# Engaging Critical Thinking Skills with Learners of the Special Populations


## SUMMARY

In this classroom portrait on critical thinking with special populations, the author describes the importance of teaching all students to pose good questions and to learn how to make meaning from complex ideas. Through Socratic dialogue, project-based learning, and other methods designed to engage all students deeply in the learning process, this teacher helps all learners to be engaged.


## *Essential to a student's success*

in school as well as in the workforce is his or her ability to think critically. Higher order thinking skills such as problem-solving, application, synthesis, and evaluation are fundamental to students' intellectual growth. As educators our expectation should be that students engage in high levels of cognitive work as often as possible during instructional time. They should have multiple opportunities per class period to complete tasks that are cognitively demanding.

All students can and should be engaged with critical thinking applications. Language deficits, learning disabilities and limited knowledge of subject matter should not restrict students. Critical thinking is a vital component to 21st century skills and the foundation to the Common Core Learning Standards (CCLS). In order to ready all students for college and careers, we need to teach them how to think on their own. Young learners need to be fully responsible for their experience of making meaning from complex ideas.

Learning in the 21st century involves measurable applications of pedagogy that may be adapted and crafted to fit any population of learners: English language learners (ELLs), learning disabled, emotionally disabled, etc. Fundamentally, teaching and learning with a focus on the 21st century learner involves imparting a blend of expertise, critical thinking, skill, content knowledge, and reading ability integrated with innovative technology supports that help students master the multifaceted, multitasked and multidimensional abilities required of them in the college and career workforce. It is a real and powerful mechanism of change for an antiquated teaching and learning system that teachers have


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relied on for decades. Twenty-first century learning involves more than integrating social "webs" and mobile digital devices. Twenty-first century learning is about moving a classroom of learners to a threshold of learning that engages students to think relevantly while learning skills that will lay a foundation for their own future, individualized paths through life.

I am responsible for six classes of mixed cognitive ability, learning and emotionally disabled high school students in a 12:1:1 ratio setting. My students range in age from 15-21 years old. Most are living in a residential setting, some travel hours by bus from their home districts. We follow the Living Environment NYSED standards implicit with CCLS for literacy in history/social studies, science and technical subjects. Within the therapeutic environment provided by the school to meet the student's emotional disabilities and learning inabilities, students are academically required to follow the same NYSED curriculum as every other student in the state of New York. As their teacher I am mandated to comply with the APPR agreements of my district and the NYSED standards of my content area.

Engagement is the specific strategy I focus on the most in my classroom. Engagement may be defined as active learning that occurs when students are inquisitive, interested, and inspired by content or teacher interaction. Engagement does not include learning when students are bored, dispassionate, or disaffected. If the students are not actively engaged, then they are not actively learning. In a 40-minute period, students walk with me through a process of structured Socratic thinking that enlivens and engages the mind with scientific inquiry, relevance, and critical thinking applications. The lesson delivery corresponds to the unit scope and sequence. The level of Socratic method questioning never changes, just the content changes as we progress through the

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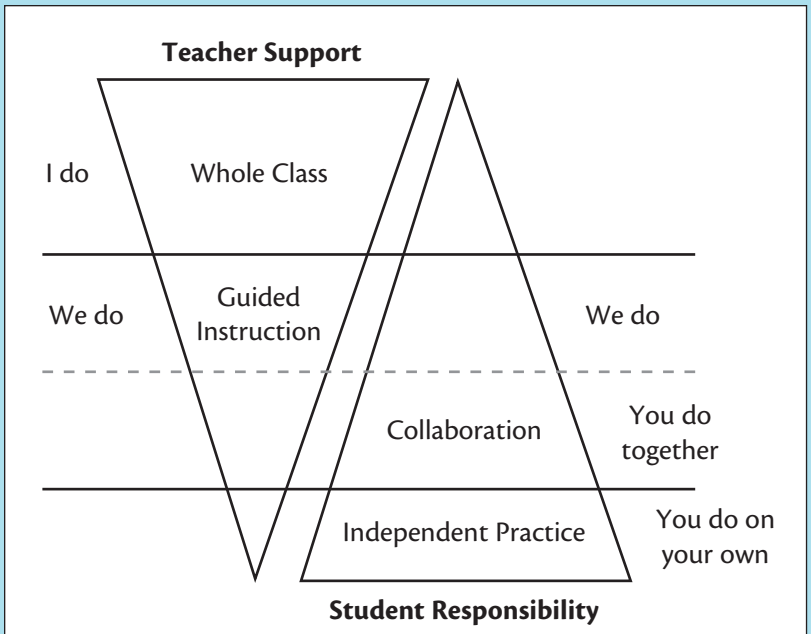
## Individuals with Disabilities Education Act

**The definition of emotionally disabled is a gray zone.** The Individuals with Disabilities Education Act deems that for a child to be labeled with an emotional disability, the child must exhibit three characteristics:

- An inability to learn that cannot be explained by sensory, health, or intellectual factors.
- An inability to build interpersonal relationships with peers or teachers.
- An emotionally disabled child will show repeated inappropriate behaviors demonstrated in normal circumstances.

## "Do Now"




*Doug Fisher and Nancy Frey (2008)*

year. With a focus on giving students questions, not answers (Socratic teaching) I model an inquiring, probing mind by continually probing into the subject with questions. I also follow the gradual release of responsibility or the "I do, We do, You do" model as outlined by Doug Fisher and Nancy Frey (2008). This instructional model requires the teacher to transition from taking on all the responsibility for learning to a condition where the students shoulder the academic responsibility. This methodology would ultimately result in confident learners who accept responsibility for their own learning, all the while directing this learning through the cognitive process.

Students continually struggle with engagement. The generation of youngsters we are currently training are inept at sitting still and focusing for longer than 20 minutes. When students are brought in as responsible parties, they are emotionally invited to sit alongside the teacher and transfer the responsibility of learning. As opposed to sitting, listening and doing (an older, out-of-date teaching model) the gradual release of responsibility strengthens confidence within the students as a community of the classroom as well as within themselves as individuals. There are no wrong answers, only learning moments to improve upon what we already know.

A learning goal is posted on the whiteboard. The learning goal is stated at the start, the middle, and the end of each lesson. An "Aim," in the form of a question, is posted on the board. The class starts with a "Do Now," motivator that gets students focused and into the academic "realm" of learning. The "Do Now" is always a rigorous question either of my own creation or a sample Regents question which is aligned to both the learning goal and aim we are covering that day. The multiple-choice questions or the higher order short answer questions of the Regents exam are easy to write on the board quickly. A scale is posted on the board that is aligned to the learning goal achievement. Another more basic scale is posted at the top of the board

and relates to the dynamic understanding of the aim, which will ebb and flow throughout the lesson. An agenda (expectations) is located at the far corner of the board, and as the students are copying the Do Now, I briefly review the agenda for the 40-minute period together, settle students, walk around continuously checking in with students, asking questions and managing the class.

Due to the nature of the special populations served in this classroom, the "Do Now" is embedded with an incentive in which students earn tickets for participation and correct responses. The incentive attached to their ticket is an engaging reward that motivates students to buy into the knowledge I am selling. An engaging reward includes a tangible such as a bottle of favorite lotion, an iPod charger, fruit, or other such item. The reward items are celebrated as a whole class, so that there is active buy in and engagement from the level of the teacher, teacher's aide and the students.

After the "Do Now," we move into the mini lesson. This can be a 7-10 minute teacher-driven, structured Socratic method content lecture relating to the aim and learning goal. This can look something like the following: I would start the lesson by saying "The learning goal states students will be able to identify the steps of the scientific method. Who in here has ever heard of the scientific method? Tell me what you know about it." Students respond with random words — "Oh, hypothesis Miss ... that's part of the scientific method" or they would say, "This means you have to make an observation and then test it, right?" Or they would say, "There's like some steps to this Miss, but I don't remember what these are." This will usually include a "leapfrog" event of the conscious minds involved in a classroom discussion. The students with lower confidence mutter to themselves or to the person next to them. The students with higher confidence raise hands or blurt out answers and identify rationale for role-modeling moments. The teacher celebrates every answer provided by a student. Celebrated responses from the teacher involve smiles, congratulatory remarks, high fives, hand pounds, hopping up and down and saying how proud I am of their attempt. This builds student confidence and ropes them into the content I am driving in the lesson. Now they want to learn more. They want to know about the scientific method because I (as the teacher) value what they know already and I want to see them succeed with this content. I want to see them know the steps to the scientific method and I want to see them

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## Socratic teaching method

Socratic method teaching is an "in the moment" series of content-driven questions that are broken down into "digestible bites" for students to percolate over in their minds and then respond to verbally.

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apply these steps to a real-life situation they should be familiar with. Next we move on to the mini-lesson and students are engaged to copy notes verbally or verbatim from a PowerPoint presentation and/or whiteboard. Then we move into a literacy-based task that involves whole group participation. This could be in the form of questions; a picture, figure or diagram; WISE or Web-based science inquiry; project-based work; a video, handout or actual projects or assignments; or other form of whole class task designed to incorporate every student's participation and buy-in. This "We Do" aspect of the lesson takes anywhere from 10–15 minutes.

The class then transitions to independent structured work in the last 10–15 minutes of class. In this, the "You Do" aspect, the students are provided with a more rigorous academic task that includes critical thinking, relevant questions that are either modified or direct copies of past Regents exam questions. The "You Do" task could be a literacy requirement based on the students' interpretations of the mini-lesson. This would include a summary, an explanation of the ideas discussed in class, a picture/drawing (that is labeled and briefly explained), a list, or sometimes any interpretation of the lesson derived by the students. For example, every Friday we complete a science journal entry. In one lesson, we explored the difference between organic and conventional foods. Students were shown an experiment performed by a third-grader on YouTube. In this experiment, the student grew potatoes of different varieties including organic from the supermarket, organic from a farmer's market and conventional from the supermarket. She grew the potatoes in water, qualifying how much potato eye growth was apparent after the potato spent a discreet amount of time in tap water. Students were required to answer the following questions about the video: How does exposure to certain chemicals alter a living organism? Which potato do you believe would be the healthiest to eat as a part of a regular diet? Describe the potato you would eat and explain why you chose it.

Students were given time to answer the questions and we reviewed these answers as a class. Then students were directed to write a summary of the video in their journals, on their own (individual work).

In another example, we watched a video or as a whole class read aloud a science article adapted from *Newsela*. The students were required to answer three questions about the article/video as a whole group. I wrote the answers on the board synthesized from the whole group discussion. Students then copied the responses into their journal notebooks. As their individual work for this assignment, students were required

to write a brief summary of the article/journal of five to seven sentences in their own words. The class would then end with students engaging in a round robin or teacher-driven probe for students to directly answer the aim. Students were provided incentive tickets throughout the 40-minute lesson for participating, peer support, positive behavior, transitioning from one task to the next, and task completion (Education, A., 2014).

Teaching critical thinking skills to the special needs populations requires educators to be flexible, to experiment, to have consistent patience, to employ academic rigor, to use evidence-based evaluation, and to be mindful of educating the whole child. It is a multifactorial approach that may yield strong results bridging the accountability gap and better preparing students for life outside of compulsory education.

Thinking is driven not by answers but by questions. When engaging a classroom with Socratic questioning it is important that:

- the discussion stays focused;
- the discussion remains stimulating with probing questions from the teacher;
- the discussion is intellectually responsible (for all learners involved, including the teacher);
- a student, group of students, or teacher summarizes what has or has not been discussed and/or resolved (this can also include a student recorder or teaching assistant acting as a recorder of important points); and
- as many students as possible are engaged in the discussion.

Questioning is the heart of critical thinking. Questions include any degree of ordered thinking that can elicit a response from a student. Open-ended questions are the best — this includes using "how-based" questions like "How did the scientific method become organized in steps?" as opposed to close-ended questions such as "What are the steps to the scientific method?" Open-ended questions cause the "wheels of cognition" in the mind to start to whirl and think. With this, students are engaged and are able to elicit responses that are intelligent and content-driven. In order to create an environment where engagement and intellectual curiosity exists, questions are essential. During the mini lesson, students are not sitting idle as the teacher drills knowledge in a lecture format. Instead the lecture integrates a flow of questions throughout. It is rare for students in my class not to be prodded with a question for more than 30-60 seconds at a time throughout the mini lesson. Incorrect

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answers are probed; other students are invited to assist or help out fellow classmates in answering questions and furthering the discussion. Successful answers are celebrated by the teacher's congratulatory verbal cues. Peers supporting one another to assist and answer questions together are celebrated, as well. It is important for me to impart upon my students the skill of asking questions in order for them to achieve the goal of thinking like a scientist. It is the process of generating new knowledge and using prior knowledge to back up, confirm or refute ideas that lead to new understanding (Community, T., 2014).

Students of special needs populations, specifically at-risk students who come from low income, non-English speaking households, have a decreased awareness of the appropriate skills that make them confident, secure learners. It is vital and necessary to embed within the lesson frame a structured flow of engaging (and therefore rewarding) experiences where the students are able to freely express prior knowledge, as well as assimilate the new knowledge the teacher is driving the lesson with.

For any population of students (general education, English language learners, **but especially with the special populations**) it is important to choose content aligned to the standards that students will actively participate in, including the use of Smart Board activities, videos and web-based science inquiries. This is key to the "buy-in" factor of the content knowledge being "sold" to students. It's important to choose topics current in the news that associate to the student's lives and that are relevant and significant to students, for example: A compression fracture that occurred on the court of a well-watched popular NBA game was a big hit to spur a discussion of the skeletal system in my classroom. Choosing topics to discuss that students can relate to gets students talking and engaged in the process of learning.

As the teacher, I spend a majority of prep time finding rich sources (videos, photos, art, interactive Smart Board games, web-based inquiries, live manipulatives, i.e., insects, physical objects to hold and work with) that connect to pressing, relevant content, which will fuel the discussions after the mini lesson. I follow up with a strong collection of questions that range from factual to analytical to connective to solution-based problem-solving. Here's an example: I had taken a class of very homogenously low-skilled students through a lesson of genetic variation. In doing so, I used a Living Environment Regents short answer question series relating to the common weed, the dandelion. The question set involved a short reading passage about a new variation of dandelion that showed up in a

science teacher's lawn. The new variation of weed was genetically short in stature and as a result, bypassed the lawn mower blades every time the teacher went to mow her lawn. The discussion was peppered with Smart Board pictures of dandelions and people mowing their lawns. In this lesson, the students became the active teachers and asked me questions and shared personal stories about dandelions, genetics, sexual reproduction, variation, etc. A fantastic discussion ensued. After the class was over, multiple students came back from lunch bringing me yellow dandelion bunches, flowers and stalks!

As part of maintaining the active discussion, the teacher should involve differing perspectives of the discussion, to a certain degree. This involves playing the role of "devil's advocate" by bringing up opposing views to dynamic situations. This is easy to accomplish in science, as there are many current, relevant and weighty situations students should be exposed to and on which they should formulate solutions or opinions. This can include the topics of stem-cell research, human impact on the environment, global warming, fracking vs. nuclear energy use, etc. It is important to give students controversial topics and let them hash it out. First and foremost it should be established that respect for one another must be upheld at all times. It is acceptable for the individuals in the group to "agree to disagree." This can be established by setting clear rules for voicing different perspectives. These rules must be founded in objectivity, such as finding a flaw in the evidence or the reasoning, not a flaw perceived to be based on subjective personal opinions. Then students can be taken through a short discussion from which they will need to compute (think) the thoughts, information and viewpoints spoken about, and transform these into a CCLS literacy-based assignment or individual task for the "We Do" and/or "I Do" aspect of the lesson.

To initiate the critical thinking process it is best to start with a prompt. Provocative questions are best to build arguments around. For the case of the dandelion example, the question of "How does genetic variation of an organism impact humans?" was the provocative insightful question (aim) that correlated to an insightful, thought-provoking and critically applicable lesson.

With the special populations it is important to identify ambiguous or subjective terms. In my classroom, students can identify with urban terms for human body parts/organs as opposed to the appropriate acceptable common knowledge terms we may use in daily conversation. Not every student enters

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the classroom with the same amount or type of prior content knowledge. It is important to elicit responses from students. This may take patience on the part of the teacher to hold the class to the probe and wait for a student to come up with a response. All students have exposure to science knowledge through prior instruction, television shows, video games, etc., so it is appropriate for them to share these responses during instructional time. It is crucial for the educator to remain open and flexible with the discussion and amount of knowledge being discussed. I always have, in my back pocket, the highest achievement skill for each student. I have learned it is more important to work flexibly with students, to support their academic strengths while generously and tenderly working to improve their weaknesses (specifically with literacy-based skills).

Not every student is able to clarify and define common knowledge terms but every single student has the right to be able to do so. So in this manner it is important to act as a patient "guide on the side" to support lower skilled student ability in unpacking content, terms and applicable skills. The outdated emphasis on students getting the "right answer" every time is a model that discourages critical thinking and turns off the learning process.

Students have the right to think out their ideas — out loud — in the presence of the teacher and fellow peers. Classmates offer support and we arrive at the answer together, in most cases. I tell my students there are no right answers; all answers are a way of contributing to the class as a whole, absorbing the knowledge that is being "led" or driven by the teacher, who should be the highly qualified content authority.

According to the Individuals With Disabilities Education Act (IDEA) students with disabilities are required to have an Individualized Education Program. IEPs identify measurable education goals that reflect student skills and degree of academic capability. IEPs also include important life skills such as social and emotional skills, and self-efficacy skills that are not addressed by the Common Core (Samuels, 2013).

To assess whether students are learning to think critically, the teacher needs a window into their thought processes. In order to do this the teacher needs to establish a method of individualized recording, assessing and evaluating the constant stream of data generated by students through the classroom period. Teachers must challenge students to communicate back to them, utilizing integrative and creative methods of communicating authentic results. Essays, summaries,

experiments, project-based learning tasks, research papers, inquiries, Socratic discussions, and academically rigorous questions give students the chance to demonstrate their skills. This allows the teacher to evaluate student reasoning in a variety of individualized situations.

Research on classroom management and highly effective best practices (Bos, C.S., Vaughn, S. 2002 & Burden, P.R., 2003) has shown that children perform best in a classroom that is predictable, stable, and structured. We should challenge our students as often as possible with full confidence that they can think critically about the ideas presented in class. Teachers may need to offer support or fill in the holes, and this is our job to do so, but most of the cognitive work is the responsibility of the students.

Students will not ask for rigorous tasks. They will do what we ask of them and nothing more. We cannot wait for them to request a challenge. We must challenge them every day. If by the end of a task students do not understand or have not reached the learning targets set out for them, we can go back, reteach, or use the opportunity to ask a different set of questions that will stimulate their brains to active learning.


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Additional resources recommended by the author

*https://www.youtube.com/watch?v=98S24g7ZZmw*

*https://newsela.com/*

Living Environment NYSED standards (found at http://www.p12.nysed.gov/ciai/mst/sci/documents/livingen.pdf) implicit with CCLS for literacy in history/social studies, science and technical subjects (found at *http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf).*

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