Center For Development of Interest in Learning (CDOIL. Inc.)

Content and Strategy Centered Teaching & Learning (CSCTL)

Professional Development - Spontaneous, Informal and Formal Knowledge Development Activities

Research behind CSCTL Carried Out by
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Statement

Many teachers still rely primarily on content-centered instruction, even though many students learn best when teaching also strengthens the strategies they use to think, connect ideas, and solve problems.

Many students struggle because the knowledge and skills they develop in everyday life are not always connected to what they are asked to do in school. Outside the classroom, children learn informally through experience, practice, interaction, and problem solving. In school, however, instruction often treats formal learning as separate from those lived experiences. As a result, students may approach learning with divided efforts: they bring useful informal skills to class, but the lesson structure does not always help them recognize, refine, or apply those skills effectively. CSCTL addresses this gap by helping teachers connect students' informal knowledge development with formal lesson design, so that learning activities becomes more coherent, meaningful, and successful.

Content vs Strategy Centered Teaching

Content-centered teaching emphasizes what students should know. Strategy-centered teaching emphasizes how students develop what students should know; how to generate resources, form or understand relationships among ideas, and apply what they learn. CSCTL brings these two aims together. Rather than treating knowledge as something students merely receive and repeat, CSCTL helps teachers design lessons that build on students' informal strengths and teach them how to think more deliberately and effectively. In this approach, content and strategy are complementary: content gives students substance to learn, while strategy gives them the means to understand, organize, and use that knowledge with confidence.

A person obtains knowledge of an object by thinking in phases. A person (1) perceives, (2) analyzes, and (3) synthesizes, (4) personalizes (thinks privately), and (5) publicizes (thinks publicly) to obtain knowledge of an object. These phases of thinking were identified by Kant (1717) and Wittgenstein (1927). Initially, a person thinks spontaneously; only the first three phases are involved. For example, if you turn your sight from one object to another, you represent another immediately. You perceive (1) perceives, (2) analyzes, and (3) synthesizes to represent another object, but they occurred spontaneously. One does not notice the time that one perceives, analyzes, or synthesizes the object. Also, a spontaneous object may be uncertain; therefore, one thinks deliberately to clarify it. In deliberate thinking, one simulates the initial phases of thinking activities. Here, however, knowledge development activity is informal, not guided by a teacher or defined rules. Informal knowledge development activities may be unsatisfactory; therefore, we have schools and trained teachers, so students learn effectively. Spontaneous, informal or formal thinking activities involve the same phases of activities; but, in school, teachers disregard phases of thinking and their functions during learning activities. In this synopsis, phases of thinking activities and their functions during spontaneous, informal and formal knowledge development activities are explained.

(1) SPONTANEOUS THINKING

Perceptive, Analytic and Synthetic thinking activities at the levels of spontaneous, informal, and formal thinking (knowledge development) activities differ. Specifically, activities that a person engages at the level of spontaneous differ from activities that a person engages at the level of informal or formal knowledge development activities. Also, outcomes of spontaneous, informal, or formal knowledge development activities differ. Significantly, one demonstrates (1) perceptive, (2) analytic, and (3) synthetic thinking activities at various levels of thinking (knowledge development) activities. In the paragraphs that follows, effects of (a) spontaneous, (b) informal, or (c) formal levels of thinking activities upon phases of [(1) perceptive, (2) analytic, and (3) synthetic] thinking activities are explained.

Perceptive and Spontaneous Thinking Activities

Perceptive thinking is filtering elements from occurrences through which a person obtains an appearance in consciousness. Perceptive thinking activities may be spontaneous, informal or formal. When perceptive thinking is spontaneous, a person does not decide whether to or not to perceive an occurrence. The response to an occurrence is spontaneous. A result of perceptive thinking at the level of spontaneity is that a person obtains an appearance in consciousness. A requirement that helps to obtain an appearance in consciousness is that there be a connection between a person and an occurrence; and conditions that promote connections include being alive and capable of being affected by occurrences.

Analytic/Synthetic and Spontaneous Thinking Activities

Like perceptive thinking activities, analytic and synthetic thinking activities at the level of spontaneity also contribute to representing an object. They have requirements that help them to operate effectively. However, at the level of spontaneous thinking, one does not decide whether to or not perceive an occurrence. A person's response to an occurrence is spontaneous, and a person does not decide what and how to or not perceive an object once it occurred.

(2) INFORMAL THINKING ACTIVITIES

A person also demonstrates (1) Perceptive, (2) Analytic and (3) Synthetic thinking activities at the levels of informal thinking (knowledge development) activities. Activities that a person engages at the level of informal differ from activities that a person engages at the level of formal knowledge development activities. Outcomes of informal and formal knowledge development activities differ. In the paragraphs that follows, effects of informal and formal (levels of thinking activities) upon phases of thinking activities are explained.

Perceptive and Informal Thinking Activities

Perceptive thinking is filtering elements from occurrences to obtain an appearance in the mind. The purpose of an object perceptive thinking at the levels of informal thinking activities is to

trigger informal thinking activities. In the informal level of thinking, an object of perception is obtained by discovery. In informal thinking, a person discovers a problem or task and responds to them consciously. A person's response is said to be informal because one responds to a task or problem consciously, but without adhering to established rules or processes. With perceptive thinking at the informal level of thinking, a person may be aware of his/her thinking activities, but not how to more effectively engage them and gain optimum advantage.

Analytic and Informal Thinking Activities

Analytic thinking is generating elements (features) characterizing an appearance. The purpose of the object (elements) of analytic thinking activities in the level of informal thinking activities is to generate the means to clarify an object of informal thinking activities. In the informal level of thinking, the elements through which a person clarifies an object is generated when a person engages in thinking about an object. In informal level of thinking, a person engages in analytic thinking by thinking about the object that must be clarified. Analytic thinking is informal when one responds to a task or problem consciously, but without adhering to established rules and/or processes. A person who thinks analytically at the level of informal thinking is aware of his/her thinking activities but not adhering to established rules or procedures.

Synthetic and Informal Thinking Activities

Synthetic thinking is producing and applying rules (strategies and formulas) to simplify and resolve a problem. The purpose of the object (rule; strategies or formulas) of synthetic thinking activities in the level of informal thinking activities is to generate the means to clarify an object of informal thinking activities. In informal thinking, the means through which a person clarifies knowledge is by producing and applying rules of relationships among elements characterizing a problem. In informal thinking, a person thinks synthetically by showing relationships among aspects of the problem. When synthetic thinking is informal, one responds to a task or problem consciously, but without adhering to established rules and/or processes. Here, a person is aware of his/her thinking activities but does not adhere to established rules or procedures.

(3) FORMAL THINKING ACTIVITIES

With formal thinking activities, a person thinks deliberately. In deliberate thinking a person deliberately creates a problem or task for practice and skills developments. Formal knowledge development activities are deliberate thinking and differ from other thinking activities. In both the spontaneous and informal thinking activities, students fail to engage in some phases of thinking activities mostly because they did not learn or know about them. During lesson activities, one may not have such an excuse. The purpose of formal learning activities is to develop skills in engaging in all phases of thinking activities. Here, teachers engage students in learning about what and how they learn. In the following paragraphs, all phases of thinking, (1) perceptive, (2) analytic, and (3) synthetic, (4) private, and (5) public thinking activities at the level of formal leaning activities, are identified and explained.

1. Perceptive and Formal Thinking Activities

Perceptive thinking is filtering elements from occurrences to obtain an appearance in the mind. The purpose of perceptive thinking in the initial phases of thinking is to obtain an appearance and trigger thinking activities. A person obtains an appearance in conscious and begins thinking activities when there is a connection between a person and an occurrence. During lessons or at the level of formal knowledge development activities, students engage deliberately in the phases of a lesson that correspond to the phases of thinking. The phase of a lesson that corresponds to the phase of perceptive thinking is the triggered interest phase of a lesson. Here, teachers engage students in learning to model perceptive thinking activities. Teachers engage their students in learning to understand, and students engage in learning to understand connections between lessons and their experiences or concerns.

The purpose of perceptive thinking activities is to obtain an appearance and trigger thinking activities. Just as appearance triggers thinking activities, events in the triggered interest phase are intended to help students understand connections between lessons and their experiences and thus trigger interest in a lesson. When students understand a connection between a lesson and their experiences, questions (problems) arise in their minds. To answer those questions, students'

interests are triggered, and they engage the activities. During lessons or formal learning activities, teachers trigger interest by (1) discussing students' experiences, (2) showing connections between lessons and students' concern (or experiences), and so on.

2. Analytic and Formal Thinking Activities

Analytic thinking is generating elements or instances characterizing an appearance. The aim of Analytic thinking in the initial phases of thinking is to generate instances characterizing an appearance. A person generates instances characterizing an appearance to facilitate the process of representing an object of appearance. During lessons or at the level of formal knowledge development activities, students engage deliberately in the phases of a lesson that correspond to the phases of thinking. The phase of a lesson that corresponds to the phase of analytic thinking is the maintained interest phase of a lesson. In the maintained interest phase of a lesson, teachers engage students in learning to model, and students engage in learning to model analytic thinking activities, students learn to generate and apply resources to facilitate learning activities.

The aim of analytic thinking in the initial phases of thinking activities is to generate features characterizing an appearance. Just as generating the instances of or features characterizing an appearance, the factors that facilitate student's efforts in lessons include understanding, developing and applying resources. When students can generate resources for a lesson, they address and resolve difficult aspects of the lesson, and they facilitate their efforts. During lessons or formal learning activities, teachers engage students in learning to generate resources for a lesson and facilitate efforts by explaining the resources of a lesson and how the resources help to address and resolve difficult aspects of the lesson.

3. Synthetic and Formal Thinking Activities

Synthetic thinking is generating elements or instances characterizing an appearance. The aim of synthetic thinking activities is to produce and apply rules (strategies or formulas) to determine relationships among instances characterizing an appearance and thus represent an object of an appearance (Allison, 2018). A person produces rules to understand relationships among instances characterizing an appearance to represent/obtain an object of appearance. During lessons or at

the level of formal knowledge development activities, students engage deliberately in the phases of a lesson that correspond to the phases of thinking. The phase of a lesson that corresponds to the phase of synthetic thinking activities is the sustained interest phase of a lesson. Here, teachers engage students in learning to model, and students engage in learning to model synthetic thinking activities, students learn to produce and apply rules to obtain an object, students learn to produce and apply rules (formulas or strategies) to understand a lesson. Dewey (1933) explained that otherwise students learn without understanding how the concepts relate to one another, and they accumulate predigested concepts. Children education must be built not just upon previous successes, achievements, and progress, but also how they were made Dewey (1933).

The aim of synthetic thinking in the initial phases of thinking activities is to produce and apply rules (strategies and formulas) and simplify object representation. Just as rules help to simplify features of an appearance and represent an object, in formal knowledge development activities or sustained interest phases of lessons, students seek to understand how features of tasks or problems relate to one another. Students seek to simplify lesson tasks or resolve problems. Factors that help students to simplify lessons tasks include producing and applying rules of concepts. Teachers engage students in learning to produce and apply rules (strategies and formulas) and simplify tasks by engaging them in learning to derive strategies and formulas to simplify/understand tasks, but not by explaining instances or giving examples.

4. Private/Personal and Formal Thinking Activities

In private thinking activities, a person deliberately engages in thinking activities seeking to more fully understand one's object. The aim of private thinking activities is to clarify and obtain a personal object/benefit (Wittgenstein, 1927). Just as a person must represent a personal object or benefit of an object to engage it, in formal knowledge development activities or personal interest phases of lessons, students seek to represent or understand personal benefits of lessons to engage the lesson or object privately. Otherwise, students may briefly engage but not persevere with a learning task. Private thinking activities or where a person develops unique capacities and skills correspond to the personal interest phase of lessons. The personal interest phase of lessons is where students learn to develop their unique capacities and skills.

Students seek to represent or understand personal benefits of lesson tasks; students want to engage objects in lessons and learn more effectively. Factors that help students understand personal benefits of lesson tasks include (1) providing students with opportunities to engage in private and personal activities, (2) engaging students in private/independent learning activities, (3) explaining the rules of independent learning activities, etc. During lessons or formal learning activities, teachers engage students in learning to represent or understand personal benefits of lessons or tasks by modeling activities of the phases of private thinking, by engaging students in private or independent learning tasks. As students engage in personal and independent learning tasks, they develop their unique and personal views or understanding of lessons, they develop skills and capacities to reflect on lesson activities and on their experiences in general. Students learn more effectively when they learn to independently develop their skills and capacities.

5. Public/shared and Formal Thinking Activities

Public thinking activities are where a person engages others in developing shared experiences or progress. The aim of public thinking is to develop a shared experience or an ideal environment (Wittgenstein, 1927). In public thinking activities, a person represents a shared object or benefit that may be achieved through public thinking activities. Public thinking corresponds to shared interest phase of lessons or formal learning activities. Just as a person represents a shared object or benefit to engage in public thinking activities, students represent benefits of and seek to understand shared experiences and activities during lessons. Students seek benefits of engaging one another and of shared learning/lesson activities Otherwise students only work in isolation from and in suspicion of one another. In the shared interest phase of lessons students also have interest in engaging others to produce an ideal environment. In the shared interest phase of a lesson, teachers engage students in learning to model, and students engage in learning to model public thinking activities, students learn to engage their peers/others.

The focus in the shared interest phase of a lesson is to engage students in learning to create strong and effective shared activities. With the shared interest phase of lessons, students learn how to learn effectively from one another, create and sustain an ideal society (a democracy), and achieve enduring progress (Dewey, 1934). With activities in the shared interest phase of a lesson, students

learn to interact well with one another and work well together. Factors that promote students' engagement with activities of the shared interest phase of lesson include (1) explaining to students the activities and benefits of the shared learning activities. During formal learning activities, teachers encourage students to identify and represent the shared benefits of lessons. As students engage in shared learning activities, they develop skills for shared activities and students learn more effectively.

CSCTL Training Activities

In CSCTL training, teachers engage in rigorous professional learning focused on students' interests, efforts, and learning needs. They examine how students develop understanding across formal and informal settings, and they learn how CSCTL practices can strengthen achievement by making lessons more responsive and more intentional. Teachers also learn to design instruction that helps students recognize connections to their experiences, identify useful resources, develop strategies and formulas within their areas of study, strengthen their unique capacities, and participate more effectively in shared learning activities.

CSCTL learning activities are organized around challenging tasks that help teachers recognize, reflect students' informal knowledge-development skills in formal learning settings, and support students in learning more effectively.

Expected Learning Achievements

- Teachers learn that students develop understanding through active thinking, and they design lessons that better reflect how students build knowledge.
- Teachers learn to identify features of informal thinking that strengthen student effort, then use those features to shape more effective CSCTL lessons and learning tasks.
- Teachers learn to make the relationship between content and strategy explicit so that students better understand both what they are learning and how they are learning it.
- Teachers learn to align lesson phases with phases of thinking so that instruction more effectively supports student understanding, engagement, and growth.

Participants Answer the Following Questions

Content-centered and strategy-centered teaching are complementary. Across CSCTL

training, participants explore the following questions in order to strengthen instructional practice and improve student learning:

- What content knowledge and strategy skills do students develop when teachers emphasize CSCTL practices, and how do those two forms of learning differ?
- What elements of students' informal thinking reinforce learning, and how do those elements compare with the features that strengthen formal lesson activities?
- What do teachers need to know to implement CSCTL effectively, and what do students do differently when they develop both content and strategy skills?
- How do students develop learning skills and strategies in challenging situations, and how do difficult experiences affect that development?
- What are the fundamental elements of content knowledge, and how do they compare with the elements of strategy knowledge?
- What features of challenging experiences contribute to growth, and under what conditions can adverse experiences promote development?

Action

CSCTL is grounded in a theory of student interest that emphasizes phases of knowledge development. Rather than relying on guesswork to address learning challenges, teachers using CSCTL learn to understand the functions of lesson phases, recognize how those phases reinforce student effort, and respond more effectively to barriers to learning. As a result, they are better prepared to design instruction that supports deeper understanding and stronger student engagement.

We encourage school leaders, districts, and educators to learn more about CSCTL practices, establish CSCTL training centers, and expand access to professional learning that helps teachers better understand the phases and functions of effective lessons. CSCTL offers educators a practical framework for strengthening instruction, supporting students more intentionally, and addressing persistent challenges in teaching and learning.

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