



MASTER PLAN

Secondary Science

2022-2023

Chief: Nicole Mancini, Office of Academics

Director: Guy Barmoha, Secondary Learning

Contact: Tamara Barnes

Course Group Number: 39000278

Purpose

The purpose of this program is to develop, improve and/or enhance the instructional practices of science teachers and administrators to effectively deliver science instruction to students in grades 6-12. This program specifically includes training events that provide core content, from foundational through application levels that support effective science instruction at all secondary grade levels. Professional learning activities events provide exposure to a variety of hands-on science inquiry and methodology in building conceptual understanding of science content in conjunction with state standards. Activities provide teachers with strategies to incorporate into science instruction that address the Next Generation Sunshine State Standards for Science. In addition, training events provide for the infusion of research-based strategies focused on differentiated instruction for students with an English language deficiency, students with disability, and gifted students.

Needs Assessment

41% of Broward Students enrolled in Biology 1 lack proficiency of the core content according to the 2022 Biology EOC data; and in grade levels above grade 9, the lack of proficiency increases to greater than 50%. This data suggests a need for increased teacher training in content knowledge and instructional delivery of the biological course content.

60% of Broward Students enrolled in middle school science lack proficiency of the core content according to the 2022 Science Statewide Assessment data. This data suggests a need for increased teacher training in content knowledge and instructional delivery of the middle school science course content.

56% of Broward Students enrolled in elementary science lack proficiency of the core content according to the 2021 Science Statewide Assessment data. This data suggests a need for increased teacher training in content knowledge and instructional delivery of the elementary science course content.

Results of standardized examination for Broward Students enrolled in the following Advanced Placement Science Courses: (Chemistry 46.1%, Physics 1 38%, and Physics2 72.4%) show a need to improve proficiency within the content specific to those courses. These data suggest a need for increased teacher training in content knowledge and instructional delivery of the advanced placement science courses content.

The tables on the following pages describe the Desired Outcomes for professional learning in support of each role associated with this Master Plan.

Desired Outcomes and Performance Indicators

1.0 Secondary Science Teachers			
1.1 Desired Outcome: Secondary Science teachers will be able to interrelate and interpret important concepts, ideas, and applications and use scientific inquiry to develop scientific knowledge for all students beyond memorization.			
Performance Indicators			
Level 4	Level 3	Level 2	Level 1
Explains state adopted curriculum standards clearly and accurately with the appropriate level of complexity and incorporates research-based resources. Monitors student progress. Monitors the extent to which knowledge is enhanced and design lessons that impact the student beyond the classroom.	Explains state adopted curriculum standards clearly and accurately. Demonstrates (i.e. posttest, lesson plans, observations, etc...) application-level knowledge of major scientific concepts, principles, theories, and laws. Organizes students to interact with new knowledge. Design lessons that apply and enhance knowledge and impact the student beyond the classroom.	Identifies state adopted curriculum standards accurately. Demonstrates (i.e. posttest, lesson plans, observations, etc...) surface-level knowledge of major scientific concepts, principles, theories, and laws. Identifies critical information for conceptual understanding. Provides opportunities for knowledge to impact the student beyond the classroom	Identifies state adopted curriculum standards incorrectly. Demonstrates (i.e. posttest, lesson plans, observations, etc...) insufficient knowledge of the major scientific concepts, principles, theories and laws. Identifies non-critical information that fails to enhance knowledge beyond the classroom.
1.2 Desired Outcome: Secondary Science teachers will be able to design and select learning activities, instructional settings, and resources (including technology) to engage all students in learning science			
Performance Indicators			
Level 4	Level 3	Level 2	Level 1
Chunks content and adapt strategies to address unique student needs and classroom situations. Monitors the progress and effectiveness of selected activities on student learning. Organizes physical classroom layout to focus on learning. Engages students in activities that link prior knowledge to facilitate connections to the real world and in summarizing, predicting, and questioning activities.	Chunks content and adapt strategies to address needs and situations of the class. Provides clearly stated learning goals on a scale or rubric that describes performance levels. Organizes physical classroom layout to facilitate movement. Engages students in activities that link prior knowledge to new content and in summarizing, predicting, and questioning activities.	Selects an appropriate strategy but uses strategy incorrectly or with missing parts to address learning goal.	Does not select an appropriate strategy that addresses learning goal or selects an inappropriate strategy.

1.3 Desired Outcome: Secondary Science teachers will be able to demonstrate and maintain laboratory safety procedures, and ethics as appropriate to the science classroom.			
Performance Indicators			
Level 4	Level 3	Level 2	Level 1
Implements and documents a safety program to ensure adherence to recommended safety practices and procedures. Obtains instructor level certification in recommended laboratory safety policies and procedures within the past 5 years. Creates, instructs, and monitors implementation of the classroom emergency plan. Creates, instructs, and monitors implementation of the school's chemical hygiene plan.	Identifies, instructs and assesses students to ensure adherence to recommended safety practices and procedures. Obtains certification in Laboratory safety policies and procedures within the past 5 years. Creates and makes available emergency plans to students, substitute teachers, and administration. Creates and makes available the chemical hygiene plan to students, substitute teachers, and administration.	Identifies and familiarizes students with recommended safety practices and procedures. Completes basic informational training in laboratory safety policies and procedures within the past 5 years. Creates classroom emergency plan. Has awareness of the school's chemical hygiene plan.	Not aware of recommended safety practices and procedures. No training on laboratory safety policies and procedures within the past 5 years. No emergency plan exists. No awareness of the chemical hygiene plan.
1.4 Desired Outcome: Secondary Science teachers will be able to demonstrate knowledge of various assessment strategies for monitoring progress and effective literacy strategies to impact student learning in science.			
Performance Indicators			
Level 4	Level 3	Level 2	Level 1
Strategically plans, selects and implements an assessment calendar of a variety of formative and summative assessment tools to monitor student progress, learning gains, and student mastery. Strategically plans, selects and implements a variety of research-based literacy strategies to support student learning of scientific concepts.	Regularly selects and implements a variety of formative and summative assessments to monitor student progress, learning gains, and student mastery. Regularly selects and implements research-based literacy strategies to support student learning of scientific concepts.	Periodically selects and implements formative and summative assessments to monitor student progress, learning gains, and student mastery. Periodically selects and implements research-based literacy strategies to support student learning of scientific concepts.	Rarely selects and implements formative and summative assessments to monitor student progress, learning gains, and student mastery. Rarely selects and implements research-based literacy strategies to support student learning of scientific concepts.

Data Collection Plan: Secondary Science Teachers			
Level of Measurement	Instrument/Data Type	Frequency	Responsible for Collecting Data
1. Participants' Reactions	PDMS Feedback Form	1x/workshop	Program manager
2. Participants' Learning	Pre/Post training assessments	1x/workshop	Facilitator
3. Organizational Supports	District records of communication with science department heads and school administrators	2x/year	Program manager
4. Participants' Practice	Student work sample with feedback Survey to address first year of Performance Task Implementation	1x/workshop 1x/year	Facilitator
5. Student Outcomes	Statewide Science Assessment Biology EOC	1x/year	Student Assessment and Research

Evaluation Plan

Level 1. Participant Reactions		
<u>Audience</u>	<u>Mid-Year Evaluation</u>	<u>End-of-Year Evaluation</u>
Secondary Science Teachers	PDMS Feedback Form Workshop Attendance	Summary of Feedback Summary of Workshop Attendance
Level 2. Participant Learning		
<u>Audience</u>	<u>Mid-Year Evaluation</u>	<u>End-of-Year Evaluation</u>
Secondary Science Teachers	Pre/Post training assessments	Review of assessment results
Level 3. Organizational Support		
<u>Audience</u>	<u>Mid-Year Evaluation</u>	<u>End-of-Year Evaluation</u>
Secondary Science Teachers	District records of communication with science department heads and school administrators	Summary of results from communication with department heads and school administrators
Level 4. Participants' Use of New Knowledge and Skills		
<u>Audience</u>	<u>Mid-Year Evaluation</u>	<u>End-of-Year Evaluation</u>
Secondary Science Teachers	Student work sample with feedback Survey to address first year of Performance Task Implementation	Annual analysis of implementation data
Level 5. Student Learning Outcomes		
<u>Level of Impact</u>	<u>Mid-Year Evaluation</u>	<u>End-of-Year Evaluation</u>
Secondary Science Teachers	Formative assessment results	Statewide Science Assessment Biology EOC