

Title of Session: Science Resources K-20: Inquiry

Moderator: Ann Sebald

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AnnSe: the topic tonight is Science as Inquiry

AnnSe: but before we get started on this topic, why don't we take a few minutes to introduce ourselves

AnnSe: can you share a little about why you're here

AngelaSu: I'm Angela and I'm a student teacher in 2nd grade from Houston

AnnSe: and you interest in Science as Inquiry?

AngelaSu: yes

AnnSe: David, would you please explain

DavidWe: We usually start discussions with a brief introduction: who you are, where you teach, etc.

MaryAliceM: Thanks David.

DavidWe: Ann, are you going to lead this discussion?

AnnSe: yes,

AnnSe: Like David said, let's start with a short intro

AnnCM: Hi I am Ann Mock from Utah and I teach visual impaired preschools and I am taking Ann's class

FredK: I am a literacy tutor retired from test engineering to the woods of SE Oklahoma

AnnSe: Thanks Ann

AnnSe: Glad you could make it, Ann!

AnnSe: Welcome Fred!

NeilR: I'm a superintendent from NY and was a special educator for many years. My passion is still educating students with disabilities. I was asked to join tapped in by SherylNB and truly enjoy the stimulating discussions

MaryAliceM: What is the name of the class Ann is teaching? Thanks.

DavidWe: I'm David Weksler. I'm a HelpDesk volunteer and I lead a math education and technology discussion here. I'm in New Jersey, not far from New York City

AnnSe: MaryAnn, I'll share that once we are through with intros (smile)

BJB2 wishes she had known about this topic so she could have posted an invitation to the special ed group

AnnSe: anyone else like to share about themselves?

AnnCM: The name of Ann's class is Science as Inquiry-

MaryAliceM: I'm Mary Alice from Albany, NY, working in SpecEd Early Interv while going back for a TVI degree.

AnnSe: No?? Okay, then please share what your interest is in Science as Inquiry or Science in general

AnnSe: Glad to have you MaryAnn

AngelaSu: I never truly understood what "science as an inquiry" means....

AngelaSu: I know...it sounds a little silly

MaryAliceM: I'd like a little backgr on Science as Inquiry, please.

AnnSe: To give a little background about science as inquiry....

AnnSe: who would like to start us off??

AnnSe: Ann, David, Others??

DavidWe: Science is an effort to understand the world

DavidWe: You need to "INQUIRE"

AngelaSu: questioning?

DavidWe: How do plants grow, for example

NeilR: For me, so much has been learned about how the brain functions and how the physiology of the brain impacts learning. I believe that what we have learned about "learning" has taken educating students to a new level

AnnCM: Science as Inquire is to make science available to all students. How to adapt it to special needs students, so that they understand the concepts that you are trying to teach.

MarySp: Ann, your comment is a nice segue for me I'm Mary Spaeth and am an educational and entrepreneurship consultant in Sweden. I found Tapped In about a month ago, but this is my first "meeting". I have a tiny agenda actually--and that is to introduce a interactive "atom" product that was created by two moms who will be coming to St. Louis to the NSTA. I told them I would see if I could get advice for them tonight. (It's 2 am here!) Maybe the tool will fit the science as inquiry theme

NeilR: So this is about pedagogy as it relates to teaching the subject of science?

AnnSe: The course that I am leading through the National Center on Low-Incidence Disabilities is to help teachers of students with sensory disabilities learn more about science, science education and science as inquiry

MarySp: One of the mom's who created this interactive atom has a blind son. He needed something tactile to learn atoms and ions

AnnSe: Mary, that sounds very interesting!

MaryAliceM: Does this program cover the entire curriculum?

AngelaSu: so this is mainly for special ed students?

AnnSe: Yes, maybe towards the end of our discussion, Mary, you can share more about your product

NeilR: So we are talking about a multi-modality approach to teaching?

MarySp: They will come to St. Louis, but neither of them is a teacher, OR business person. Still they were just announced as women entrepreneurs of the year yesterday!

AnnSe: Good for them

MarySp: And, they're scared and want advice and want to meet people.

AnnSe: Tapped In is a place to start

AnnSe: Mary, maybe you and I can chat more after this discussion

AnnSe : let's bring it back to the topic

NeilR: Ann are we talking about individuals with cognitive impairments or mainly sensory impairments

AnnSe : for abbreviation purposes, I will use SAI to mean Science as Inquiry

MarySp: That could be good. Tapped in is not good for someone who's not fluent in English.

AnnSe : for our purposes tonight, Neil, we are talking all disabilities

AnnSe : Good point, Mary

AnnSe : How does SAI differ from the traditional view of science?

AngelaSu: well, this will be new for me because I have no idea how to teach students with disabilities

MarySp: I will listen because I'd like some insight as well.

MaryAliceM: I imagine it would be more hands on learning and less textbk.

AnnSe smiles

AnnSe : traditional view of science puts forth a set process

AnnSe : the Scientific Method

AnnCM: You have to adjust the materials to meet the needs of your students. You also have to go at a slower pace then you would with normal students.

AnnSe : Ann, can you say more

AnnSe : would you say, Ann that you have to go at a slower pace, or that you are able to spend more time on a topic?

NeilR: A shot in the dark.....traditional science is seeking fact based upon a hypothesis. Inquiry implies something more.....a self discovery so to speak??

AnnSe : Neil, right on!

AnnSe : SAI invites much more leadership and discovery on the part of the student

NeilR: So when we teach science, the students need to be hands on

AnnSe: teachers who implement SAI tend to have a more thematic approach

AnnCM: I have to go at a slower pace and it is a lot of hands on. We have to go over the material many times before a student may grasp the concept that you are trying to teach.

NeilR: Teachers as "facilitators" vs. "instructors".

JenniferKE: Yes, teachers as facilitators

AnnSe: Do you think teaching SAI is more or less work for teachers?

MaureenB: much more

AngelaSu: I would say more

AnnSe: let me rephrase my question

AnnCM: I feel that it is more work.

AnnSe: What are the pros and cons of teaching SAI?

MarySp: Could I ask what types of disabilities?

AnnSe: as compared with the traditional scientific method approach?

NeilR: Much more. This isn't provide a handout and have a discussion

MaryAliceM: sounds fun for the students

NeilR: Exactly MaryAlice

MaureenB: There is lots of prep but when a true discovery is made they remember it

AnnSe: Mary, we will be talking about students with a variety of disabilities

JenniferKE: But with deaf students who may speak at a 4 year old level, a lot of language input is necessary, just like with any subject. It's a little tricky to guide them to ask their own questions while they are still learning question forms

NeilR: You know the old saying, tell me, show me, let me do.....

JenniferKE: Applies to anyone

AnnSe: You're all right - SAI is much more rich and requires multiple skill sets

AnnSe: right, Jennifer

AnnCM: The students may only get one or two concepts learned in that year, while regular education have a list of concept that they have to teach and they leave the special needs kids behind, because they don't get it.

AnnSe: by allowing the student to lead the inquiry, teachers facilitate at the students' levels

JenniferKE: exactly

AnnSe: So Ann CM, what additional skills are the students learning, besides the science concepts?

KayF: But how do you do that if the student is blind?

MaureenB: social interaction with a group

AngelaSu: just have them explore with their hands?

KayF: When the concepts might not be in place yet?

NeilR: For a blind student you're talking about using rich language with very descriptive words for starts

AnnCM: my students are learning speech skills, working on tactile objects, math ,

MarySp: Yes, this is what Pernilla, the blind boy's mother, said when she described how her son has been taught chemistry.

MaryAliceM: Also by association of already acquired knowledge and bridging it-- a child who is blind will also learn quite well

KayF: Don't blind children tend to have a rich vocabulary, but one that is not necessarily based in reality?

NeilR: I would think that we would not be talking about teaching subjects necessarily in isolation

KayF: Or is that a stereotype on my part?

MarySp: Yes, Mary Alice and Kay, His vocab is rich and the reinforcement of tactile objects important

NeilR: Content would be interdisciplinary

MaryAliceM: Depends on the child's situation--family backgr, educ serv available

AngelaSu: How would you go about teaching a child with disabilities in a regular education classroom?

AnnSe: Great question, Angela - who would like to respond?

AngelaSu: How can you slow the pace down with all the other students in there?

MarySp: What do you mean Neil? How does interdisciplinary work in science?

NeilR: To throw a ringer.....if Ann is focusing on low-incidence disabilities.....What about a deaf-blind student?

AnnCM: my students are visual impaired but they are also developmental delayed and are functioning anywhere from a 2 month level up to 36 months. I have students who are from 3-6.

NeilR: Interdisciplinary- working on language i.e. vocabulary, cognitive concepts such as color, math....how many ?

AnnSe: Adapting lessons to meet the needs of all learners...guiding discovery using language...

MarySp: Ann CM-I'm really ignorant on this level. Is science inquiry a particularly good thing for your target students? Does it provide a greater level of interest perhaps?

AnnCM: Some of my students are deaf-blind with other disabilities as well. I start where they are and go from there.

MaryAliceM: Right on Ann CM

AnnSe: Ann CM, yes, you bring up a great point...by allowing the students to lead, you are better able to facilitate

SusanR: I gather they would benefit from lots of exploration, Ann

NeilR: Perhaps the abstract is difficult for some to grasp....Ann, am I correct that we may be starting with a basic concept such as hot and cold?

AnnSe: Right - so how do you establish an environment that is appropriate for exploration

MarySp: ahhhhh, the example is good. thanks Neil

SusanR: . o O (lots of hands on materials)

NeilR: It's not desks lined up in a row!

AngelaSu: What kind of topics are set for students with disabilities?

MaryAliceM: Learning centers, various activities for tactile exploration combining lang and materials

NeilR: I'm with you MaryAlice

MarySp: I bit like Montessori with blinders

AnnCM: Mary- science is part of the pre-school curriculum. I am to have the students ready to enter either into an academic setting when the reach school age or they stay in a cluster unit within our school. We are to follow State guideline as if are students are "normal". It is a problem we have as special education teachers.

NeilR: Now that's an analogy

AnnSe: the challenge also is to not deny students information or experience because you believe they may not know or understand or have the skills to access.

MarySp: Is this the concept there of mainstreaming?

AnnSe: rather, you need to support access

AnnSe: and equal opportunity to succeed as well as fail

NeilR: The "problem" is often in our thinking that there is a different curriculum for students with disabilities than that for non-disabled peers

AnnSe: let's get more examples of how you might support student access to the information

FredK: Is game playing available or appropriate?

AngelaSu: So it's the same curriculum.....just at a slower pace

AnnSe: what do you think, Fred?

AngelaSu: correct?

FredK: I am not sure

MarySp: You mean different curriculum instead of perhaps different ways of facilitating?

NeilR: A walk in a park.....a trip to the kitchen

AngelaSu: I think game playing is totally appropriate

AnnSe: Some states require IEP goals and objectives to be based on state standards

AnnSe: so, students should be receiving the "same" curriculum

NeilR: ABSOLUTELY!

AnnSe: but, as Ann pointed out, some students may need to go at a slower pace

AnnCM: Ann has hit it on the head!!

NeilR: It's more about the process than the end product

JenniferKE: When my students mainstream they learn as much as they can in that setting and then I help them with vocab in a self-contained class, supporting their mainstream experience. I have IEP responsibility

MaureenB: I am so glad you mentioned vocabulary

AnnSe: Neil has also brought up a great point...process can sometimes be more important than product

NeilR: and that takes time.

AnnCM: I have a friend who teaches science in a regular junior high and he has a hard time adjusting the state cores to students with any disabilities,. He has a time frame of you teach this when and then that, so there is no room to slow it down for students who have to go at a slower pace

MaureenB: we do a SAI program in my school and the skill of the teacher in infusing vocabulary is not always there

NeilR: Sometimes a significant amount of time with repeated experiences

NeilR: Ann CM then that's not an "individualized program".

MaryAliceM: Point of clarification--is SAI for the entire curriculum?

AnnSe: yes, MaryAlice - it is a process for implementing the curriculum

NeilR: Are we trying to get rats to the end of the maze or learn how to get through any maze?

AnnSe smiles

MaureenB: in the elementary grades it is

AnnSe: I recently spoke with a colleague who is teaching in the schools...she has been directed by her administrator to spend less time on science and more time on literacy and mathematics...this is a challenge for SAI

MarySp: How many students do most of you teach in one sitting?

AngelaSu: 20

MaureenB: 25

AnnCM: You are correct Neil. But lucky he doesn't have any students with disabilities this year. He would love to teach a class just for special needs students to slow the flow

JenniferKE: Sometimes social goals can be met in a general ed class while in the self-contained setting they can explore something in more depth (yes, slower pace)

JenniferKE: 5

AnnSe: are all of these students with disabilities, or is this in an inclusive setting?

MarySp: yes.

MarySp: I mean yes, good question!

AngelaSu: inclusive

MaureenB: the problem is the special needs student now needs to take the same state tests

MaureenB: inclusive

MarySp: Angela and Maureen do you have students with disabilities?

MaureenB: yes

AngelaSu: I have one

NeilR: [screaming] Tests!!!

JenniferKE: yes, but we all get excited if the students recognize ANYTHING on the test

MarySp: The individual teaching must be extremely difficult with 20-25

NeilR: Do we teach to test or teach to learn?

MarySp: wait...special education students take the same tests???

AnnSe: Maureen, I do not see this as a problem...I see having students taking the tests as a positive...its how the tests are used (or not used) that is the problem

AnnCM: we teach to the test

MaureenB: my special needs kids often do better than my reg ed kids because their IEP allows the test to be read to them

NeilR: What about alternative assessments?

NeilR: I'm screaming again!

MarySp: what would you prefer to see Neil

DavidWe smiles

MaureenB: the disability has to be extreme anymore

MaureenB: for alternative

MaureenB: assessment

AnnCM: Yes special education students take the same tests as their peers, even though they may not be functioning on the same grade level

NeilR: And so what?

AnnSe: remember that test preparation is different from understanding and learning science

JenniferKE: less stressful for the students to test if they have snacks and praise. I have had some enjoy seeing some familiar questions

MarySp: back to inquiry yes....so evaluation doesn't measure inquiry?

AnnSe: how do you mean, Mary?

NeilR: Let them take the test. But teach them to learn and use the test to assess the student's present level

NeilR: The test should be for you as the educator

AnnSe: evaluation and assessment is an important part of SAI

AnnSe: evaluation is based on process evaluation

MarySp: You said that test prep is different from understanding and with disabled, especially those with slower rates of learning, the test would not reflect this

AnnSe: for example....

AnnCM: we are not allowed to read the test to our students. they have to do everything on their own. I always tell them to do their best

AnnSe: evaluating how students develop questions and formulate hypotheses is important

AnnSe: have I lost everyone

MaryAliceM: Is eval of SAI more informal?

AnnSe: let's bring it back to SAI and not testing

MaureenB: no science is all about questioning

AnnSe: I would say no, MaryAlice

JenniferKE: Assessments that are ongoing during SAI are more meaningful than the big tests

NeilR: inquiry=discovery

AnnSe: exactly, Jennifer

AnnCM: I would agree with Jennifer

MarySp: Yes Neil. I agree,

AnnSe: for example, Rubrics are a wonderful way to evaluate SAI

AnnSe: Rubrics allow you to put the process in black and white and evaluate how students achieve within that process

AnnSe: other examples?

NeilR: The basic task analysis. Each step in the task is used both for learning and assessment

MarySp: Can't standards for evaluation/testing/"rubrics" be designed to support disabilities and still match mainstream curriculum?

AnnSe: thank you, Neil

NeilR smiles

AnnSe: Yes, Mary - how might you do that?

MarySp: Well I tend to think it is done this way in Sweden. Testing is not standardized the way you are expressing it.

JenniferKE: Students can demonstrate what they know as they ask questions that lead to more questions. If we have realistic goals we can assess progress and give students feedback on what we see they have learned

MarySp: The individual, while respected in the group, is still considered independently for evaluation. On the other hand, one does not see many disabled students at university.

AnnSe: great example, Jennifer - thank you

AnnCM: That is so true Jennifer,

NeilR: Not all disabilities are visible to the naked eye

MarySp: True

AnnSe: Let's chat briefly about other disabilities

AnnSe: how might you support students with learning disabilities with SAI?

AnnCM: Good point Neil- I have a disability that you can't see.

MaryAliceM: I imagine the vocabulary for that LD student would be a need

BJB2: graphic organizers? Often students with disabilities have trouble organizing information

AnnSe: Ann, how would you like to be supported if you were learning in a SAI environment?

AnnSe: great, BJ

NeilR: I would want the obstacles to my learning be provided for so that I am learning on a level playing field.

FredK: I have found a CD called "Lexing", designed for those with dyslexia helpful

AnnCM: I have a learning disability, I got books on tape, I recorded talks given by my teachers, I would ask the teacher for additional help after school. I found all my teachers in school and college willing to work with me, so that I would be successful.

AnnSe: Ann, you also bring up another great point...self-advocacy that comes from SAI

NeilR: So the help wasn't always in the traditional setting

AnnSe: because students are leading the discovery, they become increasingly empowered

MarySp: This sounds a bit like multiple intelligence issues also. Ann CM discovered her own learning preferences.

AnnSe: and that's why Ann MC is experiencing success!!

NeilR: What an advantage if a student learns their learning style/preferences

JenniferKE: SAI should be easier for learners with LD than word scrambles and other confusing busy-work!

AnnCM: Nope, I had to ask for the help I needed. I did have a couple of teachers who told me that anyone with a learning disability should be locked up for life.

AnnSe: great connect, Jennifer

MarySp: Teachers can facilitate this. So students with dyslexia can even enjoy the concept of left brain right brain functioning and how it works or sometimes just functions oddly

AnnSe: OUCH!!

AnnSe: Glad you did not listen to them, Ann MC

AnnSe: I want to respect everyone's time...

NeilR: O.K....I'm back in my chair!

MarySp: 2.52 am

AnnSe: are there aspects of SAI that we have not yet discussed that you would like to talk about?

MarySp: much, this has been interesting--and amusing too--but triggered a few thoughts!

AnnSe: Phew, Thank you for joining us Mary

KayF: How is SAI different from good teaching?

NeilR: Are we clear what SAI is different

AnnSe: GREAT Question!!!!!!

KayF: Is it only about science?

MarySp: Send me a mail if you want-anyone mary.spaeth@transmera.com

NeilR: No

AnnCM: I can apply it to anything that I teach

MarySp: Got it--interdisciplinary

NeilR: Inquiry knows no content/subject barriers

AnnSe: Teaching SAI incorporates five steps: 5-E Model of Instruction...

AnnSe: 1. Engagement

AnnSe: 2. Exploration

AnnSe: 3. Explanation

AnnSe: 4. Elaboration

AnnSe: 5. Evaluation

AnnSe: each one of these can be used in other subject areas

AngelaSu: we learned the 5Es in one of my classes!

AnnSe: YEA!

AngelaSu: we had to write lesson plans in that format

NeilR: Why didn't anyone teach that clearly when I was pre-service?

AnnSe: it is a very helpful and empowering format

MarySp: I suspect you figured it out through inquiry Neil!

NeilR: The hard way and never put into words

AnnSe: if you would like more information regarding the 5-EModel of Instruction, you can conduct a search on the web

NeilR: Just came naturally

MaureenB: this is how all subjects are taught if you are using a Workshop model

AnnSe: In my office I have a list of references that may be helpful regarding SAI and the 5-E Model of Instruction

AnnSe: there is also information that breaks down the model and provides examples

NeilR: Anne Se-thank you for a very stimulating conversation.

MarySp: Thanks Ann.

NeilR: And to the rest of the group.

AnnSe: My pleasure, Neil. Thank you to everyone who participated

MarySp: God natt från Sverige!

BJB2 applauds...excellent

DavidWe smiles

FredK: Thanks Ann

MaryAliceM: Very informative--thank you!!!!

AnnSe: I Love discussing this concept with others

MaureenB waves to all always a pleasure

SusanR . o O (reads the EDSE 508 model)

NeilR: You all just demonstrated inquiry....Ann never gave "the answer until the end!

DavidWe: She knows how to do it

AnnSe smiles

DavidWe: Thanks, Ann

SusanR: thanks for allowing me to join the tail end of the discussion

KayF: Thank you

NeilR: I guess so.....Hope to chat again soon

AngelaSu: thank you