

Introduction to Formative Assessments For New Instructors

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MIT 500, Fall 2021

Executive Summary: Formative Assessments

North Carolina State University (NCSU) College of Veterinary Medicine (CVM) offers professional development activities on educational topics to their instructors. A group of CVM administrators, faculty, and staff agree that an opportunity for instructors to learn about formative assessments is necessary to improve instruction and to move the doctor of veterinary medicine (DVM) curriculum toward competence based veterinary education (CBVE).

Currently, instructors either do not use formative assessments or they use them inconsistently in their courses. The CVM desires to have all instructors use formative assessments in their instruction. The CVM requires a short self-paced online asynchronous module be developed to provide instructors with an overview of formative assessments. The Educational Support Services (ESS) team in the CVM will follow-up with instructors after they complete the module to assist with implementation into their courses.

The module will be available to instructors beginning January 2022 and will be used over the next 2 years as the college goes through curricular change to CBVE. This module will be delivered through the Moodle learning management system at NC State.

Gap Analysis

Current State	Desired State	Potential Solutions
There is no customized instruction for instructors to learn about formative assessment.	Customized instruction for instructors to learn about formative assessment in higher education.	<ul style="list-style-type: none"> • Faculty will complete a self-paced online module to learn how to use formative assessments in their courses. • Faculty will schedule time with the college's Educational Support Services office to learn about formative assessments. • Faculty will observe other instructors in other courses and at other institutions that successfully use formative assessments.
Instructors implement formative assessments infrequently as part of their instruction.	Instructors use formative assessment consistently as part of their instruction.	
Instructors don't know how to implement formative assessments as part of their instruction.	Instructors are capable of incorporating formative assessment into their instruction.	

Learner Analysis

Target users are faculty members and staff members who teach in the DVM program at NCSU's CVM. Instructors will vary in teaching experience, but all will have

taught at some level previously. Targeted instructors will be new to the topic of formative assessment. They may come in with some preconceptions about assessment in general. Instructors will likely believe that adding in additional assessment opportunities will take up too much of their instructional time and/or be too much to manage. This belief could negatively affect their motivation toward the subject. Special care to increase motivational aspects of the module must be considered.

Instructors will come into the module knowing how to navigate NCSU's Moodle LMS. They will be accustomed to online modules in this format and prefer self-paced modules that they can access when it's convenient.

Context Analysis

Instructors have departmental support for completing this module as part of their responsibilities in their position. College administration also views this module as relevant to transforming educational practices within the CVM. All newly hired instructors will complete the module as part of their onboarding process, and current instructors will be encouraged to complete the module within 12 months. Instructors will complete the module individually.

Instruction will be delivered online via the NCSU Moodle LMS. Learners should have versatility with access to content, so they will have access through mobile devices as well as personal computers. CVM faculty are familiar with their current LMS format.

If technical or academic concerns arise, assistance is available through the ESS team in the CVM.

There are two main limitations of providing the module online. The first is the time it takes for instructors to go through it. The module must not take more than 30 minutes and should include the ability to pause and return. Second is the disconnect between instructors taking the learning module online and teaching primarily in classrooms. For this reason, the Educational Support Services (ESS) team will be available by appointment to work with the instructors on implementation tasks.

Project Solution

It is recommended that faculty complete a short, self-paced, online asynchronous module to provide instructors with an overview of formative assessments that can be utilized in their courses. Instructors will gain skills that will allow them to effectively integrate formative assessments into synchronous, asynchronous, face-to-face, and/or hybrid learning environments. These skills include but are not limited to analyzing student work, strategic higher order questioning, appropriate and timely feedback, enhanced content knowledge, and appropriate content planning. Competency will be demonstrated by answering a variety of essential content based questions. These questions must be answered with 100% accuracy before proceeding to the next step.

After completion of the module, instructors' answers will be delivered to the ESS team. ESS will work with instructors to implement the formative assessments they choose to meet their instructional goals.

Goal Statement

Project Goals: Project will be completed and available to NCSU College of Veterinary Medicine faculty by January of 2022.

Instructional Goals: Faculty at NCSU College of Veterinary Medicine will incorporate formative assessments consistently into new and existing courses so that students can gauge and remediate their learning before summative assessments occur.

Task Analysis/Goal Analysis

1. Recognize the elements of formative assessment.
 - 1.1. Identify the learning gap through varied, low-stakes means.
 - 1.1.1. Identify the progress of student learning
 - 1.1.2. Identify the criteria for measuring student progress
 - 1.1.3. Identify learning goals
 - 1.2. Create opportunities for student and instructor feedback.

- 1.2.1. Adaptation of instruction to meet identified student needs.
 - 1.3. Segment instruction into Learning Progressions
 - 1.3.1. Track student progress towards learning goals
 - 1.3.2. Break learning into manageable goals
 - 1.3.3. Work collaboratively with students to set learning goals
 - 1.4. Create opportunities for student involvement in learning process
 - 1.4.1. Student self assessments
 - 1.4.2. Peer assessments
 - 1.4.3. Student plans for self-improvement
2. Identify a formative assessment framework that meets instructional goals
 - 2.1. Determine existing student knowledge of the instructional goals
 - 2.1.1. Identify learning needs of students
 - 2.2. Establish classroom culture that incorporates peer feedback and assessment
 - 2.3. Encourage student autonomy and ownership of the learning process (CERI, 2008)
 - 2.4. Utilize frequent, low-stakes assessments to gauge student progress
 - 2.4.1. Utilize platforms like Kahoot and Quizlet to generate questions for quick assessment of individual and group comprehension
3. Identify strategies for incorporating formative assessment into instruction
 - 3.1. Muddiest Point/Clearest Point
 - 3.1.1. Instructor clarifies muddiest point content during the next class.

- 3.1.2. Students submit a written response of the clearest and the muddiest (least clear) concepts from the lecture at the end of class
- 3.2. Class Polling
 - 3.2.1. Instructor remediates student learning if needed
 - 3.2.2. Instructor evaluates student responses for comprehension
 - 3.2.3. Students answer one question about content electronically via polling software (LMS, Kahoot, etc).
 - 3.2.4. Instructor surveys the class with one key content question.
- 3.3. Pre-test of Background Knowledge and Misconceptions
 - 3.3.1. Instructor plans instruction based on pre-test data
 - 3.3.2. Instructor identifies learner's background knowledge and misconceptions
 - 3.3.3. Students complete a pre-test on the content to be covered in the next unit of study
- 3.4. Peer Assessments, Feedback and Projects
 - 3.4.1. Students submit final projects
 - 3.4.2. Students incorporate peer feedback to improve projects
 - 3.4.3. Students provide peer assessments and feedback for projects
 - 3.4.3.1. Feedback addresses mistakes and knowledge gaps
 - 3.4.4. Students complete assigned projects using and expanding on relevant course content
 - 3.4.5. Instructor assigns individual or group projects based on the course content

3.5. Low Stakes Quizzes

- 3.5.1. Instructor repeats content with >30% incorrect response
- 3.5.2. Instructor administers low-stake quizzes at the end of each unit of content.

3.6. Concept Mapping

- 3.6.1. Students correct misconceptions and knowledge gaps
- 3.6.2. Instructor presents their version of the concept map to class
- 3.6.3. Students individually construct concept maps for identified content
- 3.6.4. Instructor identifies a segment of content for which students will create concept maps

3.7. Entrance Tickets

- 3.7.1. Instructor identifies any gaps in understanding to review
- 3.7.2. Instructor activates prior knowledge for identified objective at start of session

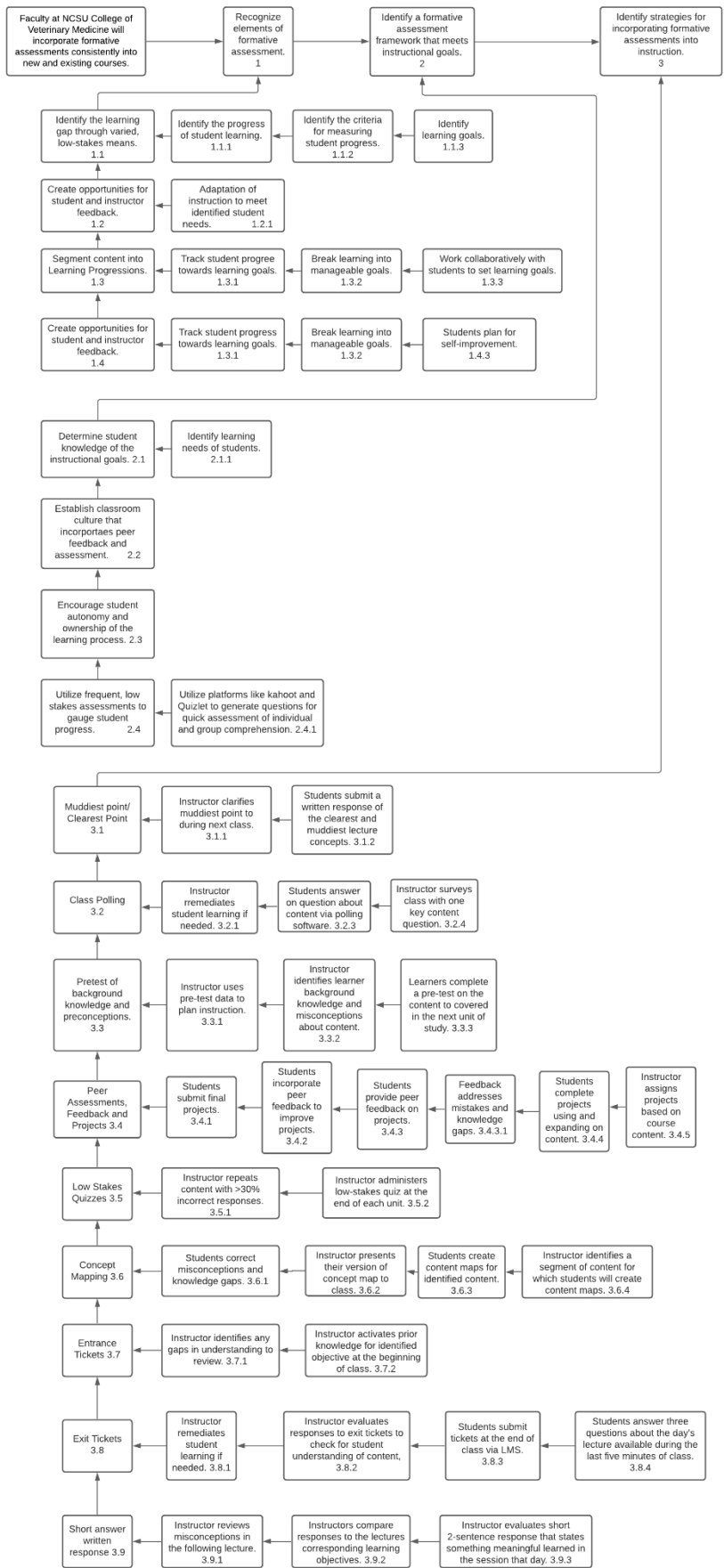
3.8. Exit Tickets

- 3.8.1. Instructor remediates student learning if needed.
- 3.8.2. Instructor evaluates responses to exit tickets to check for student understanding of content.
- 3.8.3. Students turn in tickets at the end of each class via the LMS
- 3.8.4. Students answer three questions about the day's lecture available on the LMS during the last five minutes of class.

3.9. Short Answer Written Response

- 3.9.1. Instructor reviews misconceptions in the following lecture

- 3.9.2. Instructor compares responses to the lecture's corresponding learning objectives
- 3.9.3. Instructor evaluates short 2-sentence response that states something meaningful learned in that session



References

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