Sensory Support in a School Setting

Hailey Houck
Site Mentor: Natalie Wing
UOP Mentor: Felicia Markfield

UNIVERSITY OF THE PACIFIC | School of Health Sciences

Background

Universal Design in Learning

Sensory Integration

Capital Kids

Hall, T. E., Meyer, A., & Rose, D. H. (Eds.). (2012). *Universal design for learning in the classroom: Practical applications*. Guilford press.

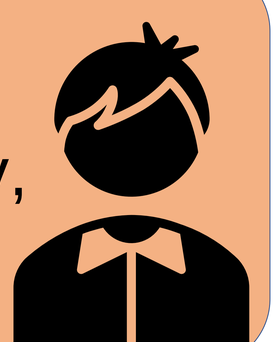
Helvacioglu, E., & Karamanoglu, N. N. (2012). Awareness of the concept of universal design in design education. Procedia-Social and Behavioral Sciences, 51, 99-103.

OTD

UNIVERSITY OF THE PACIFIC | School of Health Sciences

Program Purpose

Student Benefit – executive function, attention, participation, emotional regulation, impulse control, problem solving, memory, language development



Educator benefit – Student engagement, higher levels of regulation, increased learning success rate, alertness, focus

UNIVERSITY OF THE PACIFIC | School of Health Sciences

Tollerfield, I., Chapman, H. M., & Lovell, A. (2022). Underlying Thinking Pattern Profiles Predict Parent-Reported Distress Responses in Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, *52*(5), 2112–2131. https://doi.org/10.1007/s10803-021-05092-8

Literature Review

Educator Education

- Lack of confidence educators have when applying UDL principles
- Minimal trainings on the UDL framework and on specific technologies to incorporate for their classroom settings

Impact of UDL

- By incorporating the three principles of UDL into curriculum planning, teachers increased the ability to customize their students needs.
- Gave students the greatest chance at educational success.

Impact of sensory processing challenges with children's engagement

- Dysregulation has an impact on the brains chemical activity, memory, impulse control, emotional regulation, executive functioning and the ability to problem solve.

Literature Review and Needs Assessment

Strengths

- The clinicians at Capital Kids each have extensive knowledge of sensory processing and UDL approaches in a classroom environment.
- Evidence based care is being provided to the children and current research is being applied to ensure best practices during intervention.
- Interprofessional team collaboration.

Weaknesses

- Knowledge educators carry about universal design and sensory processing and integration in the school setting.
- Large caseload leaving limited time to educate staff on UDL and sensory support.

Opportunities

- Educational workshop that incorporated education on UDL and sensory support
- Ways of incorporating principles and sensory tools in a learning environment

Threats

- Financial barrier of creating these spaces due to the cost of equipment that can go in this design
- Limited time for education due to summer break
- Burnout for educators

UNIVERSITY OF THE PACIFIC | School of Health Sciences

Guiding Theories

Sensory Integration Theory

- This theory was created by Jean Ayres, who believed that sensory integration is the process by which the brain integrates sensory information from the body and the environment in order to function effectively.

Social Learning Theory

- This theory suggests that observation and modeling play a primary role in how and why individuals learn
- The main principles of this theory are: attention, retention, reproduction, and motivation.

Person- Environment- Occupation (PEO) Model

- This model emphasizes occupational performance shaped by intervention between person, environment, and occupation.

UNIVERSITY OF THE PACIFIC | School of Health Sciences

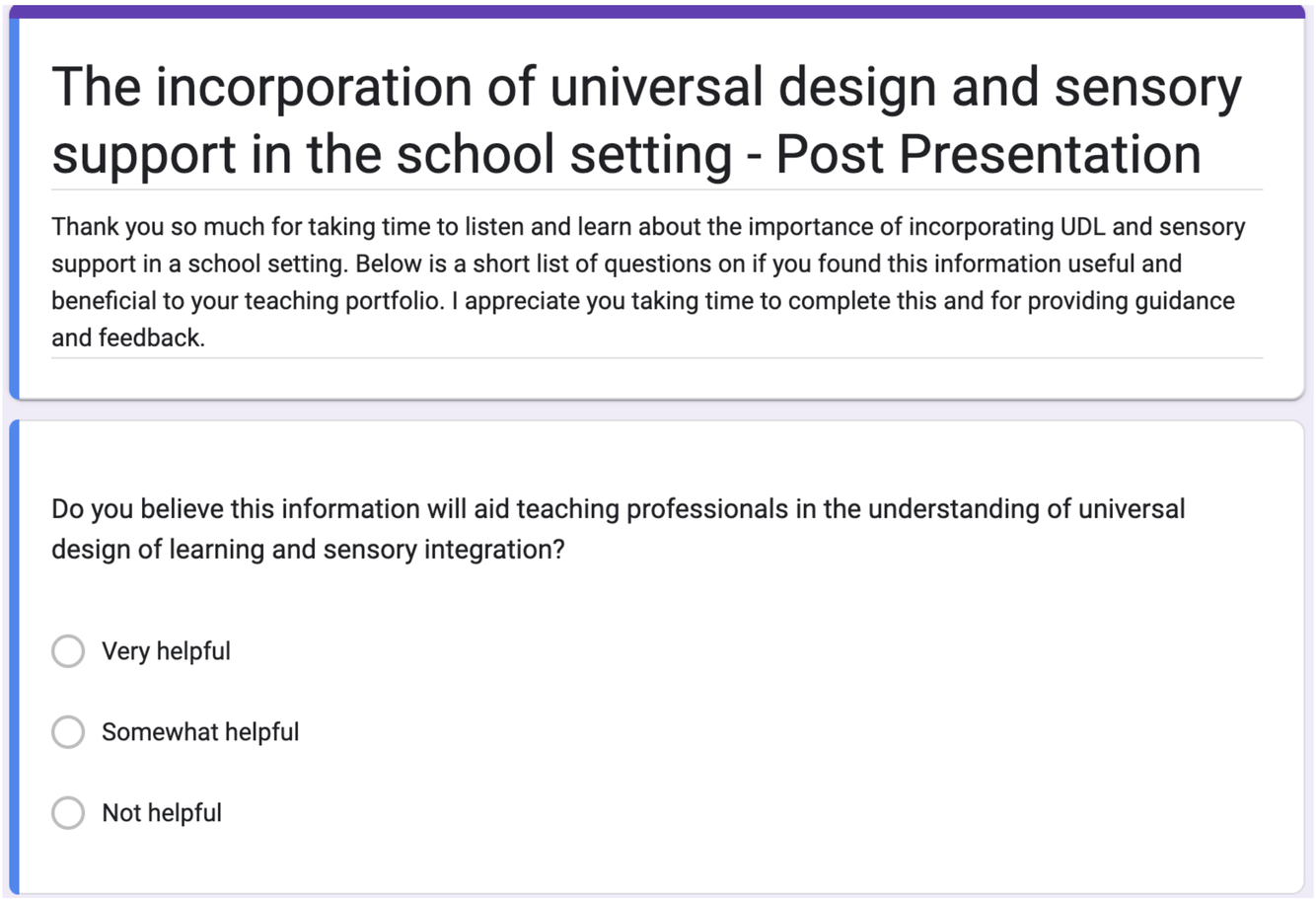
Schaaf, R. C., Benevides, T. W., Blanche, E., Brett-Green, B. A., Burke, J., Cohn, E., ... & Schoen, S. A. (2010). Parasympathetic functions in children with sensory processing disorder. *Frontiers in integrative neuroscience*, *4*, 594.

McLeod, S. (2011) Albert Bandura's social learning theory. *Simply Psychology London.*

Outcomes

Pre-test Survey for educators and school based occupational therapists at Capital Kids

Post-test Survey for educators and school based occupational therapists at Capital Kids



The incorporation of universal design and sensory support in the school setting - Post Presentation

Thank you so much for taking time to listen and learn about the importance of incorporating UDL and sensory support in a school setting. Below is a short list of questions on if you found this information useful and beneficial to your teaching portfolio. I appreciate you taking time to complete this and for providing guidance and feedback.

Do you believe this information will aid teaching professionals in the understanding of universal design of learning and sensory integration?

- ○ Very helpful
- ○ Somewhat helpful
- ○ Not helpful

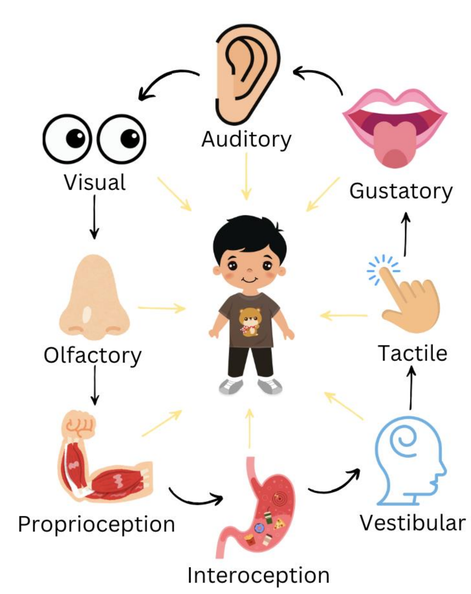
Outcomes

Created an educational course that described UDL, sensory integration theory and its application to a school setting.

Outcomes

Created an educational course that described UDL, sensory integration theory and its application to a school setting.

EIGHT SENSES



EIGHT SENSES

Auditory
The auditory system is what we hear and how we process what we hear. This sense allows us to detect what sounds are important and which sounds can be tuned out.

Visual
The visual system is responsible for the body's ability to perceive and interpret one's surroundings. Types of visual information include: color, shape, orientation, and motion.

Olfactory
The olfactory system is responsible for smell. The body's ability to detect and discriminate various scents using chemical receptors in the nasal cavity.

Gustatory
The gustatory sense is responsible for tasting. This sense helps us distinguish between items that are sweet, salty, sour, bitter, and umami (savory) flavors.

Tactile
The sense of touch. This sense allows us to feel various textures on our body, such as: clothing, pressure, vibration, texture, temperature, and pain.

Vestibular
The vestibular system contributes to balance and gravitational position; i.e. laying down, standing, sitting, etc. This sense is a function of the inner ear and usually works in conjunction with other senses.

Proprioception
Proprioception is the ability to sense movement, action, and location. It is responsible for knowing how much effort to use when performing simple tasks, such as using a pencil or lifting a glass to take a drink.

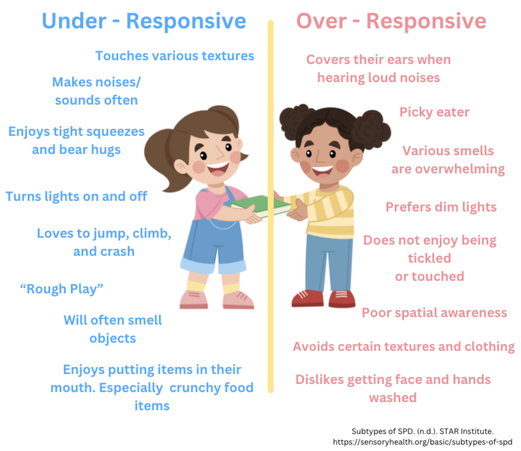
Interoception
Interoception is responsible forsensing signals from your body such as when you are hungry, your heart is beating fast

(Greutman, 2018)

UNDER RESPONSIVE VS OVER RESPONSIVE

Under Responsive: not reacting to the typical levels of sensory input around them because they don't pick up on the sensory signals in their surroundings. Responses are muted or responds with less intensity compared to the average person

Over Responsive: React more strongly to sensory input compared to the general population. Their sensory experiences are intense and are perceived themselves as being overwhelmed by sensory input. As a result, these individuals frequently experience a "fight or flight" reaction to sensory stimuli.



Subtypes of SPD. (n.d.). STAR Institute. https://sensoryhealth.org/basic/subtypes-of-spd

OTD

UNIVERSITY OF THE PACIFIC | School of Health Sciences

Outcomes

Tier One Sensory Tools				
TOOL	USE	SENSORY SYSTEM	COST	WHERE TO FIND IT
Visual Timers 	Visual timers are great for students who struggle with transitioning between activities or for students who need a visual representation of time to stay on track.	Visual	$15.00 - $32.42	Visual Timer Visual Timer option 2
Play doh / cloud dough 	An alternative to a fidget; can be used as a manipulative medium for activities or can be used as a fidget to assist with students focus during seated activities.	Tactile Proprioceptive	$3.47	Play-Doh
Floor dots 	Floor dots create opportunities to play games that involve following directions, and hop, jump or crawl around for movement breaks to keep them regulated between learning tasks. Floor dots can be used with	Visual Proprioceptive	$7.99	Floor dots

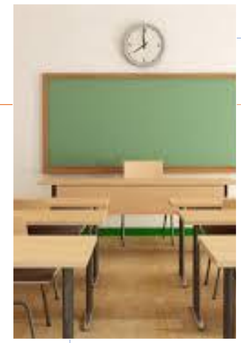
Created a sensory tool catalog for additional resources and sensory support that can be incorporated within a classroom environment.

Impact

Personal

- Increased appreciation for educators, faculty members, and clinic administrators.
- Communication
- Organization
- My passion for sensory processing and integration and working with the pediatric population

Community Site

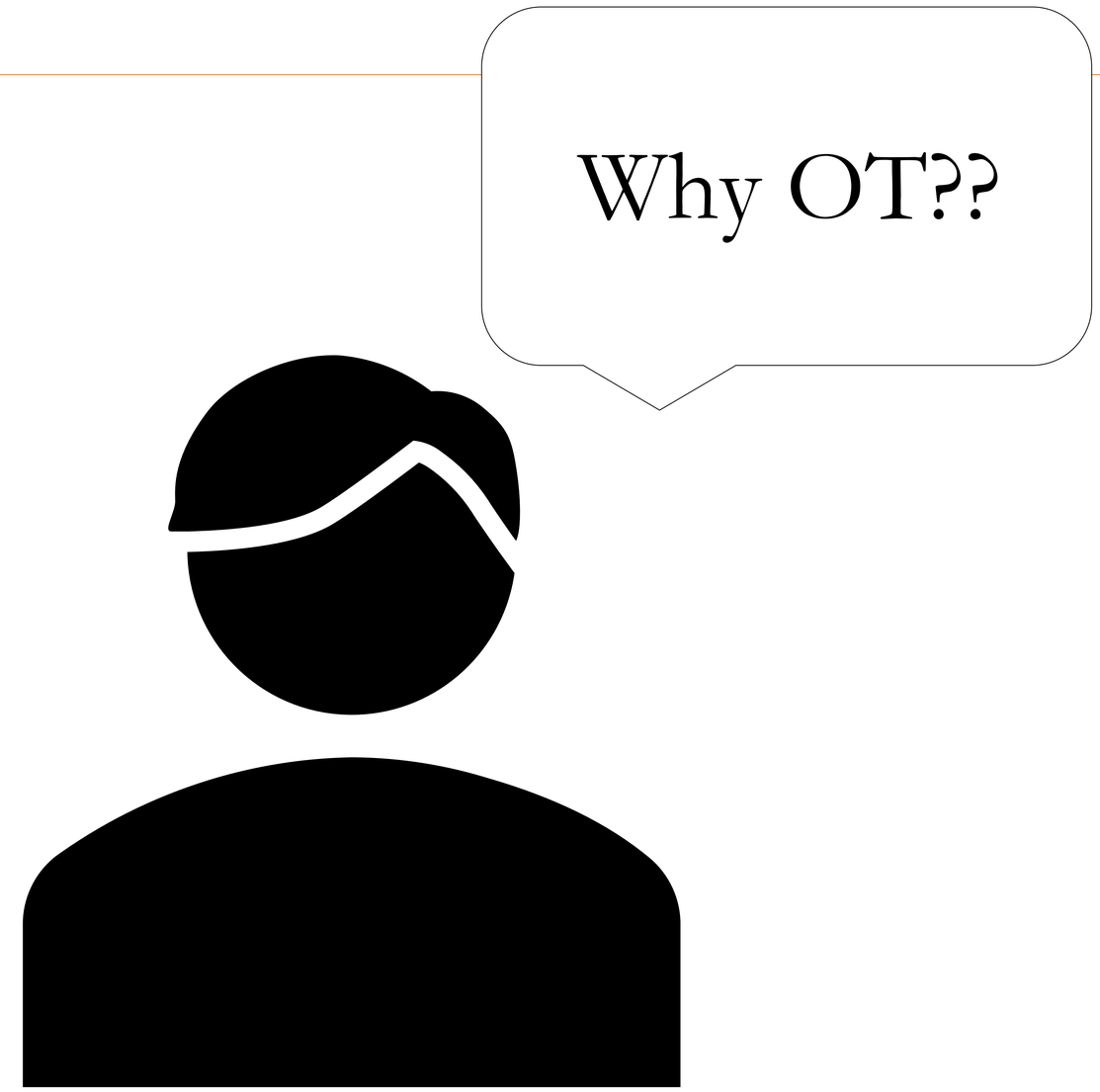


Access for all types of learners in the classroom setting by removing and addressing obstacles.

Empowering educators to create a sensory safe space for children in their learning environment

Provide the Unified School District with an array of sensory tools with guiding information to met children's different sensory needs.

Discussion

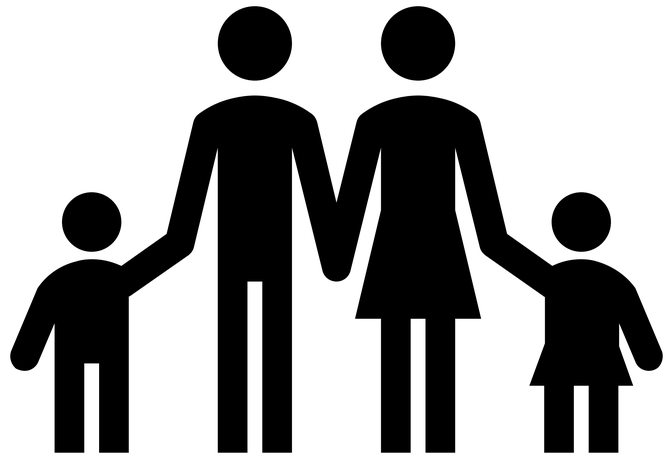


Future Implications

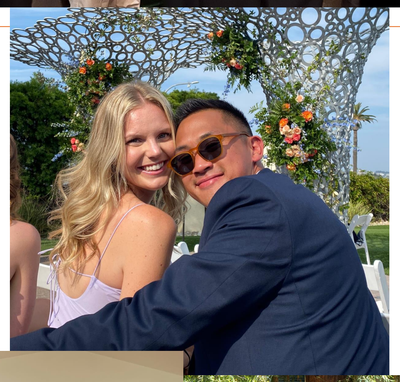
- Program Development
  - Create a resource for teachers to share experiences, stories, and tools that have been found to be beneficial within their classroom environment.

- Expand outside of the classroom experience to larger scale to a school setting
  - Cafeteria, Special classes (P.E, music, theatre)

- Carry over of skills from school to home – provide parents with education tools on how to implement sensory support at home.
  - Handouts, educational workshops before or after school



Acknowledgements



Thank you to my parents for always believing in me,
My family for always supporting me,
And my friends for always encouraging me.

Extra thanks to:
UOP Faculty and staff
Felicia Markfield
2024 UOP cohort

Your support and guidance made this dream possible!

UNIVERSITY OF THE PACIFIC | School of Health Sciences

References

American Occupational Therapy Association [AOTA]. (n.d.). Addressing sensory integration and sensory processing disorders across the lifespan: The role of occupational therapy. Retrieved from https://www.aota.org/-/media/corporate/files/aboutot/professionals/whatisot/cy/fact-sheets/factsheet_sensoryintegration.pdf

Camarata, S., Miller, L. J., & Wallace, M. T. (2020). Evaluating sensory integration/sensory processing treatment: Issues and analysis. *Frontiers in Integrative Neuroscience*, *14*. https://doi.org/10.3389/fnint.2020.556660

Greutman, H. (2018, August 28). What are the 8 senses? sensory processing explained. Growing Hands-On Kids. https://www.growinghandsonkids.com/what-are-the-8-senses.html

Hall, T. E., Meyer, A., & Rose, D. H. (Eds.). (2012). *Universal design for learning in the classroom: Practical applications*. Guilford press.

Helvacioglu, E., & Karamanoglu, N. N. (2012). Awareness of the concept of universal design in design education. Procedia-Social and Behavioral Sciences, 51, 99-103.

Higbee, J. (Ed.). (2003). Curriculum transformation and disability: Implementing universal design in higher education. Minneapolis, MN: Center for Research on Developmental Education and Urban Literacy.

McLeod, S. (2011) Albert Bandura's social learning theory. *Simply Psychology London.*

Horn, E., & Banerjee, R. (2009). Understanding curriculum modifications and embedded learning opportunities in the context of supporting all children's success

Kieran, L., & Anderson, C. (2019). Connecting universal design for learning with culturally responsive teaching. *Education and Urban Society*, *51*(9), 1202-1216

Mayer, A., Rose, D. H., & Gordon, D. (2014). Universal Design for Learning: Theory and Practice. Wakefield: CAST Professional Publishing.

Schaaf, R. C., Benevides, T. W., Blanche, E., Brett-Green, B. A., Burke, J., Cohn, E., ... & Schoen, S. A. (2010). Parasympathetic functions in children with sensory processing disorder. *Frontiers in integrative neuroscience*, *4*, 594.

Tollerfield, I., Chapman, H. M., & Lovell, A. (2022). Underlying Thinking Pattern Profiles Predict Parent-Reported Distress Responses in Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, *52*(5), 2112–2131. https://doi.org/10.1007/s10803-021-05092-8

UDL: The UDL Guidelines. (n.d.). https://udlguidelines.cast.org/

Universal Design for Learning | Center for Teaching Innovation. (n.d.). https://teaching.cornell.edu/teaching-resources/designing-your-course/universal-design-learnig

Universal Design for Learning | Center for Teaching Innovation. (n.d.). https://teaching.cornell.edu/teaching-resources/designing-your-course/universal-design-learning