EQuIPD Facilitative Coaching Model

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The EQuIPD Grant

Teachers play influential roles in facilitating education reforms (Darling-Hammond, 2000), so providing support and professional development (PD) opportunities that effect systemic improvements in teaching practices and student outcomes is essential. The **E**ngaged **Qu**ality **I**nstruction through **P**rofessional **D**evelopment (EQuIPD) is a teacher PD program that includes strategies that transcend hierarchical relationships between professional development providers and teacher-learners. EQuIPD aims to promote teacher capacity building and professional growth, focusing on system thinking, conceptual modeling, inquiry-based lessons, design thinking, process mapping, workforce skills, technology, collaboration, and classroom discourse (Figure 1).

The EQuIPD grant uses a modeling pedagogical framework grounded in constructivist learning techniques (Fosnot & Perry, 1996; Osborne, 1996; Tobin, 2012) to develop core conceptual models (Justi & Gilbert, 2002; Lesh & Doerr, 2003) in students and teachers. EQuIPD uses a simple four-stage model: Elicit, Develop, Deploy, and Refine to engage teachers to create learning cycles that support students to develop conceptual models. EQuIPD uses teacher and student lenses to help teachers understand the impact of their pedagogical practices on the learner. All coaching practices and activities are designed to support the teacher in building these pedagogical practices aligned to their curriculum and state standards.

EQuIPD is a Department of Education, Supporting Effective Education Development (SEED) funded program running from 2018 through 2021. It has served over 250 teachers in 10 Florida school districts through diverse and high-quality PD strategies, including one-on-one facilitative coaching, technology training, boot camps, and professional learning communities. The grant showed What Works Clearing House (WWC, https://ies.ed.gov/ncee/wwc/) level of results for change to teacher practice.

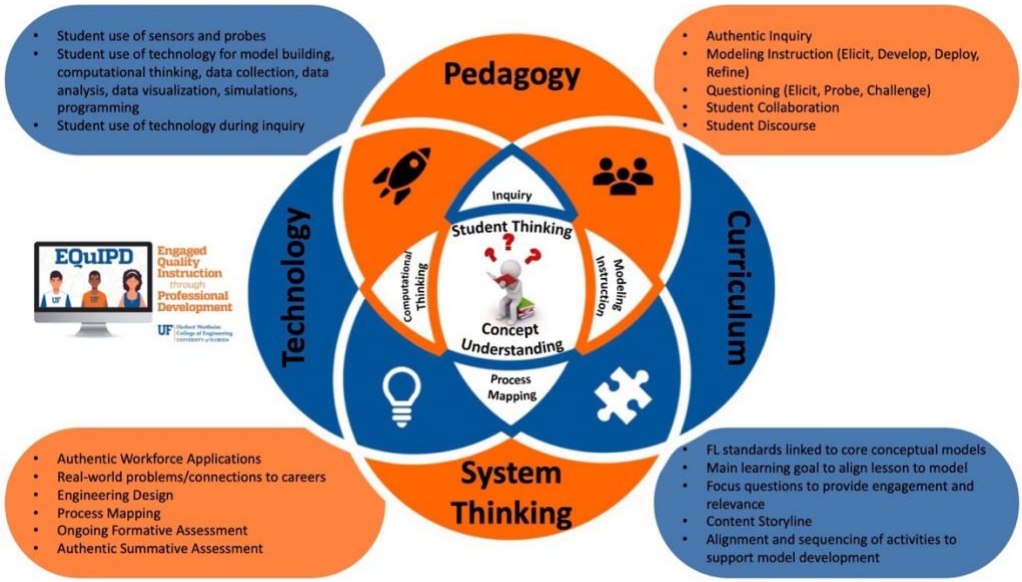


Figure 1: EQuIPD professional development core model.

Coaching Philosophy and Structure

One-on-one coaching is at the core of EQuIPD's PD model. Coaching provides ongoing and focused support and PD to teachers as they implement pedagogical strategies in the classroom. EQuIPD utilizes an instructional coaching approach directed toward individual teachers in their classrooms and helps them understand the learning system in which they operate. This type of coaching has been shown to positively impact teachers' attitudes, increase skill transfer and implementation of new strategies in the classroom, increase feelings of teacher-efficacy, and improve student achievement (Desimone & Pak, 2017; Joyce & Showers, 1981).

Through coaching, a collaborative and dialogic interaction is developed, and this perpetuates support for teachers. The EQuIPD coaching development model (Figure 2) includes four essential and critical processes: **prepare and develop coaches, create organizational systems, enact the EQuIPD coaching model and provide just-in-time PD**.

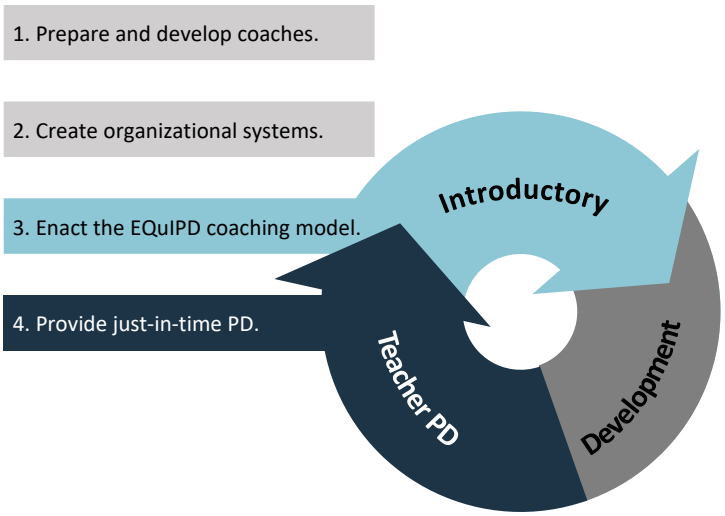


Figure 2: The EQuIPD coaching development model.

Coach Preparation and Development

High-quality coaching starts with providing preparation and development to impact coaches' pedagogical and content knowledge. As a result, an Agile (Boyle et al., 2006) culture is created to ensure constant improvement. The coaches work within a space with high levels of challenge, systematic coaching plans, effective communication channels using a collaborative platform (Microsoft TEAMS), refinement of performance analysis, and high levels of support and adoption of the program's goals for both coaches and teachers. Owing to the coach's ability to make pedagogical decisions with the teachers, they were able to adapt the coaching process to meet the needs of the teachers. Additionally, since the coaches came from different backgrounds, various training was requested and designed to support their professional development.

Organizational Systems

The EQuIPD Coaching Model is considered a system with various components, processes, and elements in place. Using a system thinking perspective, the principal investigators and coaches collaboratively set policies and procedures and created corresponding documents to support coaching. There are three main components to EQuIPD's coaching **organizational system**, which make up its policies and procedures: **coaching routines, documentation, and scheduling**. The organization system and policies and procedures are mapped out in Figure 3.

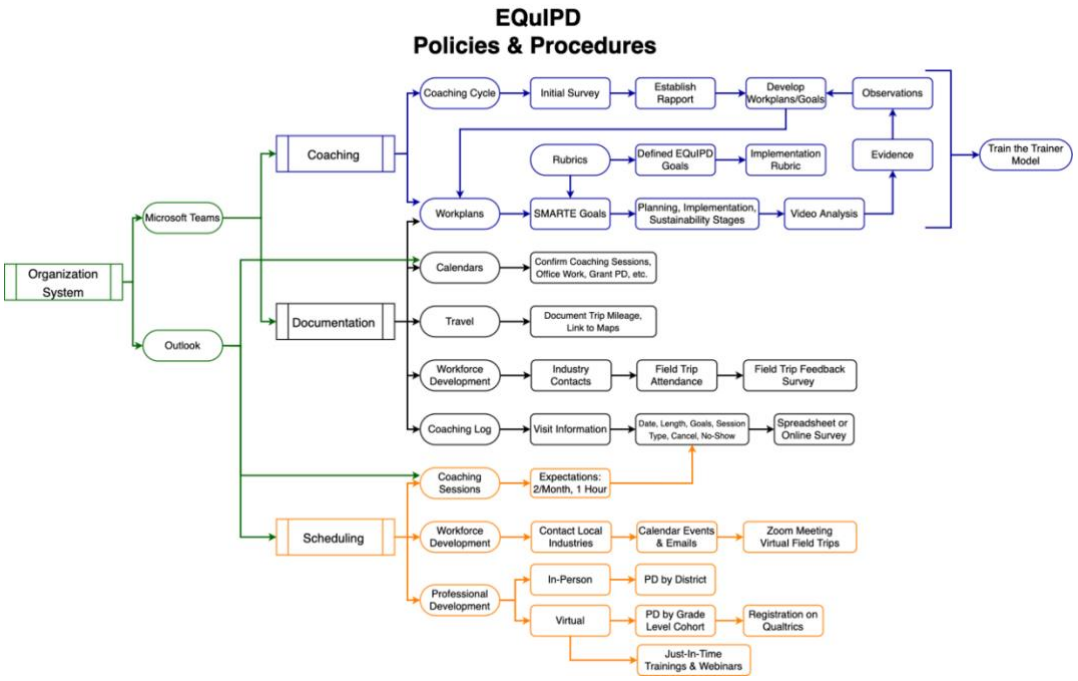


Figure 3: The EQuIPD organizational system, policies and procedures.

While the EQuIPD program is Agile in its design, it was imperative to map out significant policies and procedures to ensure cohesive systems between each coach. This alignment allowed the program to identify the essential elements for coaches to complete or collect proper documentation of coaching sessions, work plan development, teacher evidence, scheduling industry tours, and professional development design.

The EQuIPD Coaching and Professional Development Model

The coaching process involves three stages: an introductory stage, a development stage where classroom pedagogical practices are implemented, and ongoing teacher professional development to deepen practices. These stages are illustrated in the graphic below (Figure 4).

The Introductory Stage of the coaching process aligns itself with the elicit stage of the EQuIPD grant's modeling pedagogical framework. The coaches introduce themselves, the program, and its goals. While beginning to build rapport through casual discussions about their teaching practices, pedagogical goals, and the environment and resources they have access to. We

document the introductory stage using a survey to elicit initial teacher goals and information about their classrooms; an abbreviated version is of this survey is attached in Appendix A.

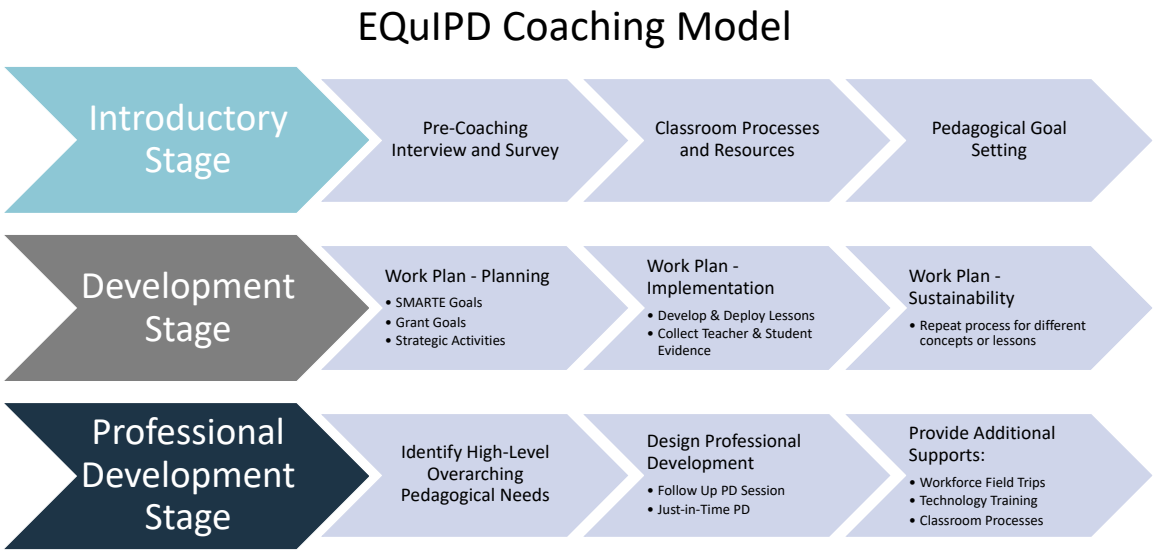


Figure 4: The stages and components of the EQuIPD coaching model.

In the Development Stage, coaches and teachers work together to identify the pedagogical wants, needs, and gaps in their teaching practice. The coach guides the goal-setting process to align with one or more of the grant's goals. They then develop a work plan that moves the teacher through three coaching stages: planning, implementation, and sustainability. The teacher and coach identify strategic activities during each stage to meet the overall goal of the work plan. As teachers develop lessons, strategies, and activities, the coach collects drafts, frameworks, handout examples, and student work as evidence of progress in the work plan. The coach and teacher refine the work plan to continuously meet the teacher's needs to reach the sustainability stage throughout the coaching process. An example of the coaching work plan developed for the EQuIPD grant can be found in Appendix B.

During the Teacher PD Stage, coaches identify the higher-level conceptual needs of the teachers they are coaching to design professional development to support transforming pedagogical practices. During the brainstorming stage of the PD design cycle, each coach will share the conceptual needs and gaps they identify when working with their teachers. The team looks for common trends which either become the topic of the next "Follow Up Session" or a "Just-in-Time" training. The coaches then offer multiple dates for the PDs based on grade bands to establish like cohorts.

Current coaching models often face challenges due to their deficit nature, only providing information on what the program leaders and coaches think needs to be done and leaving out what the teachers believe effective coaching means. EQuIPD aims for a coaching process that resembles a *shared* experience between coach and teacher; therefore, we developed a more comprehensive and complete coaching model that includes teachers' perceived experience. As

part of the Agile approach utilized by the EQuIPD grant, feedback from the teacher stakeholders was collected to inform the features and efficacy of the coaching model. These features augment our initial model to include facets that coaches need to prioritize and pay attention to when coaching.

Interviews of a sample of EQuIPD teachers who had coaching support provided evidence of at least six essential facets of EQuIPD facilitative one-on-one coaching. These features were categorized into two categories based on how the features inform the coaching process (Figure 5). The first category pertains to establishing rapport and includes maintaining equal partnership, identifying teachers' pedagogical needs, and providing social and emotional support. The second category pertains to building knowledge and skills and includes focusing on grant goals, work plans and rubric for refinement and evaluation, and sharing of resources.

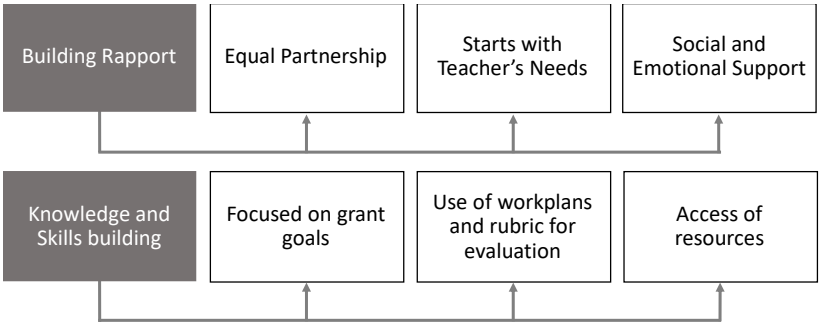


Figure 5: Coaching essentials as experienced by the teachers.

Professional Development

Coaching Preparation Professional Development

To prepare the coaches for their role as facilitative coaches, they first attend an intensive 40-hour bootcamp. The bootcamp is designed to develop skills and pedagogical practices in the core goals of the grant, attributes of an effective coach, and support in understanding how to use and apply new technology to build conceptual understanding. In addition to the initial bootcamp, coaches are provided with continual and ongoing professional development to support their coaching and professional development design and facilitation needs. A breakdown of the bootcamp is displayed in (Table 1).

Effective coaching starts with understanding the eight EQuIPD pedagogical goals, which comprise the core of the coaching model. Each goal and successful implementation of the goal is outlined in Appendix C. The core content training for coaches begins in the bootcamp session, where coaches are introduced to the grant goal concepts and are pushed to understand and apply the concepts in academic and coaching roles. The model for this PD follows a process that establishes a foundational understanding of system thinking, conceptual modeling, storyline development, process mapping, and inquiry-based lessons or design thinking processes. Following the core content, we analyze and transform pedagogical practices in collaboration, communication, questioning strategies, use of technology, computational thinking, workforce

applications, and video analysis. A process map is provided in Appendix D that lists the eight grant goals and provides a map of how the content is delivered.

Coaches also participate in activities to build attributes of an effective coach. During active coaching cycles, coaches need to be active listeners, supportive, participate in goal setting, guide pedagogical transformation, arrive at sessions prepared with a goal for the coaching session, and have valuable coaching conversations. Coaches are also introduced to the documentation policies, procedures, and expectations for their coaching sessions and other elements of their role, such as travel, coaching logs, scheduling workforce field trips, and tracking teacher leadership and certification opportunities.

The last element of the bootcamp is to expose coaches to new types of technology to support students in developing conceptual models around the concepts they are learning. Coaches learn to use sensors and probes to collect and analyze data in experiments designed to build core conceptual models. They also learn to program with block coding languages such as Scratch (https://scratch.mit.edu/) and MakeCode (https://makecode.microbit.org/). More experience with different technologies allows coaches to be more effective during coaching because they have gained a broader experience with newer tools and apply them to support conceptual development. Coaches also learn to utilize computational simulations in support of conceptual models. The technology training component of the bootcamp offers a first-hand learning experience for coaches beneficial for coaching.

Table 1. Details of the 40-hour bootcamp for coaches.

Bootcamp Activities	**Description**
Core Content Training	• Establishes a foundational understanding of core content goals (system thinking, conceptual modeling, storyline development, process mapping, and inquiry-based lessons or design thinking processes) and pedagogical practices (collaboration, communication, questioning strategies, use of technology, computational thinking, workforce applications, and video analysis)
Coaching Orientation	• Understanding how to become an effective facilitative coach (Aguilar, 2013). • How to facilitate content-oriented coaching using the EQuIPD grant goals and rubric.
Technology Training	• Identifying appropriate technology for classroom needs. • Using technology to build core conceptual understanding.

Designing and Facilitating Professional Development

EQuIPD PD ultimately results in transformative changes in teachers' pedagogical approaches. It builds teacher leaders who are expected to facilitate PD sessions for peer teachers in a "train-the-trainer" model. To support teachers in becoming leaders, the coaches themselves are handed a similar yet more challenging task, that is, to become an effective PD designer and facilitator. The coaching development model is extended to include preparation and support specifically for PD design and facilitation for coaches.

During EQuIPD coach development, coaches utilize and move through three stages: Leadership Development, Professional Development, and Teaching and Learning (Figure 6) to become effective PD designers and facilitators. When learning effective PD design and facilitation skills from other PD leaders, coaches are in the model's Leadership Development Stage (green). The coaches move to the Professional Development Stage (orange) when they become the PD leaders and design and facilitate PD to teacher peers. The Teaching and Learning Stage (blue) is when teachers deploy the transformed pedagogical practices learned during their PD experiences into their classrooms. Teaching and student learning are at the core of the model, with content understanding at its center.

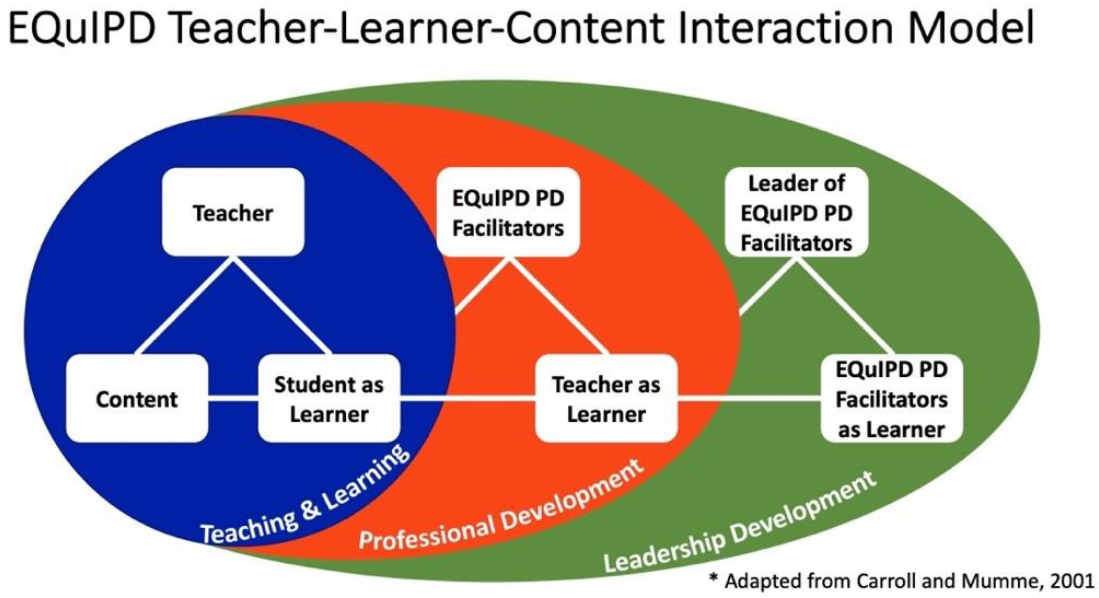


Figure 6: EQuIPD Teacher-Learner-Content Interaction Model

The model for EQuIPD PD Design and Facilitation is outlined in Figure 7. To develop PD, the coaches follow a design cycle to establish the needs of their audience, identify clear learning goals through conceptual modeling, and create a cohesive storyline for the PD. The PD design moves into content development, where coaches make engaging, collaborative activities that scaffold learning and challenge teachers to use and apply new pedagogical strategies and lenses to their practice. The activities also include intentional moments of reflection and metacognition to highlight changes in practices and thoughts. The final stage is the facilitation of the PD. Coaches need to confidently deliver the PD content and facilitate the activities to support their learners. Facilitation involves skills used in coaching to drive discussions to elicit current understanding from participants to ensure full group understanding. An example facilitation move is to tactically use questioning strategies: elicit, probe, and challenge, to support these discussions.

Figure 7: EQuIPD Professional Development Design and Facilitation Model

Coaching Resources

Various resources were helpful at different stages of coach development and the coaching implementation process with teachers. These resources supported effective coaching, goal setting, work plan development, video analysis, content storyline development, and design and facilitation of effective PD that supports conceptual knowledge development of core content in both student and teacher-learners.

- "The Art of Coaching: Effective strategies for school transformation" (Aguilar, 2013).
- "Switch" (Heath & Heath, 2011).
- EQuIPD Implementation Rubric
- SMARTE Workplan – Modified from Aguilar
- STeLLA – Video Analysis
- EQuIPD/STeLLA Content Storyline (Appendix E)
- BSCS Professional Provider Institutes 1 & 2

Appendix

A. Coaching Introductory Meeting Survey

Part 1: School and Teacher Information

Name of Coach: Name of Teacher: Name of School District:

- Time frame for meeting:
  - ○ Before School ○ Planning Period ○ Other
  - ○ After School ○ Professional Learning Community Time
- How many unique sections of students does this teacher teach?
- What is the class size for this teacher? (if multiple sections, put the largest and smallest class size)

Part 2: Technology and Infrastructure

Check with the teacher to see what technology is available in the classroom and how much of each technology is available. (computers, laptops, sensors and probes, 3D printers, lab equipment...)

○ Whiteboard	○ Sensors and probes	○ 3D printers
○ Desktop Computers	○ Lab equipment	○ Robots
○ Laptop Computers	○ Calculators	○ Other

- Does the classroom layout facilitate inquiry activities? Explain what you like and do not like about the classroom set up.
- What does classroom space look like? Is it clear to students what information they need to access "now"? For example - Does the teacher have a word wall up for something we are currently working on, or is there old words on the wall from last year. Are the walls cluttered with posters not related to content? Is it clear what we are learning or doing in the classroom?)
- What infrastructure does the teacher have access to?
  - Water
  - Multiple electrical outlets
  - Outdoor space
  - Laboratory Space
  - Computer lab
  - Laptop cart
- How much time does the teacher have to teach content to students (during a general class)

○ 15 minutes ○ 30 minutes	○ 45 minutes ○ 60 minutes	○ more than one hour

Part 3: Identification of target grant goals

The grant has several goals in relation to coaching. Each of these goals are described below.

a) **Authentic Inquiry-Based Lessons**
b) **Use of Technology by Students to Build Core Concept Knowledge**
c) **Concept Knowledge Development Through Collaborative Grouping**
d) **Core Concept Model Building**
e) **Engineering Design/Design Thinking**
f) **System Thinking/Process Mapping**
g) **Authentic Workforce Applications**
h) **Quality of Classroom Discourse**

- In your discussion with your teacher, what goals if any do they have this semester related to **any of the grant goals above (A-H)**?
- What do you view as the strengths of this teacher towards accomplishing the goals they have for this semester?
- What lesson/core concept has your teacher shared with you that they want for their model lesson embedding technology for the fall semester?
- How much time was actually spent in this session for teacher contact (how much direct time did you spend?)
- What needs do you think this teacher has in regard to being successful in goals related to this grant?
- How receptive do you think this teacher is to have a coach?
- How did you feel about the relationship you have with this teacher after your first meeting?
- What other information do you want us to know about this teacher?

B. Coaching Work Plan Template

Coaching Work Plan

Status	Planning	Implementation	Sustainability

Goal Statement(s): (Dates)

>

EQuIPD Goal(s):

>

Strategic activities to achieve goal:

Teacher and coach

>

Teacher

>

Coach

>

Check-in Dates

1.
2.

Signatures

_____ _____

Signature of Teacher Date

_____ _____

Signature of Teacher Date

SMARTE: Strategic, Measurable, Attainable, Results-Based, Time Bound, Equitable

Workplan Evidence

>

Date

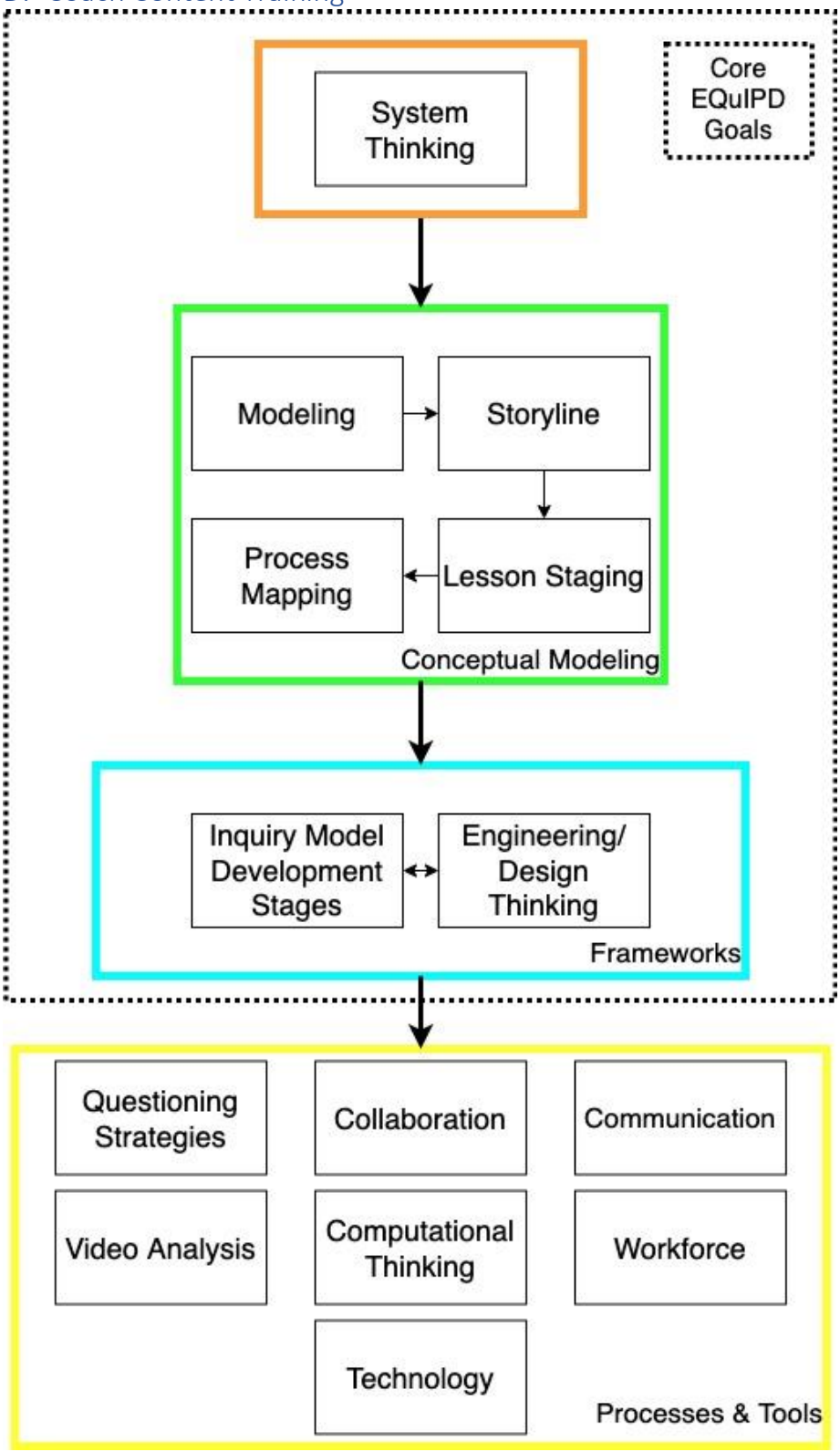
C. EQuIPD Implementation Rubric

EQUIPD IMPLEMENTATION RUBRIC

Coaching Area	Descriptors	Emerging	Developing	Proficient
A. Inquiry Based Lessons				
Pedagogy	**A1.** Through the year, classroom activities move along a spectrum from less teacher-centered to more student centered inquiries.	**Confirmation Inquiry** predominates. (Students confirm a principle through an activity when the results are known in advance-teacher provides question & procedure.).	**Structured Inquiry** (students investigate a teacher-presented question through a prescribed procedure but formulate their own explanations) predominates, but some **Guided Inquiry** (students investigate a teacher-presented questions using student designed/selected procedures) is present.	**Guided inquiry** and **Open Inquiry** (students investigate questions that are student-formulated through student design/selected procedures) predominate.
Pedagogy	**A2. Questions/Problems/ Design Challenges** are posed or proposed by students.	The question, problem, or design challenge is presented by the teacher and is used to reinforce a previously introduced idea or concept. Emphasis is on getting the right answer.	The question, problem, or design challenge is presented by the teacher in order to elicit prior knowledge or encourage concept exploration. Emphasis is on gathering multiple answers.	The question, problem, or design challenge is posed/presented by the students. In order to explain or elaborate on a phenomenon or concept. The emphasis is on multiple perspectives which can then be evaluated for best answer.
Pedagogy	**A3.** Students practice and gain expertise in designing **Investigations and Data Collection** methods.	The teacher specifies the materials or resources that may be used, the type of data that must be collected, and the step-by-step procedures for carrying out the investigation.	Students are provided with multiple materials and resources and may choose among these. The teacher defines the type of data to collect. Based upon their choice of materials, students may utilize different data collection procedures.	The teacher provides requirements and constraints related to the inquiry. The teacher monitors safety of all data collection procedures. Within these parameters, the type of data collected and the procedures used to collect these data are up to the student.

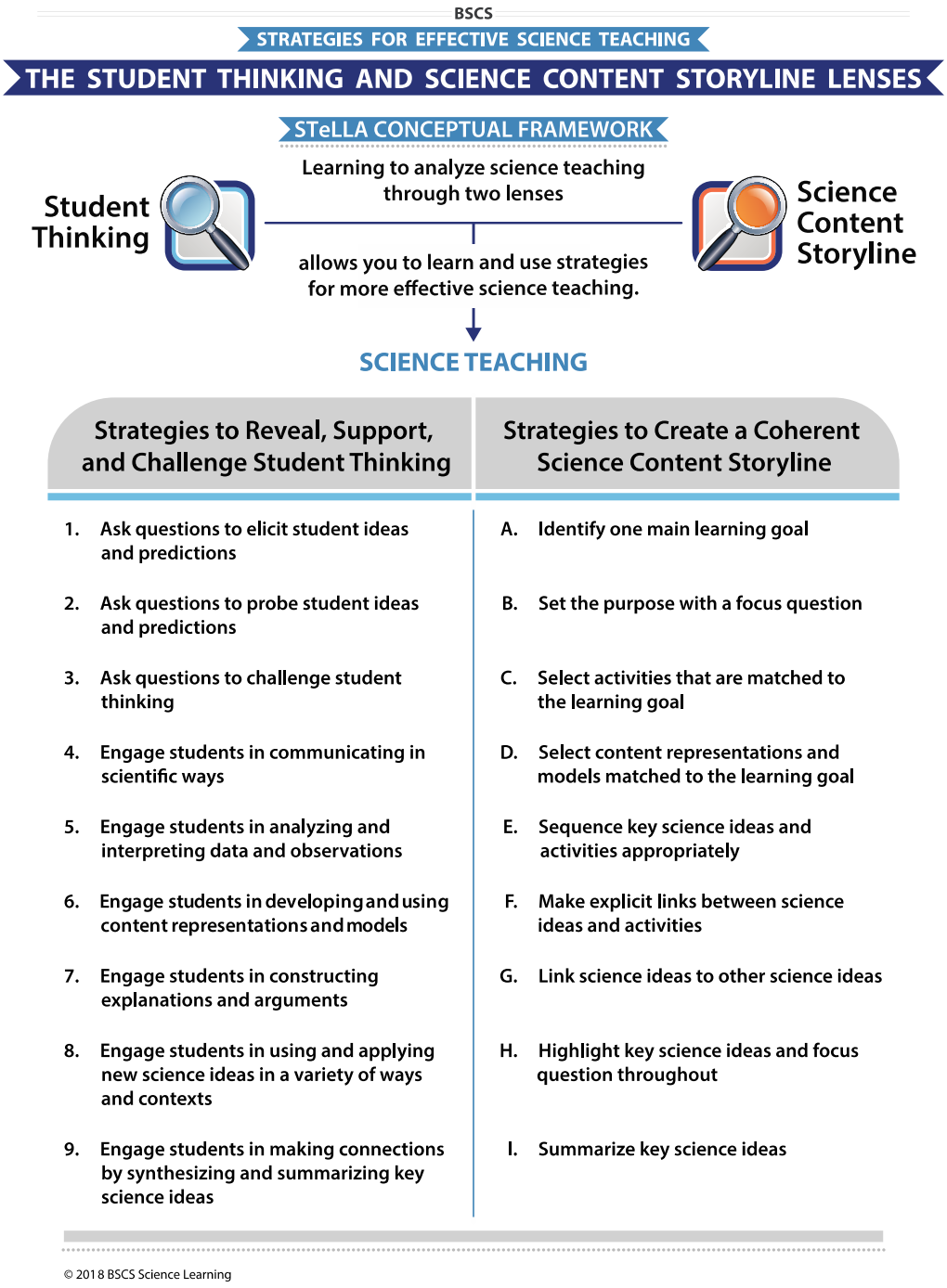
This is just a snapshot of the implementation rubric; please follow the link for the entire document: https://drive.google.com/file/d/1ml94e0Gg0yKEwSIM-oFfGMVAeyLiR-tj/view?usp=sharing

D. Coach Content Training



E. EQuIPD STeLLA Strategies

We worked with the STeLLA program from BSCS to learn the process of video analysis and strategies to develop coherent content storylines.



This is an overview of the strategy document; please find the link to strategies A-I here: https://drive.google.com/file/d/1vWBTeCq95v2Dv5ijD6yyauKZL8WAJU0W/view?usp=sharing

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