

How Can Informal Environmental Education Curriculum and Pedagogy Be More
Inclusive for Autism Spectrum Disorder (ASD) Students?

by

Claire Dobie

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Capstone Project Facilitator: Julia Reimer
Content Expert: Marla Richter

Project Summary

Parents of ASD children and researchers alike have pointed to training for educators as an important tool for increasing inclusivity (Humphrey & Symes, 2013). Formal educators often receive this training throughout their undergraduate coursework and/or through staff training opportunities. In the formal setting, coursework in education and a teaching license is a must. As for informal environmental educators, while teaching/educator experience through school and work is a plus, it is oftentimes not a requirement for employment. Naturalists, zoo interpreters and other informal environmental educators will often carry a degree in biology, ecology, natural resources or another environmental field. This means that they may have never experienced coursework or training on being an educator. That is why this project is a response to the research question *How can informal environmental education curriculum and pedagogy be more inclusive for autism spectrum disorder (ASD) students?*

In response to this question, I created a staff development training that can be provided as a workshop for organizations to have their staff complete as a group, but this development can also be self-guided. A presentation was made that guides the group through important concepts of ASD student learning understanding, recommendations, and resources. Within this presentation there will be prompts for collaborative conversation about research and information covered. Learners can choose to discuss as a group or record their independent understanding of the content. Being as collaboration is important for learning (Knowles & Associates, 1984), it would be recommended to complete this as an educational team to achieve maximum benefit. This workshop would have the greatest benefit for informal environmental educators that work with school

groups of middle school age on outdoor recreation, science education, and experiential learning. Though this is the targeted audience, this workshop is beneficial for informal educators that program for all ages and opportunities in environmental education.

The workshop itself will span five separate sessions at a minimum of an hour each. It is at the discretion of the learner to decide what specific days/times would work best to complete the workshop. This could be completed in five consecutive days, but it is recommended that the staff has ample time to conduct research as the concept of self-direction is critical to andragogical learning (Forrest & Peterson, 2006; Knowles & Associates, 1984). The goals of this workshop will be to prepare informal educators to modify and adapt programming as needed to increase inclusivity for students with ASD, and create meaningful experiences for all.

Session 1: Introduction

60 Minutes

[Google Slides Link for Session 1](#)

| <i>Slides</i> | <i>Content</i> | <i>Approximate Time</i> |
|-------------------|---|-------------------------|
| Slide 1 and 2 | Introduction Welcome <ul style="list-style-type: none">● Thank you● Expectations for learning | 2 min. |
| Slides 3, 4 and 5 | Course Schedule/Outline <ul style="list-style-type: none">● Day 1● Day 2● Day 3● Day 4● Day 5 | 5 min. |
| Slide 6 | Personal/Group Objectives <ul style="list-style-type: none">● At this point the group will discuss what they hope to get from this workshop.● Their choice of objectives may have influence on what research they conduct for Worksheet 2 (Slides 21 and 22)● The responses will be referenced throughout the workshop as a reminder of intentions. Complete Worksheet 1 <ul style="list-style-type: none">● Complete as instructed on worksheet questions. | 10 min. |
| Slide 7 | Workshop Objectives <ul style="list-style-type: none">● What the creator of the workshop hopes the audience will learn● This is in response to the research question “<i>How Can Informal Environmental Education and Pedagogy be More Inclusive For Autism Spectrum Disorder (ASD) Students?</i>” Discuss: What is the current understanding of ASD by this group? | 2 min. |

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| Slide 8 | <p>Learning Style Image</p> <ul style="list-style-type: none"> ● Take a look at the image describing different learning styles ● Discuss how each participant feels they would place themselves on that spectrum ● Just as we all learning best in situations, there are some individuals that struggle to learn in certain ways ● ASD is an example of s condition that can impact how individuals learn in a neurotypical setting, and it is also a spectrum | 2 min. |
| Slides 9, 10, 11, 12, 13, 14, 15 and 16 | <p>Autism Spectrum Disorder (ASD)</p> <ul style="list-style-type: none"> ● General Introduction ● Sensory Processing <ul style="list-style-type: none"> ○ As a result of deficits in sensory processing, students with ASD may present behaviors traditionally viewed as distracting and not considerate of others. It is a method of coping with overstimulation from this deficit, and a great source of comfort in such situations ● ASD and Communication/Socialization <ul style="list-style-type: none"> ○ Though you may only have a brief period of time to interact with students, keeping in mind that not every student will fit the mold of a social and extroverted individual is important ○ Demanding social interactions and expecting certain etiquette can make for an upsetting interaction for the student ○ Be flexible and patient ● Imagination/Creativity <ul style="list-style-type: none"> ○ While this is a skill educators attempt to cultivate in students some may struggle to activate the creative process. ○ It may be helpful to tie in special interests, or supply guiding thoughts ○ Example: | 20 min. |

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| | <ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ■ If designing a structure for a survival structure, ask the student what shape would be the easiest to build in the woods? Or what shelter they have seen built in a special interest setting? ● Repetition <ul style="list-style-type: none"> ○ As state before, Repetitive behaviors may appear as a distraction to the class, but the situation may be causing stress and this needs to be taken under consideration ● The Importance of Visuals <ul style="list-style-type: none"> ○ Visual examples can be used for a multitude of processes and highlight the strengths of ASD students. ○ Keep it simple yet visual, repeating visuals in different settings will create consistence and help to reduce stress ● Symptoms of Mistreated ASD and Comorbidities <ul style="list-style-type: none"> ○ Mental health and unrecognized struggles can influence how students interact with you and classmates ○ Show compassion and remember to stay positive ○ Do your best to add excitement to the opportunity for all students | |
| Slides 17 and 18 | <p>Middle School</p> <ul style="list-style-type: none"> ● Information on how ASD presents in individuals during middle school years <ul style="list-style-type: none"> ○ This is a complex time for all students, and can increase stress and issues for students with neurodivergent minds ○ The concepts being brought to the student in school and through your programming are beyond basic comprehension | 5 min. |

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| | <ul style="list-style-type: none"> ○ Explaining and creating based on understanding is new at this time, and can be a difficult process for any student, especially neurodivergent individuals. | |
| Slide 19 | <p>Traditional Classroom Education</p> <ul style="list-style-type: none"> ● How ASD students benefit and lose in the classroom with their peers <ul style="list-style-type: none"> ○ Avoid showing up to a program with bias of what students can achieve ○ Do not assume level of intelligence ○ Give each student the same opportunity and adjust as the students go ○ Communicating with the student on how they are doing, what they need from you, etc. is a helpful way to keep the experience enjoyable | 3 min. |
| Slides 20 and 21 | <p>Special Education (SPED) in Schools</p> <ul style="list-style-type: none"> ● Summary of SPED teachers and their work to help ASD individuals <ul style="list-style-type: none"> ○ Once again, this is a range of assistance offered, and so the best way to know what a students needs is by communicating with them and their support group <p>Field Trips</p> <ul style="list-style-type: none"> ● Information and Entities involved in making field trips enjoyable for students <ul style="list-style-type: none"> ○ Do what you can to pre plan for such experiences, connecting with students support team and seeing what can be done on your end will also ease the tension you may feel going into a new teaching opportunity <p>Video: Supporting Autistic Children in the Classroom (8 min.)</p> | 15 min. |
| Slides 22 and 23 | Conclusion | 5 min. |

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| | <ul style="list-style-type: none">● Summary of key points● Discuss/Questions <p>Wrap Up</p> <ul style="list-style-type: none">● Opportunity to expand understanding● Assign Worksheet 2 to be done by Session 2● Provide resources to conduct research (can be done individually or as a team).● Look ahead to schedule of Session 2 <p>Link: NDA Query Tool</p> | |
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Session 2: Introduction

60 Minutes

[Google Slides Link for Session 2](#)

| <i>Slides</i> | <i>Content</i> | <i>Approximate Time</i> |
|----------------------|---|-------------------------|
| Slides 1, 2 and 3 | Introduction Schedule (Day 2) Objectives <ul style="list-style-type: none">● Review Worksheet 1● Review PD Objectives | 3 min. |
| Slide 4 | ASD Independent Research <ul style="list-style-type: none">● Review Worksheet 2● Discussion on further findings● Overall discussion on understanding<ul style="list-style-type: none">○ The previous presentation provides sufficient information to understand the basics of ASD○ This is an opportunity to cater the understanding to specific facets of ASD in relation to the work the audience does | 20-30 min. |
| Slides 5, 6, 7 and 8 | Environmental Education (EE) Formal and Informal EE Environmental Learning Centers (ELCs) <ul style="list-style-type: none">● Discussion on how EE impacts ASD individuals and concerns that arise | 15 min. |
| Slides 9 and 10 | Conclusion <ul style="list-style-type: none">● Key points from session<ul style="list-style-type: none">○ Environmental Learning Centers and EE in general propose inherent restraints on who may participate○ Considering how your place of work includes ASD individuals is crucial for increasing equity Wrap up <ul style="list-style-type: none">● Looking ahead at Session 3 plan | 5 min. |

Session 3: Introduction

60 Minutes

[Google Slides Link for Session 3](#)

| <i>Slides</i> | <i>Content</i> | <i>Approximate Time</i> |
|-------------------|--|-------------------------|
| Slides 1, 2 and 3 | Introduction Schedule (Day 3) Objectives <ul style="list-style-type: none">● Review Worksheet 1● Review PD Objectives | 3 min. |
| Slides 4, 5 and 6 | Preparing to make improvements <ul style="list-style-type: none">● Putting the understanding to the test<ul style="list-style-type: none">○ Now is the opportunity to discover solutions to issues in education○ By using the information from past sessions, the participants will analyze their own practices in relation to curriculum and pedagogy● Challenges typical of ELCs<ul style="list-style-type: none">○ ELCs present similar challenges for neurodivergent learners and traditional classrooms do○ They also add change and lack of familiarity, which are tough processes for students with ASD to confront● Capitalize strengths<ul style="list-style-type: none">○ Find ways to incorporate what works for students○ Remember to consider a range of helpful tools, some may be more helpful than others from one individual to the next | 5 min. |
| Slides 7 and 8 | Long Lake Conservation Center (LLCC) <ul style="list-style-type: none">● How LLCC staff uses their understanding of ASD● 3 program examples (examples will be | 5 min. |

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| | <p>provided to individuals to use as guidance and understanding of curriculum/ improvement decisions)</p> <ul style="list-style-type: none"> ○ Wolf Pack Outline ○ No canoeing outline ○ Bog Trek Outline <ul style="list-style-type: none"> ● Each outline will be skimmed for general guide on how the programs are conducted | |
| Slides 9, 10, 11, 12 and 13 | <p>Wolf Pack</p> <ul style="list-style-type: none"> ● Course Description <ul style="list-style-type: none"> ○ A brief explanation of the program ● List of Challenges <ul style="list-style-type: none"> ○ Challenges noted by the staff at LLCC in relation to ASD ● Curriculum and Pedagogy Improvements <ul style="list-style-type: none"> ○ Examples of processes, props and modifications made to increase opportunity for ASD students in that class | 10 min. |
| Slides 14, 15, 16, 17, 18 and 19 | <p>Canoeing</p> <ul style="list-style-type: none"> ● Course Description <ul style="list-style-type: none"> ○ A brief explanation of the program ● List of Challenges <ul style="list-style-type: none"> ○ Challenges noted by the staff at LLCC in relation to ASD ● Curriculum and Pedagogy Improvements <ul style="list-style-type: none"> ○ Examples of processes, props and modifications made to increase opportunity for ASD students in that class | 10 min. |
| Slides 20, 21, 22, 23 and 24 | <p>Bog Trek</p> <ul style="list-style-type: none"> ● Course Description <ul style="list-style-type: none"> ○ A brief explanation of the program ● List of Challenges <ul style="list-style-type: none"> ○ Challenges noted by the staff at LLCC in relation to ASD ● Curriculum and Pedagogy | 10 min. |

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| | <p>Improvements</p> <ul style="list-style-type: none"> ○ Examples of processes, props and modifications made to increase opportunity for ASD students in that class | |
| Slide 25 | <p>Supplemental Materials</p> <ul style="list-style-type: none"> ● How LLCC Staff improve the learning experience <ul style="list-style-type: none"> ○ This slide provides evidence of how LLCC staff work to ease the stress of uncertainty and other challenges presented to students when it comes to the schedule and other logistics of the trip | 5 min. |
| Slide 26 | <p>Wrap Up</p> <ul style="list-style-type: none"> ● Though LLCC and staff are not perfect in the process to be more inclusive, these modifications are a simple way to go one step further to ensure more students experience opportunities in a comfortable way ● Looking ahead to Session 4 | 5 min. |

Session 4: Introduction

60 Minutes

[Google Slides Link for Session 4](#)

| <i>Slides</i> | <i>Content</i> | <i>Approximate Time</i> |
|-------------------|---|-------------------------|
| Slides 1, 2 and 3 | Introduction Schedule (Day 4) Objectives <ul style="list-style-type: none">● Review Worksheet 1● Review PD Objectives | 3 min. |
| Slide 4 | Day 3 Recap <ul style="list-style-type: none">● What are some challenges that your facility shares with LLCC in regards to students with ASD?● What were some common tools added to the program at LLCC?● How are these examples getting you thinking about your own programs? | 3 min. |
| Slide 5 | Curriculum and Pedagogy Breakaway <ul style="list-style-type: none">● Look at audiences curriculum<ul style="list-style-type: none">○ The participants will now decide who will be reviewing what curriculum/pedagogy at their facility○ How this is divided will be influence by the group dynamic and choice● Complete Worksheet 3● Have participants decided what medium will be used to present improvements (presentation, oral, etc.)● This time will be primarily spent reviewing and brainstorming for improvements | 45 min. |

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| | <ul style="list-style-type: none"> • If time allows they may begin developing a mode of presentation • If they would prefer to make a powerpoint this may take some time outside of the workshop to complete • Oral presentations in session 5 are sufficient | |
| Slide 6 | <p>Wrap Up</p> <ul style="list-style-type: none"> • Looking ahead to Session 5 | 5 min. |

Session 5: Introduction

60 Minutes

[Google Slides Link for Session 5](#)

| <i>Slides</i> | <i>Content</i> | <i>Approximate Time</i> |
|-------------------|--|-------------------------|
| Slides 1, 2 and 3 | Introduction Schedule (Day 4) Objectives <ul style="list-style-type: none">● Review Worksheet 1● Review PD Objectives | 3 min. |
| Slide 4 | Present improvements <ul style="list-style-type: none">● At this time participants will take turns presenting their thoughts and ideas● This is a chance to share ideas and inspiration● Discussing what sounds like a good idea and what may need improvement | 25 min. |
| Slide 5 | Taking Action <ul style="list-style-type: none">● Complete Worksheet 4 as a team and discuss<ul style="list-style-type: none">○ This worksheet will detail the action step needed to implement the ideas proposed○ An accountability manager will be appointed by the group to check in on the progress of actions taken○ The group will schedule at a minimum 1 check in meeting at a future date to discuss progress | 25 min. |
| Slide 6 | Review Objectives Were they met? <ul style="list-style-type: none">● Have participants go down the list of group objectives and course objectives to see if they | 5 min. |

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| | <p>were met</p> <ul style="list-style-type: none">• If objectives are left unmet further pursue until an answer is found | |
| Slide 7 | <p>Course Evaluation</p> <ul style="list-style-type: none">• Provide the link below to all participants to assess the quality of the professional development opportunity <p>Google Forms Evaluation Link</p> | 5 min. |

References

- Knowles, M. & Associates (1984). *Andragogy in action: Applying modern principles of adult learning*. San Francisco: Jossey-Bass.
- Twinkl. [Twinkl Publishing Company]. (2021, April 20). *Supporting autistic children in the classroom / National Autistic Society / Twinkl* [Video file]. Retrieved from <https://youtu.be/MLWij7yrgqE>
- U.S. Department of Health and Human Services. (n.d.). *NIMH Data Archive - Data - General query*. National Institutes of Health. Retrieved May 1, 2022, from <https://nda.nih.gov/general-query.html>