

## **How to Modify an Academic Activity:**

***This is a general procedure that will allow you to modify any given academic activity for a visual learner on the autism spectrum:***

1. What is the main point of the activity (ie. what concept is being taught?)
2. What are the underlying concepts that the student must already know before learning this new concept? Are there gaps that need to be filled before teaching this concept? If the gaps can't be filled immediately, how will you compensate for the unknown information?
3. Why does the student need to know this concept? How does the concept connect to "real life" situations?
4. How can this concept be presented in a visual "hands-on" way (what combination of activities will be necessary to promote learning with comprehension)?
5. How can the student's areas of special interest be included to increase motivation and attention to learning? If there is a classroom theme, is it appropriate to this student? Can you combine the special interest with the theme to expand the student's range of interests and knowledge?
6. How will the student respond to indicate comprehension?
7. Remove complicating non-essential response requirements
8. Generalization of information indicates true comprehension - can the student use the new information in a flexible and creative way?

*Following is a specific example to illustrate the use of this modification process:*

**Math (measurement) - Grade 1 - Ontario Curriculum Objective - relate temperature to daily activities**

**Class activity:** sheetwork - match written temperature to weather picture (eg. 30 degrees Celsius matching picture of children in bathing suits at the beach) and then write a sentence and draw a picture about what you like to do in that kind of weather

**1. Main point**

- connect temperature number to weather condition (does this number mean it's hot or cold?)

**2. Gaps in underlying concepts**

- does the student have a good understanding of the numbers 1-100? does the student understand above/below (in terms of above and below 0 degrees)? are temperature words like "cold", "cool", "warm" and "hot" part of the student's vocabulary? Can this activity be used to introduce the verbal labels for temperature conditions (eg. very visual student may understand the number connection before the verbal connection)

**3. Real-world connection (why does any person need to learn this concept? - how is it useful?):**

- listening to weather report or looking at temperature gauge and deciding what to wear, what activities are possible or not possible (prediction based on a number)
- listening to or reading an experience related by someone else and comprehending the details of the setting and how they affect the events in the story (eg. in a story, the main character gets up in the morning and is very sad because the temperature is only 10 degrees C - his trip to the beach is cancelled - if you don't make the connection that 10 degrees C is too cold for swimming outside, the chain of events in this story doesn't make much sense)

**4. Presenting concept in "hands-on" visual way (now comes the creative fun part):**

- although the sheetwork is visual, it presumes a knowledge that the pictures represent something in the student's own life - individuals with ASD could successfully complete the paperwork (draw the lines, cut and paste) and get the "correct" answers without any comprehension of what the activity is supposed to represent - "shallow" learning in the early grades leads to failure in later grades, when students are asked to perform more abstract tasks with concrete information that was supposedly mastered in previous school years

- you need to use a variety of interactive activities to help the student learn this concept with meaning (it helps to remember that with a typically developing child, school activities teach them formal ways to represent concepts for which they already have a basic understanding - students with ASD have had atypical development in the pre-school years and do not have the same understanding of basic concepts related to "how the world works" as their peers do)
- the basis for this temperature/weather connection will be provided by the daily circle activity of "what's the weather like today?", "what's the temperature?" recorded on the class calendar
- ask parents to continue this connection at home - have the student check and record the temperature each day and make decisions about what clothes are appropriate (can support this with "visual choice boards")
- interactive computer programs like "Sammy's Science House" allow students to work at their own pace with a very visual presentation of information (pictures and animation) that allows them to explore the cause-effect connection between the temperature number and the observable weather conditions
- photos from the student's own life (eg. family vacation at the beach, skiing or sledding in the winter) can be connected to written temperatures and then written about in language arts activities
- expand the original sheetwork activity into one where the student is given the temperature number, chooses the appropriate weather scene, then dresses a 2-D feltboard figure or a small toy in appropriate clothing, then chooses a possible activity from a range of pictures, then draws and writes about it (connect this back to the previous activity with the personal photos)
- use storybooks and predict the temperature number from the pictures and written story in the book - help student make the connection between events in the story and the weather - play "what if . ." and see how events would change if the weather was different
- use the visually absurd and problem-solve in a visual way - eg. draw a boy on a bicycle when given various temperatures - show difficulty and silliness of riding through deep snow, easy riding in warm temperature and sweat coming from the rider in the very hot weather - when you engage the humour, the student often learns the concept in a "deeper" way

### **5. Using student's special interest:**

- many (if not all) individuals with ASD show high interest in particular topics
- you can use this high interest to engage a student in learning a new concept
- for example, let's say the student's area of interest is road maps and road signs - instead of relating temperature to clothing, relate it to road conditions - then talk about clothing in terms of what you would need to wear in case your car got stuck at the side of the road and you had to get out - personal photos could include pictures of the student in the car in different weather - you draw road maps and have the student write signs indicating the temperature and what "road risks" the driver might face (eg. -10C / Careful - Icy Roads - Slippery - Slow Down) - you can gently expand this interest by having the people in the car taking a trip to somewhere in particular (eg. if the roads are icy and slippery, are the people likely taking a trip to the beach or the ski hill?)

- consider the class theme to see if it can be "blended" with the student's area of high interest - for example, maybe you are relating temperature work with a unit about how different people live around the world - for the student described above, make a road map and drive to different places - when do you need to take a ferry? what kind of clothes do you need to take with you in your suitcase? what kind of roads and road conditions do they have in other countries? - again, you can gradually expand the interest in roads to what's beside the road (eg. when I look out the car window, what do I see?)
- we are asking these students to learn difficult new concepts that initially they don't see as personally interesting or useful - by hooking onto the strong focused attention that the ASD students are capable of when dealing with something that they do find interesting, you can maximize the potential for learning new things (my experience has been that when they gain enough information about the new concepts, their range of interests begins to broaden)

## **6. Response to indicate comprehension**

- this will vary from student to student
- a student who can draw will be able to draw a picture to show their understanding of what has been read or said
- a student who can write will also be able to give a written response that indicates their thinking (caution - I would try to add drawing or pictorial response to this, since written responses may be rote - similar to echolalia)
- for a highly verbal student, you may use talking - again, someone should record answers in a written/pictorial form so that the student can consider the concepts in a more complete way (auditory signal decays, visual signal stays around for longer processing)
- for a less verbal, non-literate student, you may make visuals that can be physically manipulated and put together (felt-boards, velcro boards, small toys, stickers, cut and paste, matching activities) - results can be photographed or photocopied and made into personal books (digital cameras are extremely useful tools for visual learners) - add simple text to the visual images

## **7. Removing non-essential complicating task requirements**

- consider factors that may unnecessarily complicate the activity from the student's point of view
- for example, a student who can read but has poor fine motor skills should be allowed to type a response, or choose from a list of possible answers
- a student who has limited attention for "sit-down" activities should work "hands-on" - get dressed, go outside, take a picture, put it in a personal book with the temperature recorded
- your main goal is to teach the new concept with comprehension - any unnecessary frustrating details should be eliminated so that the student is in a state to learn
- working on fine motor skills or ability to tolerate "sit-down" activities should be done separately with concepts that are well-known and easy for the student

## **8. Check for generalization (and true comprehension)**

- as soon as you see a student using skills and concepts outside of the original learning task, you know that they are beginning to truly understand what was taught
- with the temperature activity, you may notice that the student spontaneously checks the outside thermometer and then announces the weather (eg. "cold out today"), or you may see that the student begins to record temperature on their drawings in class, or they may volunteer information during temperature/weather time in circle
- lack of generalization is not some strange feature unique to autism - no one generalizes information that they don't understand - lack of generalization indicates that you need to continue to teach a given concept using a variety of materials and methods, since the student has not yet acquired it with understanding