Assessment 3: [Assessment of Candidate Ability to Plan Instruction]
Methods Mathematics Project

1. A brief description of the assessment and its use in the program.
The Methods Mathematics Project is one of 3 content-specific projects required of candidates enrolled in ESEC 383/386 – the Methods course block that precedes student teaching and is the first extended field experience for Elementary Education majors. Candidates apply what they have learned about curriculum development and integration and the teaching of mathematics from earlier, required education courses (ESEC 320, Math 171 and Math 172) as they develop and teach 3 related math lessons in their classroom settings. Emphasis of this assessment is on candidate ability to effectively ***plan*** instruction before teaching, therefore planning occurs through a multi-step process that is described in detail in the following narrative.

2. A description of how this assessment specifically aligns with the standards it is cited for in Section III.
The Methods Mathematics Project is a multi-layered learning experience for Keene State College Elementary Education candidates. It is the most comprehensive project in the initial extended field experience, Elementary Methods (ESEC 383/386). The project aligns with the following (14) **ACEI standards: 1, 2.1, 2.3, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 4, 5.1., 5.2, 5.3, 5.4.** The standards are listed at the end of the Assessment Assignment (Attachment A) and are embedded in the Assessment Scoring Guide (Attachment B). In this way, candidates are made aware of the importance of adhering to standards as they complete each phase of the project. The project is described step-by-step with ties to specific standards offered in parenthesis in **bold** font at the end of each paragraph.

The Mathematics project is introduced at the beginning of the semester but candidates do not build and teach their lessons until they have been in the classroom for a month. In the initial month, one of their primary tasks is to get to know each student individually to establish a basis for communication and trust and to determine the specific learning needs and cultural considerations that will impact their approach to teaching each child as well as their approach to teaching the entire group. Candidates work closely with their cooperating teachers in getting to know the students and are encouraged to attend parent/teacher conferences, I.E.P. meetings (as appropriate) and after school, family-related activities such as reading nights, book fairs and curriculum-related presentations. Candidates also write a letter of introduction at the outset of the semester that is sent home to all families inviting student or family-related input that might impact student interest and/or learning. Additionally, candidates refer to learning, motivation and development theories studied in earlier required courses (ESEC 150 and 250) in order to understand and target the general learning needs of the age group and to enhance student engagement. There are a number of content-specific readings and in-class activities that Methods candidates experience both before and during their work on the Methods Mathematics Project. This demonstrates the Methods faculty's commitment to researching and fully exploring content and appropriate pedagogy as the first step in planning to teach. **(Standards: 1, 3.1, 3.2. 3.4, 3.5, 5.1, 5.3, 5.4)**

Early in the semester and prior to the official start of the Methods Mathematics Project, candidates meet with their cooperating teachers to discuss possible mathematics topics in light of the curricular demands, expectations and materials used in their particular classroom

and district. At this time, candidates and cooperating teachers select a general topic for the project and cooperating teachers share site-specific materials including children's literature that relates to the selected topic and might be of interest to the group. They also discuss students who may need differentiated instruction – which may take the form of remediation and/or extension. Differentiation (both cognitive and behavioral) is a key component of the Keene State College Lesson Plan form. This form serves as a consistent instructional framework for the lesson required within the science project and in all other Methods projects as well. KSC Lesson Plan steps include (but are not limited to): aligning plans with curriculum standards; meeting with cooperating teachers and field supervisors to determine diversity considerations and lesson objectives; researching materials and students' prior knowledge before teaching; creating formative and summative assessments that align with lesson objectives; being mindful of classroom management issues; and reflecting on the effects of the lesson on student learning. The form serves as the instructional framework for the three math lesson required in the Methods Mathematics Project and in all Methods projects. Candidates are next required to extend their research beyond what is given to them by their cooperating teachers and to include Web resources and additional children's literature in order to foster the use of current technologies and curriculum/literacy integration. In most cases, candidates use the Keene State College Curriculum Materials Library (CML) for additional materials. **(Standards: 1, 2.1, 2.8, 3.2. 3.4, 3.5, 5.1, 5.4)**

The Methods Mathematics Project officially begins with "unpacking the mathematics" workshops led by mathematics textbook author and Keene State College faculty member, Dr. Thomas Bassarear. Dr. Bassarear revisits the major mathematics concepts Methods candidates learned during Math 171 and 172 (required prerequisite courses) in light of what is being studied in their current classroom placements. Readings selected by Dr. Bassarear as well as readings from the Marilyn Burns textbook are targeted to the grade level and development needs of the various classroom settings (K-6) and emphasize problem solving using multiple approaches. Through hands-on activities and video clips of children doing mathematics-related work in a variety of elementary classroom settings, Dr. Bassarear explores the importance of developing children's confidence in experimenting with numbers (developing "number sense") and going beyond rote memorization of algorithms. During the workshop week, candidates work together examining both formative and summative means of assessing the mathematical learning of the range of students within their classrooms. After this, Dr. Bassarear and the Methods supervisors for each cohort of candidates work with candidates individually as they begin to design their projects. (There are approximately 20 candidates in each team-taught section, with a maximum ratio of 1 faculty member to each group of 10 candidates.) At the end of the week, candidates conduct micro-teaching sessions; they bring their materials to their Methods class and practice teaching their math lessons to their peers. Candidates use feedback forms to assess strengths and weaknesses of their peers' work then engage in constructive feedback sessions where the cohort works together on strengthening their lessons and sharing their ideas and materials. The goal of this experience is to build a community of learners that develop mathematical teaching skills for a range of learners in a variety of classroom settings. After sharing their plans with their peers, candidates are required to share their finalized plans with their cooperating teachers for additional feedback and suggestions. **(Standards: 1, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 4, 5.1, 5.2, 5.4)**

Candidates then teach their lessons. They are strongly encouraged to teach all three lessons, but if this is not possible in their setting, they are required to teach at least one. They are

observed by their field supervisors at least once. Candidates and their supervisors discuss the outcome of their work, successes as well as areas for improvement, immediately following the observation. Before turning in their final project, candidates gather and respond to student work samples, to assess the effective of their planning and teaching on student learning. Finally, candidates write a reflection of the Methods Mathematics Project in its entirety – what they have gained in terms of content knowledge as well as pedagogy and how they might improve their work in the future in order to enhance student engagement and learning. **(Standards: 1, 3.3, 3.4, 3.5, 4, 5.1, 5.2, 5.4)**

3. Brief Analysis of the Data Findings

The data from the pilot of the Methods Mathematics Project offer an initial picture of areas of strength as well as areas for further development within the Methods field experience. Performance categories are assessed using the following descriptors: EE (Exceeds Expectations), ME (Meets Expectations) and NI (Needs Improvement). Each category is fully explained in the Methods Mathematics Project scoring rubric (Attachment B).

Our findings determine that 100% of our candidates in the pilot cohort met or exceeded the expectations of the Methods Mathematics Project in the category of *planning and preparation* (focus on selecting and researching a topic with input from the cooperating teacher that meets state and national standards and meets the needs of all students)*.* In the *instructional* category (creating, teaching and assessing the impact on student learning of three consecutive lesson plans), 93% met or exceeded expectations. A separate category *providing feedback to students* (impact on student learning) will be included in the instructional category in the future. For this iteration of the project, 100% met or exceeded expectations in this category. In the final assessment category, *professionalism* (quality of final product, ability to determine areas of strength and areas for improvement)*,* 93% again met or exceeded expectations. While data from the pilot group was limited, it gave us an initial idea of areas to target for further work. Developing differentiated lessons, particularly designing age-appropriate assessments that measure stated objectives, is an area that will need further attention in the future.

4. Interpretation of how data provides evidence that ACEI standards have been met.

Our (pilot) findings demonstrate that candidates involved in this project successfully met ACEI standards: 1, 2.1, 2.3, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 4, 5.1., 5.2, 5.3, and 5.4. These standards are aligned with each step of the project; they are addressed during on-campus study and through field work in an elementary classroom. The project calls for candidate application of: 1) CONTENT knowledge (mathematics); 2) PEDAGOGICAL and PROFESSIONAL KNOWLEDGE, SKILLS and DISPOSITIONS (planning for, designing and teaching of three consecutive lessons), and; 3) FOCUS ON STUDENT LEARNING (response to student work samples and a follow-up interview with a student).