Metamorphosis
TEACHING LEARNING COMMUNITIES

Summary of
Principles of Learning for Effort-Based Education

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The Entity Theory of Intelligence: People with display-oriented goals think intelligence is a thing, an entity, and that each person has certain an amount of intelligence as evidenced in how well they perform. Referred to by Carol Dweck as a "performance-based" mindset, which causes people to tend to believe that:

- Doing well in performance is evidence of intelligence
- Doing poorly is evidence of a lack of intelligence

People who believe these things often dislike challenging situations where they have to work hard or where there is a chance they might fail, because both working hard and failure would be evidence that they are not smart.

The Incremental Theory of Inelligence: People with learning-oriented goals believe intelligence develops over time, in different contexts, and is learnable. By solving hard problems, working on them, "massaging" them, "walking around" them, and viewing them from another angle, people get smarter. This goes with the belief that high problem-solving effort actually makes you smarter. These individuals:

- Display continued high levels of task-related effort in response to difficulty
- Love challenge and will often ask for a harder problem or a more difficult book

Socializing Intelligence: Based on the convergent findings of motivational and cognitive research, understanding of intelligence encompasses:

1. *Beliefs:* a set of beliefs about oneself- one's right and obligation to understand and make sense of the world, and one's capacity to figure things out over time. Intelligence includes two kinds of beliefs:

a) Believing that one has the right and the obligation to understand things and make them work better; to understand what, how, and why and to ask questions, "push-back" and not just receive information passively.
b) Believing that one can solve problems and has the capacity to figure things out over time. I am smart if I understand that problems get solved through analysis and work. I have to believe that I can do it.

2. *Skills and Knowledge:* a set of problem-solving and reasoning capabilities, which include:

a) A toolkit of cognitive strategies like memorizing, using resources, a repertoire of smart things to do in reasoning, problem solving and decision-making.
b) A toolkit of social skills and knowing how and when to: help, ask questions, seek outside help, or struggle through on their own, and how to receive, evaluate and adapt to feedback and guidance.

3. *Disposition* to use the skills and intelligent thinking regularly: Concerns habits of mind and a positive disposition, tendency to ask questions, and put forth serious, sustained, and targeted effort to become smarter.

Instructional Environments for Socializing Intelligence would include:

1. Evidence of highly rigorous curriculum that demands active mental work and questioning from all students

2. Classroom discourse with "talk" that is respectful, constructive and inclusive with plenty of pushback and challenge and the expectation that arguments be backed up by appropriate evidence and sound reasoning
3. Charts, rubrics, and recent student work which attests to the clear and public expectations and standards students are expected to meet.
4. Students taking responsibility for their own learning by using established criteria to guide efforts and actively monitoring/regulating their own cognitive processes.
5. Students noticing when they do not understand and asking for clarification and making appropriate use of resources in their environment, including teachers and partners.
6. Evidence of apprenticeship learning where students are involved in projects and presentations under the expert guidance of teachers, coaches, and advanced peers.

Academic Rigor in Thinking Curriculum
Educators' challenge is to integrate *high-rigor content* with *high-level thinking and active use of knowledge* for the sake of real learning and economics of time. Cognitive research in learning is absolutely clear that knowledge matters: it is the basis for reasoning. Well-organized knowledge allows people to learn large amounts of information in productive ways.

The Principle of Academic Rigor calls for:

1. Commitment to a Knowledge Core. This means:
    a. Having an articulated curriculum that progressively deepens students' understanding of core concepts while avoiding needless repetition
    b. Choosing concepts that matter and going into those in-depth.
    c. Focusing everything- teaching, assessment, and everything else that support learning- on students' deep mastery of those concepts.
2. High Thinking Demand. This means:
    a. Infusing every learning opportunity with a press for deep understanding
    b. Students are expected to raise questions, solve problems, think, and reason
    c. Students are doing challenging high-level assignments in every subject.
3. Active Use of Knowledge. This means:
    a. Developing classroom discourse, instructional tasks, and assignments that require students to interpret texts and synthesize multiple sources of information, test their understanding of concepts by applying and discussing them, and use their prior and out-of-school knowledge.

Accountable Talk: Many agree that talk is essential to learning, but what matters most is what students are talking about and how they talk about it. Accountable talk sharpens student's thinking by reinforcing their ability to use and create knowledge. Teachers create the norms and cultivate the skills of "accountable talk" by:

- Modeling appropriate forms of discussion
- Questioning, probing, and leading conversations (i.e. press for clarification and explanation, require justification of proposals and challenges, recognize and challenge misconceptions, demand evidence for claims and arguments, or interpret and "re-voice" student statements.)

To be valuable, talk must include:

1. *Accountability to the Learning Community*- Students:
    a. Listen to one another so that they might use and build on another's contribution
    b. Can paraphrase and expand upon one another's contributions
    c. Can make an effort to clarify, if they don't understand

d. Disagree respectfully, challenging a claim, not the person who made it
e. Move the argument forward, with or without the teacher's help

2. *Accountability to Knowledge*- Students/speakers:

a. Try to be as specific and accurate as possible when making a claim
b. Are confident that what they are saying is true
c. Are prepared to back up claims with evidence that meets the standards of the discipline, if challenged, like citing specific passages or evidence in the course of discussion
d. Expect to ask and answer challenging questions, and work hard at "getting it right"
e. Do not shut down discussion with emotive statements of personal opinion or preference that defy challenge

3. *Accountability to Rigorous Thinking*- When talk is held to rigorous thinking standards, students:

a. Refer to a *variety* of texts and sources of information
b. Connect ideas within and between texts and use appropriate background knowledge to support their ideas and opinions
c. Recognize and acknowledge when more information is needed
d. Use sequential ideas to build logical and coherent arguments, with various types of evidence
e. Ask questions to test their own understanding of concepts
f. Draw comparisons and contrasts among ideas and indicate to what degree they accept ideas and arguments
g. Assess and challenge the soundness of each other's evidence and quality of reasoning

In classroom talk that is accountable to generally accepts standards of reasoning, students:

a. Use rational strategies to present arguments and draw conclusions
b. Provide reasons for their claims and conclusions, and fashion sound premise-conclusion arguments
c. Use examples, analogies, and hypothetical "what if" scenarios to make arguments and support claims
d. Park arguments and issues, in order to stay on topic and further the discussion, until later discussion

Clear Expectations

For teaching and learning environments to create intelligence, they must communicate clear expectations about what students will learn, how they will learn it, and what qualifies as good work. This means setting explicit content and performance standards that all students will work to achieve, and making those standards clear to everyone--students, teachers, principals, parents, and the community--by displaying and discussing them regularly. Educators can help students internalize the expectations by having them develop rubrics and criteria charts that express the standards for quality work in the students' own words. By reflecting on exemplars and models of student work that meet or are on the way to meeting standards, students can learn to judge the quality of their own and others' work. Models should also demonstrate the process used by learners to reach an understanding or follow a path of reasoning. The social setting of the classroom can provide occasions for modeling effective thinking strategies that include not only the final model but also the process itself. In other words, not only is the final product of the learning pictured for learners, but also the learner's thinking aloud to get to the final model is made visible. Moreover, social interactions tied to reflections about learning can motivate students and establish the disposition to use deeper thinking skills. It behooves us as educators to extend our efforts at

creating intelligence by moving the audience for the student's work beyond the classroom into the community and family.

Self-Management of Learning

If students are going to be responsible for the quality of their thinking and learning, they need to develop--and regularly use--an array of self-monitoring and self-management strategies. These *metacognitive* skills include noticing when one doesn't understand something and taking steps to remedy the situation, as well as formulating questions and inquiries that let one explore deep levels of meaning. Students also manage their own learning by evaluating the feedback they get from others; bringing their background knowledge to bear on new learning; anticipating learning difficulties and apportioning their time accordingly; and judging their progress toward a learning goal. These are strategies that good learners use spontaneously and all students can learn through appropriate instruction and socialization. Learning environments should be designed to model and encourage the regular use of self-management strategies.

1. Within the context of instruction and learning in the various subject areas, metacognitive strategies are explicitly modeled, identified, discussed, and practiced.

a. Teachers model ways that people notice and regulate their own learning processes.
b. Teachers call attention to students' effective use of self-management strategies, making overt the thought processes that are usually carried out internally.
c. Students can talk about their self-monitoring and self-management strategies: what they are, why they are using them, and how they help them learn in specific situations.
d. Students and teachers comment on the quality of questions, inquiries, explanations that arise in the course of content-area study.

2. Students are expected and taught to play an active role in monitoring and managing the quality of their learning.

a. Students regularly check their understanding by paraphrasing or restating concepts in their own words, explaining things to themselves, asking themselves questions, extending ideas, and checking new information against their background knowledge.
b. Students notice and can talk about how clearly, fully, and deeply they understand something.
c. Students objectively assess their work against standard-meeting models and ask for instruction or coaching when they need it.
d. Students can predict how their products and performances will be evaluated.
e. Students regularly gauge how much time and effort will be required to accomplish a learning task or achieve a learning goal. They plan their steps and pace themselves accordingly.

3. Teachers scaffold students' performance during initial stages of learning, and then gradually remove supports.

a. During early learning, teachers play an active role in monitoring students' understanding, anticipating how long tasks will take and where learning difficulties will occur, and deciding when further explanation or direction is needed. Students carry out these functions themselves as their competence grows.
b. Students assume increasing control over the conditions of their learning, such as use of resources, sequencing of activities, and conditions of work.
c. As students begin to take over the management of their learning, teachers may ask them to reflect on and discuss the strategies they use.