Objectives	Outcomes		Impact Measures & Data Collection Plan	
Summer Institute				
(*Inquiry Sessions*) • Increase teachers' understanding of 3D science inquiry and engineering design • Increase teachers' science and engineering content knowledge	• Teachers' self-efficacy to teach science and engineering in PreK-3 classrooms will improve • Teachers' content knowledge will improve	• Children will be able to engage in 3D science • Children's science achievement scores will improve	• P-TABS (A) • EQUIP (A)	• Classroom lesson videos analyses (SCIIENCE) (PT) • ELS, KELS, & Galileo Assessments (PT & A)
• Increase teachers' ability to integrate Common Core Mathematics/ELA into science lessons	• Teachers' lessons will increase children's vocabularies and sentence fluency • Teachers' lessons will increase children's mathematical and computational thinking		• Lesson plan analyses (PT) • Classroom lesson videos analyses (SCIIENCE) (PT)	
• Increase teacher's use of technological tools for scientific inquiry/engineering design tasks	• Teachers' lessons will show evidence of increased use of technology for data collection, analysis, and communication of understanding		• Lesson plan analyses (PT)	
(*Metacognitive Sessions*) • Have teachers discuss and practice productive discourse (e.g., Question types: open or closed, literal or inferential; Question purposes: relating, inferring, predicting; and Talk Moves: re-voicing, restating, wait-time). • Provide teachers time and support for reflective consideration of 3D learning	• Teachers' discussions will show evidence of increased intentionality and use regarding classroom discourse • Teachers' lessons will show evidence of attention to DCI, SEP and CCs		• Qualitative coding of PLC discussions and shared artifacts (PT) • Lesson plan analyses (PT) • EQUIP (A)	
Unit Planning (*Learning Architecture Planning*) • Have teachers collaborative with grade level peers that supports teachers' declarative, procedural and conditional knowledge building • Guide teachers to unpack NGSS 3D performance expectations and plan instruction	• Teachers' lessons will show evidence of 3D science instruction • Teachers' lesson planning will result in more robust units of instruction (rather than one-off experiences/activities)		• Qualitative analysis of planning discussions (PT) • Lesson plan analyses (PT)	
Academic Year Support				
• Provide teachers opportunities to discuss and think about critical aspects of supporting young children to engage in 3D learning • Provide teachers with PD regarding family engagement strategies, particularly for diverse populations	• Teachers demonstrate pedagogical goals regarding 3D teaching/learning during PLCs • Teachers' artifacts presented during PLCs show evidence of attention to 3D components • Teachers will develop & maintain parent relationships		• Qualitative content analysis coding of PLC discussions and shared artifacts (PT) • Parent-Teacher Relationship Survey (A)	
Family Science Packs (FSP)				
Encourage families to engage in NGSS 3D-aligned scientific investigations together (through and inquiry cycle of Explore, Discuss, Think)	Families will demonstrate evidence of completing the FSP		FSP *Journal Sheet* FUSE rubric (PT) Family survey (A)	
Guide families to have meaningful science discussions	Conversation between parent and child will reflect in-depth discourse & talk move strategies		Family survey (A)	
Encourage families to make children's thinking visible on Journal Sheet (e.g., graphic organizers, illustrations, models, and journal entries	Families will demonstrate evidence of completing the *Journal Sheets* and returning the sheets to school		Teacher records of FSP distribution & return (A) *Journal Sheet;* FUSE rubric (PT)	
Develop children's scientific vocabulary (e.g., For example: *living things, habitat, survival*.	Families will show evidence of using science vocabulary from the FSP		FSP *Journal Sheet* FUSE rubric (PT)	
Encourage families to seek additional science resources (e.g., books from library or visit websites that provide additional information)	Families will demonstrate evidence of seeking out additional science-based resources after using the FSP		Family survey (A)	
Children will learn DCIs, SEPs, and CCs in the FSP	Families will demonstrate 3D learning		FSP *Journal Sheet* FUSE (PT)	
Introduce & reinforce Common Core Math and ELA concepts (National Governors Association, 2010)	Families will demonstrate evidence of using mathematics and ELA concepts in FSP activities		FSP *Journal Sheet* FUSE rubric (PT)	
Community Events				
Teach families how to use community resources to foster scientific inquiry /engineering design	Families will show an increased interest in attending science-related community events		Follow up survey about other things they have done (A)	
Teach families how to facilitate their children's science experiences	Family conversations will demonstrate balanced discourse between parent/ child(ren)		DIIFS rubric/direct observation (A)	
Teach families how to develop children's scientific vocabulary	Children will use science vocabulary in the Community Events (pre/post observation)		Observation of Community Event vocabulary (A)	
Key to outcomes: Teacher outcomes=yellow; Parent/family outcomes=green; Student outcomes=blue				
Key to data collection: Project Team (PT), Acumen (A); NOTE: schedule for data collection is in Table 6 and the narrative				