



GUIDE FOR SUBJECT MATTER EXPERTS

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The Subject Matter Expert (SME) is the heart of any certification program. The NCWM Professional Development Committee (PDC or Committee) is enlisting subject matter experts to assist in creating and maintaining a viable and meaningful certification program. The key characteristic in a subject matter expert is not book learning or street smarts, but rather a good balance of the two. We are looking for professionals who can properly blend the important technical knowledge with the practical application of that knowledge within the profession. The Committee will work through the NCWM membership and the State Certification Coordinators to help identify these Subject Matter Experts in the fields selected and encourage them to volunteer. This *Guide* is intended to provide a brief introduction to what they will be asked to do.

The PDC is using a triangle model involving three important activities in an education program. These include the learning objectives outlined in the modules, the training provided, and the evaluation, which includes the certification exam. All of these components work together, to ensure that the goals and objectives in the curriculum have been met. The SME will help the PDC in that process.

The first task for the SME is to help the PDC formalize expectations, i.e. learning objectives. This is a break from the old textbook/subject driven idea. The PDC has created a model for this work in the document called the *Professional Certification Body of Knowledge Model*. This document, available on the NCWM website, describes the format and process used to develop modules or pieces of a broad curriculum that describes broad goals and individual, measurable milestones toward those goals. The PDC has also created a Curriculum Outline to organize the modules into that broad curriculum. The curriculum focuses on what a professional needs to know rather than how to teach that professional, i.e. the end rather than the means. The SME will help ensure that modules accurately and meaningfully reflect the current state of the profession. In this regard, we will ask SMEs to review draft modules and comment on those drafts. In this process, we are looking to ensure that the modules contain the appropriate learning objectives, at the right levels. A sound module does not contain extraneous or unnecessary material, or material at too high a cognitive level. This is why the SME must possess the right balance between the technical and practical.

The SME's second task is to create questions to populate a certification exam. The PDC will begin by defining the scope of a particular exam in the form of an exam announcement covering one or more modules. Where multiple modules are included, the Committee will break the exam into appropriate parts. The exam announcement details the weighting of the exam, i.e. how many questions on each part. When asking

a SME to prepare questions, the Committee will supply copies of the exam announcement and the appropriate modules for reference when writing new questions. The Certification Program Coordinator may also ask for questions in specific areas of the curriculum to fill gaps in the exam banks. The PDC has also created a model for this in the document (available on the website) called the *Professional Certification Program Guide for Preparing Exam Questions*.

The particularly difficult part of writing good questions is to match the difficulty of the question to the level of the measurable milestones in the curriculum. All too often, exams test for knowledge alone. This is testing only at the first cognitive level from Bloom's Taxonomy (see the Body of Knowledge Model), but it fails to reach the understanding and application levels we believe the basic professional must reach. Testing at these higher levels requires exam questions directed at higher levels of learning. Thus, we are trying to avoid true/false questions for any level. Instead, we are using multiple choice questions at the knowledge level, harder multiple choice questions at the understanding level, and harder multiple choice or short-answer/citation questions at the application level. The PDC is currently working with the NIST Office of Weights and Measures to help both trainers and exam writers properly match training and evaluation methods to best reach the desired goals and objectives defined in the learning objectives. The PDC and the NCWM Certification Program Coordinator will work with SMEs to help them learn to be good question writers.

The SME's third task is to review and evaluate exam questions drafted by others both before and after they are used in a certification exam. This process will ask the SMEs to rate selected questions against their own personal knowledge in the field. The SME will assess if the question matches the learning objective in the module. In this regard, it is valuable for multiple eyes to see a question, as someone might see alternative valid responses or a question fails to be effective for other reasons. The SME's goal is to help the PDC ensure that the exam is fair and challenging measure of competence with a validated answer key.

The PDC knows that volunteers do not have unlimited time and resources, so one of our goals is to spread out the work to make each SME's commitment reasonable. The Committee will endeavor to keep workloads manageable so that goals are accomplished in reasonable time frames. Thus we are asking SMEs to review and comment on drafts in their area of expertise, for them to create small numbers of new exam questions, and for them to review small selected groups of exam questions. This also serves to limit your exposure to all of the exam questions in the exam bank.

A major concern of any certification program will be security. Each SME must clearly understand that the integrity of the exam can only be maintained if there is no pre-knowledge on the part of the exam taker of the questions that will be on any certification exam. **In agreeing to serve as a volunteer SME, each participant agrees that the NCWM owns the exam questions prepared and further that the NCWM may copyright them.** The SME further agrees that they will not use any exam questions prepared for the NCWM certification in any training efforts. This agreement does not prevent the SME volunteer from creating additional questions for their training based on the body of knowledge in the modules.

In addition to securing the questions that a SME may draft or review, it is expected that he/she will not direct training to specifically prepare candidates for the questions they have written or reviewed. Rather, the Committee expects that a SME will use the body of knowledge in the modules as a guide in preparing training plans that broadly addresses the wide range of skills required in the work. This is the age-old dilemma of teaching to the learning objectives or teaching to the exam. We sincerely believe that professionals, who are prepared according to the learning objectives in the modules, will not have difficulty in passing a fair and balanced, but also challenging, certification exam.