02
Active learning strategy

ACTIVE LEARNING STRAGEGY 02

Connect-Extend-Challenge

Jordanne Christie

Durham College

THE STRATEGY:

CONNECT-EXTEND-CHALLENGE

The Connect-Extend-Challenge activity is a visible thinking tool that proposes the following set of three questions that encourage students to reflect on their thinking and to assimilate new information with prior knowledge:

> **CONNECT:** How are the ideas and information presented CONNECTED to what you already knew?

> **EXTEND:** What new ideas did you get that EXTENDED or pushed your thinking in new directions?

> **CHALLENGE:** What is still CHALLENGING or confusing for you to get your mind around? What questions, wonderings or puzzles do you now have?

This activity guides students to reflect on their prior background knowledge, identify new learning, and think about how new knowledge challenges or puzzles them. This activity was developed as part of Harvard's Project Zero Visible Thinking (2016) initiative which is focused on teaching practices that help make thinking visible. Its purpose is to help demonstrate to students that ideas and information can connect to other subjects and topics that they already know, and to get students to think in new ways and question assumptions. In addition, the Connect-Extend-Challenge activity provides an opportunity for students to make their thinking visible and helps to support the development of metacognition skills.

Defined broadly as 'thinking about one's thinking', metacognition is about being able to successfully plan, monitor, and evaluate your own learning. Many students who enter college lack metacognitive skills or fail to recognise when to use them (Flavell, 1979). As educators, it is important for us to help

Image1: Students Connecting

foster the development of metacognitive skills in students as these skills can help them to become successful lifelong learners. Research shows that metacognitive capabilities develop over time and that metacognition improves with appropriate instruction, suggesting that students can be taught to reflect on their own thinking (Brown & DeLoache, 1978). When students engage in metacognition, they become aware of their strengths and weaknesses as learners and are more likely to 'actively monitor their learning strategies and resources and assess their readiness for particular tasks and performances' (Bransford, Brown, & Cocking, 2000, p. 67). In addition, there is evidence that improved metacognition is associated with promoting students' overall academic success (Kuhn and Pearsall, 1998).

The Connect-Extend-Challenge activity supports metacognitive reflection by asking students three questions that encourage them to identify new information and ideas that are consistent with their prior understanding of a topic, that encourage them to revise or modify their thinking, and that are confusing or puzzling to them. This process helps students to deepen their understanding of a topic and become more thoughtful and reflective learners. This activity works best after students have been introduced to a new idea, concept or topic that might challenge their initial understanding or perspective (Facing History and Ourselves, 2018). The Connect-Extend-Challenge activity is broadly applicable to any discipline and works well with the individual, in small groups, or as a whole class activity.

RESOURCES

This activity requires a handout, slide or flipchart paper with the Connect-Extend-Challenge questions, and optionally you can also provide Post-It Notes for students to record their responses to the questions. If you are teaching in an online or hybrid environment you can create a collaborative Google Doc (https://www.google.com/docs) with the Connect-Extend-Challenge questions listed where students can collaboratively post their responses to the questions, and review their peers' responses.

Alternatively, you could also use a bulletin board tool such as Padlet (https://padlet.com) where you could provide the Connect-Extend-Challenge questions and students could post their responses for the rest of the class to see, either anonymously or with their names associated.

In addition, you could also use an audience response tool such as Socrative (https://www.socrative.com) to pose the Connect-Extend-Challenge questions to students and to collect the responses and share them with the class for discussion.
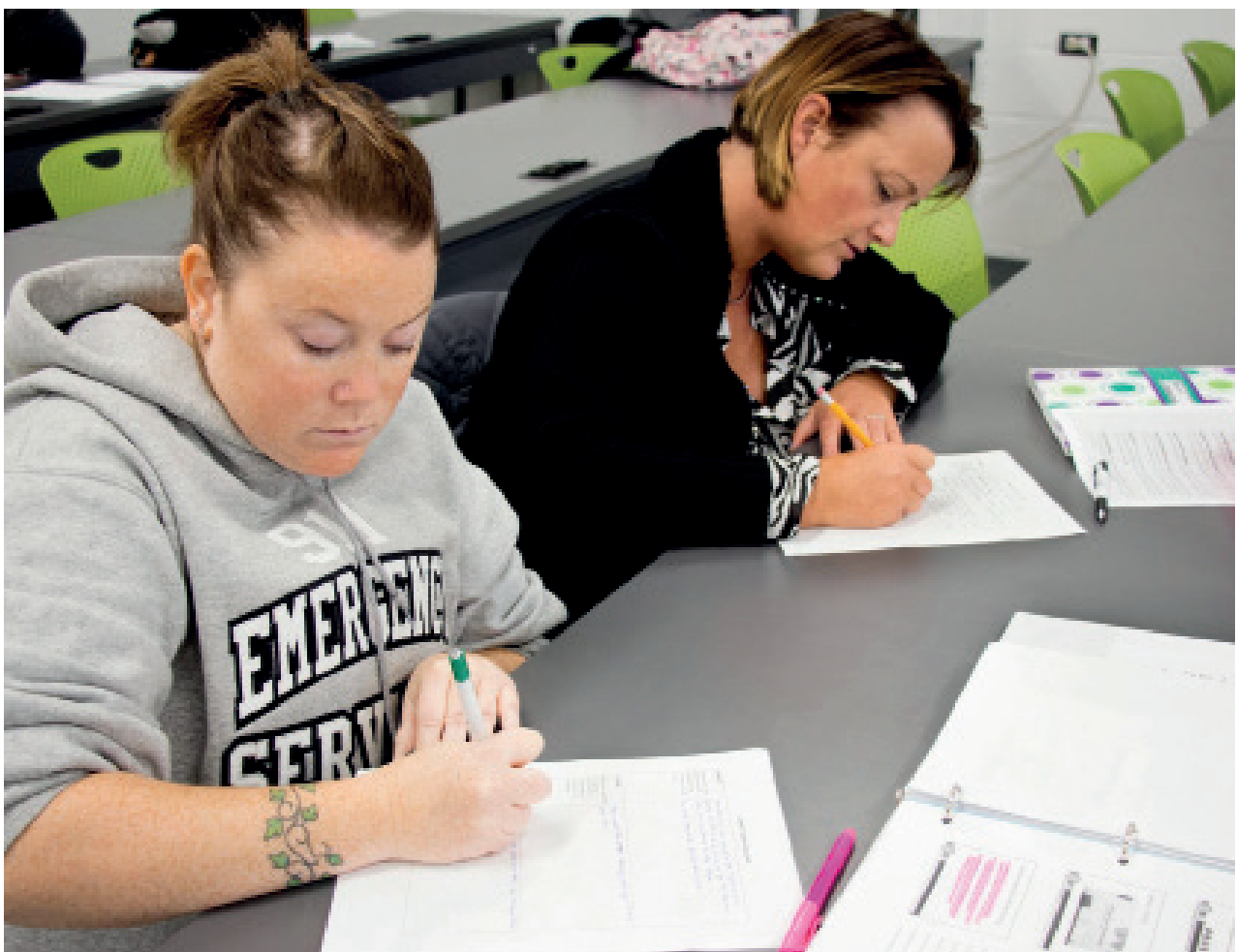

Image2: Students preparing their responses

WHAT YOU CAN DO TOMORROW

If you would like to use this activity right away, you can easily add it to an upcoming lesson where students have been introduced to an idea, concept or topic and are receiving new information or perspectives that might challenge their initial understanding. Upon exposure to a new idea, concept or topic, you can provide students with a handout that has the following questions:

> **CONNECT:** How are the ideas and information presented CONNECTED to what you already knew?
>
> **EXTEND:** What new ideas did you get that EXTENDED or pushed your thinking in new directions?
>
> **CHALLENGE:** What is still CHALLENGING or confusing for you to get your mind around? What questions, wonderings or puzzles do you now have?

You may also pose the questions verbally, or add them to a slide or flipchart paper. As a low risk activity, students may possibly be asked to complete the questions individually. Student responses can then be shared anonymously or publicly with the use of Post-It Notes to encourage discussion and debate. For a more medium risk option, you could ask students to work in small groups to answer the questions and have each group share their responses with the entire class, noting common themes and questions.

STEPS FOR IMPLEMENTATION

STEP 01

Identify a course concept or idea that may be new to the students and which has potential to challenge initial levels of understanding. The activity can be used at various stages during a lesson, for example, when introducing a new resource, throughout a lesson, or at the end of a unit of study.

STEP 03

If the activity is to be completed individually, you can prepare a handout with the Connect-Extend-Challenge questions, or you can provide Post-It Notes to students and ask them to jot down their responses. If the activity is to be completed in small groups, or as a whole class, you may want to provide flipchart paper to record the responses.

01   **02**   **03**
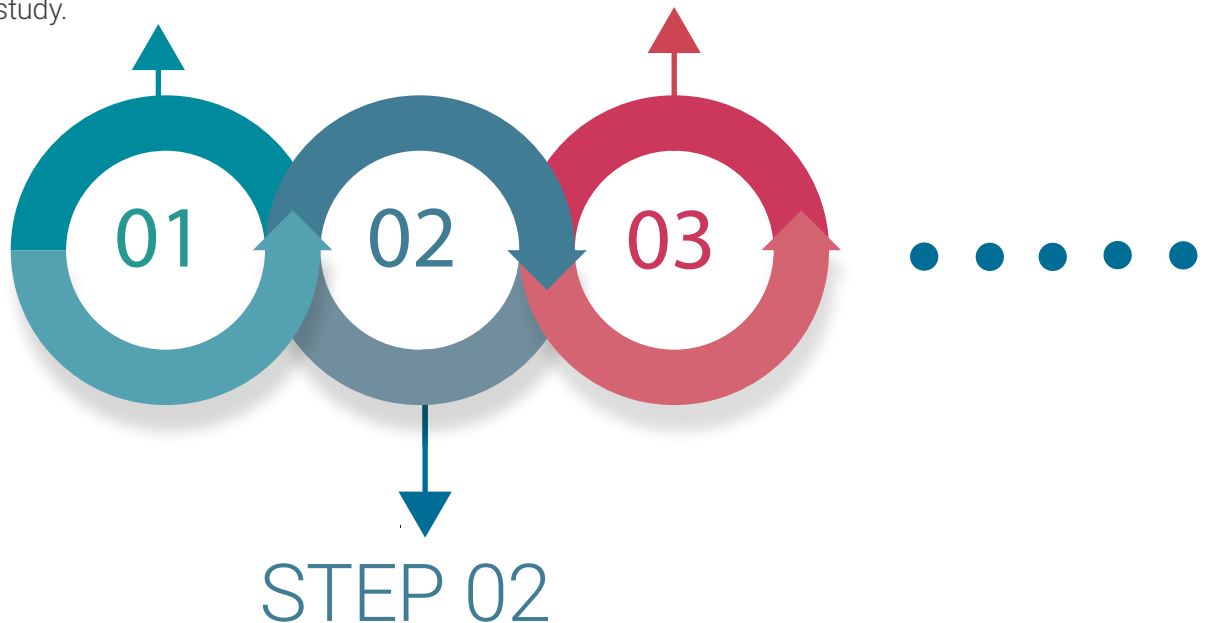
STEP 02

Once the most appropriate time has been decided for use of the Connect-Extend-Challenge activity, you can decide whether you want the activity to be completed individually, in small groups, or as a whole class.

STEP 04

Have students engage in a lesson or discussion, view a video, read an article, listen to a guest presentation, or participate in any other teaching and learning situation where they may encounter new knowledge, and then pose the Connect-Extend-Challenge questions. When posing the Connect-Extend-Challenge questions to students you can customise them to the situation.

For example:

CONNECT: How do the ideas and information from this lesson/discussion/reading/video/guest presentation connect to what you already know about _____?

EXTEND: How does this lesson/discussion/reading/video/guest presentation extend or broaden your thinking about _____?

CHALLENGE: Does this lesson/discussion/reading/video/guest presentation challenge or complicate your understanding of _____? What new questions does it raise for you?

04   05   06

STEP 05

After students have completed their responses, you can debrief the activity with paired or whole-group discussion. You can address the identified questions and challenges, or have students work individually or collaboratively to provide suggestions of how to overcome the challenges or answer the questions. Alternatively, you can have students submit their responses and you can review them to identify any misconceptions, new learning, and outstanding questions which you can address in the next class or by sharing additional resources.

STEP 06

If you are using this activity in-class, be sure to schedule enough time to ask the questions (approx. 2 minutes), to allow students to respond (approx. 5–7 minutes), and to collect and discuss their responses (approx. 10 minutes).

OVERCOMING PUSHBACKS

Students may struggle making connections between the new material and their prior knowledge, as well as identifying new learning and challenges, so you may want to provide some prompts to help them overcome this such as:

> CONNECT - CONNECT: 'I already know the following about this topic...' or 'This reminds me of...' or 'I have encountered similar informa tion in the past when...'

> EXTEND - : 'This added to my thinking because...' or 'I used to think... Now I think...'

> CHALLENGE - : 'This makes me wonder...' or 'This surprises me because...' or 'I would like to know more about...'

Also, students may be reluctant to share their responses, so you may want to start the activity by having the students answer the questions individually and then have them pair up to share their responses. You can then have the pairs join to form small groups and each group can report one or two responses from each question. You can also have the students submit their responses anonymously and use the information to get a general overview of how the class has understood the new knowledge.

CASE STUDY

One example of how I have used the Connect-Extend-Challenge activity is in my General Education course at Durham College entitled 'Social Innovation: Becoming a Changemaker'. This course has been designed using a 'hybrid' format which means that it integrates both face-to-face learning and online learning in the delivery of the course. In this course, students have one hour of online learning and two hours of face-to-face learning each week. The one hour of online learning consists of online readings, videos, discussion forums, self-directed learning activities, small group activities, etc., which students can complete anytime,

anywhere prior to the face-to-face class each week. In the two-hour face-to-face class, we will build on the activities that students have completed online and extend the conversation.

For the purposes of this course, I included the Connect-Extend-Challenge activity in my face-to-face lesson in Week 9 which was focused on the Ideate phase of the Human-Centered Design framework. Prior to attending the face-to-face class where we completed the Connect-Extend-Challenge activity, students were required to read a short article about the Ideate phase and complete an online brainstorming activity where they had the opportunity

to apply some of the principles from the reading and to practice a brainstorming approach. When they arrived to the face-to-face class, I asked students to share in small groups some of the key elements of the Ideate phase that they learned about online through the reading and brainstorming activity. I then played a short, two-minute video that depicted a group of experts completing the Ideate phase of the Human-Centered Design process which showed a real-life application of this phase. After watching the video, I provided the following prompt to the students via a PowerPoint slide and provided them with a handout to record their responses:

CONNECT: How are the ideas and information presented in the video CONNECTED to what you already knew about brainstorming and the Ideate Phase?

EXTEND: What new ideas did you get that EXTENDED or pushed your thinking in new directions?

CHALLENGE: What is still CHALLENGING or confusing for you to get your mind around? What questions, wonderings or puzzles do you now have?

The students were given five minutes to record their individual responses and then I asked them to form a small group and discuss their responses with their peers, with the students noting any similarities and differences. I then asked each group to share some of the connections and extensions that they discovered as well as any questions that emerged from their individual responses and group discussion. As a whole class we debriefed the activity and discussed how the Ideate phase is similar to traditional brainstorming processes that many have experienced in other courses. We also discussed some of the common questions that emerged from their small groups such as how do you come up with original ideas, and how do you properly articulate your ideas and make sure that you don't lose them during the Ideate process.

This activity helped to connect students' new knowledge about the Ideate phase of the Human-Centered Design process with their prior knowledge and experience with brainstorming, and also helped to highlight some of the key features of the Ideate phase which makes it unique from other frameworks and applicable to social innovation. It also allowed the entire class to benefit from the discussion of some common questions about the Ideate phase and helped to address misconceptions before moving on in the lesson where we explored specific techniques that are used in the Ideate phase.

Image3: Students in a small group discussing their responses

SUMMARY

This activity encourages students to reflect on their prior background knowledge, identify new learning, and to think about how new knowledge challenges or puzzles them. It also helps to support metacognition as it guides students to reflect on their own thinking about new ideas, concepts or topics that might challenge their initial understanding or perspective. The Connect-Extend-Challenge activity is effective for any discipline and can be used individually, in small groups, or as a whole class activity both in the classroom and online.

FURTHER READING

Harvard Project Zero. (2016). Connect Extend Challenge. Retrieved from http://www.visiblethinkingpz.org/VisibleThinking_html_files/03_ThinkingRoutines/03d_UnderstandingRoutines/ConnectExtendChallenge/ConnectExtend_Routine.html

Ritchhart, R., Church, M., & Morrison, K. (2011). Making thinking visible: How to promote engagement, understanding, and independence for all learners. San Francisco, CA: Jossey-Bass

TEMPLATE

CONNECT-EXTEND-CHALLENGE

CONNECT: How are the ideas and information CONNECTED to what you already knew?	
EXTEND: What new ideas did you get that EXTENDED or broadened your thinking in new directions?	
CHALLENGE: What CHALLENGES or puzzles come to mind as you think about the ideas or information that was presented?	