



CONNECT-EXTEND-CHALLENGE

Consider what you have just read, seen, or heard, then ask yourself:

- How are the ideas and information presented *connected* to what you already knew?
- What new ideas did you get that *extended* or broadened your thinking in new directions?
- What *challenges* or puzzles have come up in your mind from the ideas and information presented?

In puzzling over some of the challenges of teaching and learning, it struck our team that a common place at which learning breaks down, particularly in schools, is when students are given information but are never asked to do anything mentally with it. Listening, in and of itself, doesn't lead to learning. One cannot passively absorb information in a way that will make it useable in the future. And yet, one does learn a lot from reading, watching, and listening. By identifying what separates active listening from passive hearing, a new routine with wide applicability emerged: Connect-Extend-Challenge (CEC). Active processing of new information can be facilitated by connecting the new information to what one already knows, identifying the new ideas that extend our thinking, and looking for how these new ideas challenge us to think in new ways or to question assumptions.

Purpose

Students often receive pieces of information bit by bit in classrooms. This can cause them to view important ideas as isolated from one another. It is helpful to think of the Connect-Extend-Challenge routine as one that helps students fasten ideas together and that raises awareness of puzzles worth further attention. The use of this routine offers a structure and space in which new thinking around a topic, *as inspired by new learning experiences*, can be made visible.

In the routine, students connect new ideas they come across to those they already hold while reflecting upon how their thinking is being extended as a result of what they have just read, seen, or heard. By pressing for both connections and extensions, the teacher sends powerful messages to students that ideas and thoughts are dynamic, ever

deepening and growing, and that a big part of learning is attending to the information we take in. Beyond the connections and extensions, this routine also asks students to articulate challenges and puzzles they believe to be particularly important to their efforts to explore an issue or concept. By taking notice of and expressing potentially complex conundrums within a topic, students become more aware of and sensitive to important ideas necessary to develop deep understanding.

Selecting Appropriate Content

This routine is designed to help students become active processors of information. Therefore, it is well positioned after information-rich sessions as a way of synthesizing that information. This might be at the end of a lesson, after a reading, or even after a whole unit of study. Our team frequently uses it as a way of reflecting at the end of a week-long institute. Because of its “linking” quality, a wide variety of content can easily work with this routine. Ask yourself, Are there connections to be made between this content and what the class has previously studied or already knows? Was new information presented that students can identify? Were puzzles and challenges raised from this information?

Steps

1. *Set up.* Before students begin listening to a story, reading a passage, viewing a video, visiting an exhibit, or participating in another information-rich activity, invite them to be mindful of how this new learning experience connects to what they already know. Ask them to think about how it pushes their thinking into new directions and to be aware of new challenges and puzzles that may surface as a result of what they hear, read, watch, or experience.
2. *Connect.* After the activity, have students take note of how what they've just experienced connects with ideas they have already explored or thought about. Ask, “How do the ideas and information you've just heard connect to ideas you already thought about or knew?” It is important to allow students time to write their connections individually before having any group discussion.
3. *Extend.* Now prompt students to identify how their ideas have broadened, deepened, or expanded in some way as a result of the new learning experience. Ask, “How has your thinking been extended in some way, taking it in new or further or deeper directions?” Again, have students individually record their responses.

4. *Challenge.* Finally, ask students to consider ideas that seem significantly challenging in the topic. "What challenges or puzzles have come up in your mind about this topic now that you've been presented with these new ideas and information?" These might be questions or issues that emerge.

5. *Share the thinking.* Once students have a chance to individually respond to the CEC prompts, have them share their thoughts with partners or in small groups. When sharing, it is important that students give their reasons or thoughts behind why they made their selections. A group could have this conversation in three parts so that each part of the routine is given due attention. Also, collecting the connections, extensions, and challenges from small groups to display on chart paper is a good way of making the whole class's new thinking more visible.

Uses and Variations

As part of their social studies curriculum, Jim Linsell's sixth grade students in Traverse City, Michigan, explored cultures of indigenous peoples across various geographic regions. To strengthen their understanding of the cultures they were studying, Jim's students viewed works of art created by members of an indigenous group that depicted the group's culture. Jim used CEC as a front-end organizer for students' looking, asking them to look closely at the art and share how what they were examining *connected* to what they had read previously about this group. He then asked how what they were examining seemed to *extend* their learning of this cultural group beyond what their textbook had offered. Finally, he invited them to voice interesting questions and wonderings the class might puzzle about as they continued in their study. Jim's students made use of their ongoing, documented connections, extensions, and puzzles as they went on to examine how climate and geography influence culture.

During a five-week mathematics unit on area and perimeter, Mark Church had his sixth graders at the International School of Amsterdam record the connections and extensions that surfaced for them following each investigation. Drawing from students' responses, Mark pulled together a dozen commonly expressed connections and extensions as well as a few unique, thought-provoking ideas and posted them investigation-by-investigation on a large classroom bulletin board. In doing so, Mark was building a display of his students' connections and extensions over the course of the entire unit. Mark hoped his students would see and experience the dynamic growth of mathematical ideas over time physically on the display as well as in the classroom discourse. As more connections and extensions were added to the bulletin

board, Mark was able to have students look for common themes and important ideas worth remembering when considering area and perimeter relationships. On the DVD, you can watch how Mark's students also used the CEC routine to discuss a video on the archeological find of Lucy as part of their social studies unit on the origins of early man.

Assessment

Try to get a sense of how students are making sense of ongoing, collective ideas that matter to the understanding of a topic through the connections and extensions they share. Are students recognizing particular themes or nuances that tie ideas together, or are they viewing each learning experience as if it were a brand-new event with no interconnectedness to what has come before or what may lead on from here? Are students seeing how ideas and concepts explored in this topic are connected or have relevance to bigger ideas in other subjects or beyond school itself?

It is important to keep open to the connections and extensions students express. By being open, a teacher may see or hear something that might have otherwise remained invisible or overlooked. At the same time, it is likely that some connections or extensions will seem more powerful or deep than others. By making a list of the class's connections and extensions for all to see and share ownership of, a teacher can begin inviting students to consider which connections and extensions seem particularly strong. This kind of documentation, as well as the conversation it creates for a group, serves as a powerful model for what connection making, both to prior knowledge and toward new territory, looks like.

Tips

This routine often takes time to develop in a classroom, as students need to become familiar with the language. In addition, students need models of just what constitutes a meaningful connection, a rich extension, or a worthwhile challenge. In Chapter Seven, you can read more about how Mark Church developed this routine with his students and came to realize its power in directing learning.

Once familiar with the Connect-Extend-Challenge routine, a teacher will have a better sense of how to invite learners to share their responses. Sometimes it may seem appropriate to have students voice their connections and extensions together, with the teacher probing their reasoning. At other times, after individuals and small groups have shared their responses, a teacher may wish to stretch the class by asking them to nominate the top two or three connections and extensions they feel are most significant to the topic they're studying and ask them what makes them say that.

A teacher might also wish to have a class undertake the "Challenge" portion as a next step or follow on to an initial "Connections and Extensions" conversation. These challenges within a topic could even be expressed as a headline, capturing the essence of an important conceptual complexity. (See Headlines routine, p. 111.) It is important for a teacher not to feel obligated to answer or explain away all the challenges brought forth. He or she should use such puzzles as a way of drawing a group further into their sense making of a topic rather than solving all the puzzles for them.

Once this routine becomes familiar and students are comfortable with the language and have seen and heard examples of meaningful connections, extensions, and challenges, then a teacher could ask students to organize notes under the headings "Connections," "Extensions," and "Challenges." However, to do this before students are comfortable with the routine would probably not be effective.

A Picture of Practice

Josh Heisler, a teacher at Vanguard High School in New York City, saw a potentially good fit with thinking routines and his humanities curriculum. "One of the concepts our class explores in my humanities class is race and membership in society. Throughout the course we look closely at America's first forays into imperialism, how Americans have come to view foreigners at different points in history, and the encounters earlier Americans had with non-Americans, for example, in World's Fair exhibits. We even study complex and controversial topics such as the eugenics movement," Josh said. "In my mind, I saw many patterns within these topics—many connections linking these various units with one another. I became interested in creating ways for my students to begin recognizing and making these important connections." Josh set out to use the Connect-Extend-Challenge routine across many contexts and in various ways. As he did so, he followed the evolution of the routine as it played out with his students over time.

One of the first instances of using Connect-Extend-Challenge came when Josh's class was reading *Freedom Road*, a historical fiction work by Howard Fast, set in South Carolina during the period following the end of the American Civil War known as Reconstruction. The protagonist in the story, Gideon, is a former slave who purchases land in pursuit of autonomy and independence. This was perceived to be a radical idea for the times, and the powers that existed within society

worked to crush Gideon's dreams. After they had read some of the novel, Josh distributed sheets to his students with "Connect-Extend-Challenge" written at the top and explained that he wanted them to do a little reflecting on the text with these headings in mind. "The kids actually came up with some intricate, interesting connections," said Josh. "It wasn't so much that I, myself, hadn't thought of these very same connections; rather, I didn't expect my students would make such strong connections that so clearly extended their thinking around the challenges that race and class pose in our society." Both surprised and pleased, Josh saw right from the start how CEC could help his students articulate how they were making sense of important ideas.

Some time later, Josh wondered what else he might do to scaffold rich thinking for his students. "I decided to put some sentence starters in with the Connect-Extend-Challenge steps. I wanted to support the connections they were making with evidence and rich thinking language." With this added scaffolding, Josh felt even more students began to make some fairly impressive connections (see Table 5.1).

Though Josh was pleased with his initial uses of Connect-Extend-Challenge, he knew that if he wanted his students to make deeper connections, then he would have to help them articulate just what these deeper connections might look like. Nearly two years after his first use of this thinking routine, Josh invited his students, some of whom had been with him in prior years, to begin looking closely at the connections they were making. "We had made use of this routine often enough over multiple school years that I thought they were ready to evaluate the quality of their thinking within this routine," said Josh. While reading *Tarzan of the Apes* and examining complex ideas related to the concept of Social Darwinism, Josh posted two pieces of chart paper in the front of the classroom: one titled "Examples of an O.K. Connection," and the other titled "Example of a Stronger Connection: One That Has Legs." Josh then invited students to look through their notes and find examples of each type of connection. Once his students had shared examples from their journals and Josh had written them on the paper under the appropriate headings, he asked them to describe the features distinguishing "O.K. Connections" from "Stronger Connections." Josh wanted his students to develop a shared sense of criteria for good connection making. His hope was that by deciding upon and examining these features together, his students would be more likely to develop deep connections in further studies (see Table 5.2).

Table 5.1 A High School Student's Connect-Extend-Challenge Reading Notes

Select at least four lines from the reading that you connect to, that extend your thinking, or that raise a challenge or question	Use one of the following sentence starters: For a connection: "This quote reminds me of..." For an extension of your thinking: "This quote is adding to my thinking because..." Or, "I used to think... Now I think..." For a challenge: "This quote makes me wonder...?"
"And if they declined to work the plantation the house must be vacated."	This reminds me of the Indian Removal Act—the Native Americans were either assimilated or kicked off their land.
"The sight of seeing African Americans with arms was a scary thing for the pro-slave Whites."	This reminds me of the Thomas Jefferson quote about holding a wolf by their ears because pro-slavery Whites fear Blacks coming together for rebellion.
"We have one master now, Jesus Christ, and he'll never come here to collect taxes or drive us off."	This quote reminds me of Nat Turner using his faith in God as the key to freedom.
"The ex-slaves desire for land and the presence of armed African American soldiers were an explosive combination."	This added to my thinking because I used to think that African Americans would be forced to leave the land, but now I realize that they weren't going to allow themselves to be forced off.
"Negroes on the land are armed and have announced their purpose was to allow no white man on it."	This surprises me because Gideon recruits Abner Lait (a White sharecropper) to assist him to buy land.

"In the past I tended to think that my students would take the easy way out and just give me something relatively shallow when I asked them to think deeply about a concept. Then I began thinking that perhaps they just didn't always know how to articulate something with more depth to it," said Josh. "That's why noticing and naming good connection making took on such importance for me together with my students. I wanted them to get much better with their connection making as the school year went on." Over time, Josh has come to appreciate the power of having his students evaluate and take ownership of their own thinking.

Table 5.2 High School Students' Criteria for Good Connection Making

Example of an O.K. Connection	Example of a Strong Connection (One That Has Legs)
Tarzan of the Apes reminds us of George of the Jungle because they both climbed trees. Tarzan reminds me of the "we & they."	Tarzan's learning separates himself from the Apes and the Africans—it is like the "we & they" relationship—this reinforces the idea of "we & they." Tarzan's teaching himself to read reminds me of Frederick Douglass—education equals power—he can outsmart people. Tarzan separates himself from a lot of people—sailors, African tribe. This is like Social Darwinism—the weak and the poor won't survive, but the rich will. Tarzan is an example of survival of the fittest, because Tarzan has noble heredity.
How we would describe the qualities or features of an O.K. Connection...	How we would describe the qualities or features of a Strong Connection...
Dry, stale, no details, simple, as if there is no explanation, just one statement—these aren't analyzed—these are shortcuts, more general	These have deeper connections, details, ideas from the topic, considers multiple viewpoints—new and intriguing information, sets new ideas come out
Not much evidence, not many clues about what is going on—simple, cannot do anything with these, cannot push your thinking much further	Makes you notice things, understand the situation better, and provokes new ideas, you can take an idea that will lead to another, draws attention and helps expand your ideas, these provoke the imagination