

Evidence-Based Teaching: How to Develop, Deliver, and Evaluate Effective Substance Use Curricula

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Learning Objectives

1. Become familiar with the basic principles of learning derived from educational science and directly applicable to teaching and supervision.
2. Describe and apply the stages and processes of curriculum development around an identified substance use service or training need.
3. Compare and contrast potential instructional techniques such as didactic lectures, discussions, online tools, and team-based learning.
4. Identify evidence-based assessment tools to evaluate the success of educational interventions and the knowledge, skills, and attitudes of learners.

Module Roadmap

1. Basic principles of learning from educational science
2. Curriculum development: stages and processes
 - Needs assessments, setting goals
 - Instructional techniques
3. Assessments/evaluation
4. A curricular example

A Caveat....

- This module focuses on professional training and/or supervision of professionals in the health care field. Educational programs for patients, families, and youth may differ significantly.
- These curricula for professionals may be formal or informal and could be of various intensities and durations.

Priming Yourself for Learning...

- Take a moment to consider all of the different contexts where you may formally or informally teach.
 - Classes? Seminars?
 - Lead discussions during meetings?
 - Clinical supervision? Managerial supervision?
 - Interns? “Little sibs”?
- What do you think you do well in each setting? What would you like to improve?

What is Educational or Learning Science?

“Education research is a field of inquiry aimed at advancing knowledge of education and learning processes and development of the tools and methods necessary to support this endeavor. Education researchers aim to describe, understand, and explain how learning takes place throughout the life cycle and how formal and informal processes of education affect learning, attainment, and the capacity to lead productive lives.”

American Education Research Association;
<http://www.aera.net/EducationResearch/WhatisEducationResearch/tabid/13453/Default.aspx>; accessed 8/21/13.

Evidence-Based Teaching

- Just as we talk about “evidence-based treatment” for medical problems, we should be talking about “evidence-based teaching approaches” that have been proven effective.
- We should use educational research and science to make informed choices about curriculum development, delivery, and evaluation.
- These principles are of use at all levels of involvement including frontline supervision.

Some Core Principles

- Learners proceed through developmental stages. Our teaching/supervision methods should be pitched at the right level and use developmentally appropriate instructional methods. Teachers are often experts and have forgotten how to think like beginners.
- Learning makes cognitive, emotional, and motivational demands. The most effective teachers attend to all 3. In stressful clinical settings, coping and motivation are essential.

Some Core Principles

- Data (studies) may be convincing but stories are memorable. Be sure to include both as part of your teaching.
- Multi-modal approaches (discussion, video, role plays, exercises) are more effective learning tools than standard lectures. Find ways to engage learners more deeply.
- Multiple “doses” of teaching are often required before a learner can acquire complex skills. Be sure to re-visit earlier lessons.

What is “Adult Learning?”

- Since the large majority of our SUD teaching programs will target adults (health professionals), we should consider how adults may differ from youth in how they learn. Adults tend to be:
 - More problem-based and collaborative
 - Teacher and learner are more equal
 - Adults are more internally motivated and self-directed
 - Adults prefer practical applications
 - Adults are able to use more life experience and have better perspective

Curriculum Development

- This section will be most useful if
 - You need to create a new training program or session(s)
 - You would like to revise an existing curriculum
 - You would like to better understand how an existing curriculum might have been developed
- We will first describe a “quick and dirty” process using “GNOME”
- Then include a more thorough description of curriculum development stages (Kern)

Curriculum Development: GNOME

- We suggest that curriculum development should be thoughtfully guided by a few key questions rather than relying on tradition or convenience . These key questions can be represented by the acronym “GNOME”:
 - Goals: what are you trying to accomplish?
 - Needs: what do your learners or patients need?
 - Objectives: specify what will be learned
 - Methods: how will it be taught?
 - Evaluation: how will it be assessed?

Curriculum Development: Stages

A more formal process of curricular development stages has been described by Kern et al.

1. Problem identification and general needs assessment
2. Targeted needs assessment
3. Goals and objectives
4. Educational strategies (pedagogy)
5. Implementation
6. Evaluation and feedback
7. Curriculum maintenance and enhancement

(Kern et al)

Problem Identification and Needs Assessment

- What is the problem you hope your curriculum will assess?
- What is the scope, frequency, and consequences of this problem? Who is involved?
- Of those involved, what do they currently know? What do they need to learn?
- What does the clinic, learner, teacher, patient, and others need for this to be a success?

Targeted Needs Assessment

- Brief surveys of the learners are often used to identify current strengths, challenges, and areas for improvement.
- Items could include tests of knowledge, attitudes, or self-reports of skills.
- Items may also solicit learning preferences – e.g. would they prefer online modules or an in-person seminar?

Setting Curricular Goals

- Learning outcomes can be cognitive (knowledge), behavioral (skills), or affective (attitudes). Your goal should be specific about what it is you hope to accomplish.
- Goals can reflect level of learning but they may also reflect broader clinical or systems outcomes you hope will be achieved.
- How will you know your intervention has been successful? What will be different?

Writing Learning Objectives

- If done well, learning objectives can be challenging to write.
- A quality learning objective should
 - Be concrete and specific: “Understand substance abuse” is too vague.
 - Be measurable: You need to be able to assess when a learner has achieved an objective.
 - Reflect the appropriate level of learning expected using Bloom’s Taxonomy (next slide)

Bloom's Taxonomy

Bloom, 1956

- Bloom's Taxonomy refers to cognitive learning outcomes (what do people know and how do they know it?). The original model lists these hierarchical levels:
 - Data recall
 - Comprehension (understand meaning)
 - Application (use knowledge in a novel situation)
 - Analysis (understand different elements and interrelationships)
 - Synthesis (putting together new knowledge)
 - Evaluation (judge information or ideas)

Examples: Learning Objectives

- **List the 5 stages of changes specified in the Transtheoretical Model.**
 - This objective is specific and measurable. However, it is simple “data recall” placing it at the lowest level of Bloom’s taxonomy.
- **Select and describe a motivational intervention based on patient’s level of readiness to change.**
 - This is specific and measurable (with a case vignette). It requires the “application” of knowledge (Bloom’s 3rd level).

Reminder: Stages of Curriculum Development

- So far, we've gone through the first 3 stages (general and targeted needs, setting goals/objectives).
- Even if you aren't an educator or curriculum developer, the next stage on "instructional techniques" is relevant to everyone. We all have a preferred teaching style (or habit) that we should review and possibly improve.
- What is our menu of options and what seems to work best?

Instructional Techniques

- Classic continuing education offerings are done in large lecture, didactic formats (often using powerpoints). More recently, these didactic formats are offered online or on webinars that may or may not be “live.”
- In these approaches, an “expert” delivers knowledge to those less experienced who are then expected to absorb and use this new information.
- Unfortunately, this format doesn’t work well.

POP Quiz

- What do you think the traditional lecture format does well? What doesn't it do well?
- What instructional techniques do you think work best?
- Take a few moments to jot down your thoughts.

What Instructional Techniques Work?

- This all depends on what your learning outcomes are. Are you trying to change attitudes, impart knowledge, or teach a new skills?
- For skills like substance abuse screening or counseling, the most effective interventions are multi-modal: limited didactics, discussion, demonstrations, videos, and hands-on practice. Ideally, learners will be observed later and given corrective guidance. (Hauer et al, 2012)

Example 1: Refreshing Didactics

- A lengthy powerpoint presentation with even the most dynamic speaker can be tiresome.
- Try these strategies to improve engagement
 - Weave in stories and narratives using “characters” that are similar to your audience
 - Integrate videos that illustrate a teaching point
 - Include a “fish bowl” role play where you demonstrate a skill in front of the learner(s)
 - Fold in verbal “pop quizzes” where participants have to share their own knowledge and attitudes

Example 2: Use of Narratives

- What is it that makes a story memorable and engaging? What kinds of stories have the power to change people's minds?
- A few key principles:
 - Vivid, sensory details and descriptions facilitate learners' experience of the story.
 - Learners should be able to relate to the main character(s) and empathize with his/her perspective.
 - Cliff hangers or chapter stories that are spread throughout a talk help retain learners' interest.

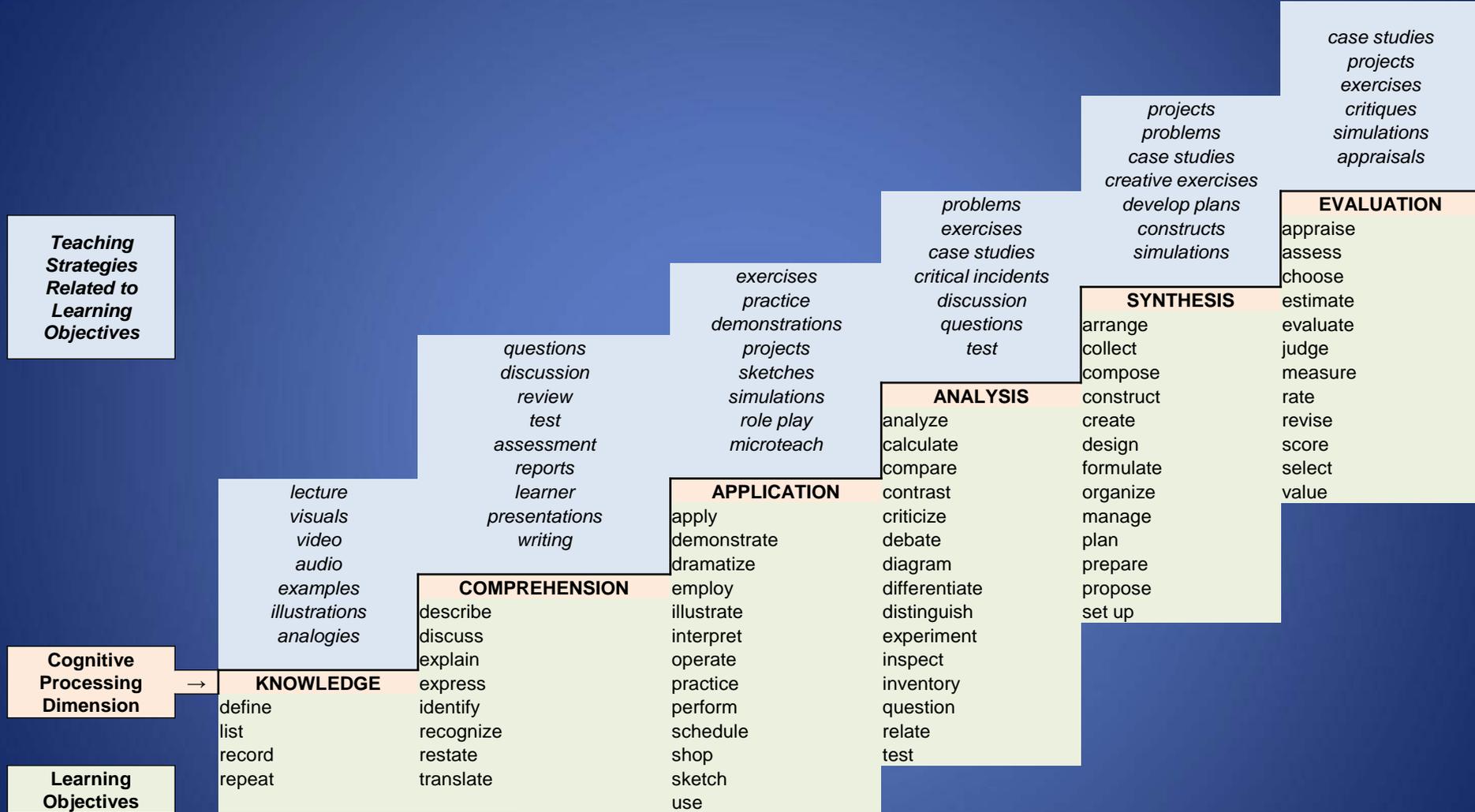
Example 3: Flipping the Classroom

- People learn better when they have a chance to apply something they have been taught. “Flipping the classroom” refers to moving the didactics and basic knowledge usually taught during class time to outside of the classroom (e.g. a video lecture learners watch before the class). Actual class time is spent applying the new knowledge to cases or other active exercises.

So What Techniques Should You Use?

- First reflect on your learning goals/desired outcomes.
- What level are your learners?
- What resources do you have at your disposal?
How much time?
- Consider “stretching” the teaching time to require advance on-line preparation and booster sessions or brief refreshers after the teaching session ends.

Learning Hierarchies: Teaching Strategies



Adapted from: Bloom, B.S. (Ed.), Engelhart, M.D., Furst, E.J., Hill, W.H., & Krathwohl, D.R. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook 1: Cognitive domain*. New York: David McKay.

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Where Are We Now?

- Thus far, we've made it through 4 of the 7 formal stages of curriculum development – with the selection of instructional methods being the most recent.
- “Implementation” is the next stage and refers to the change management strategies that will get this new material into your clinic or training program. Given the complexities of the topic, we recommend the PCSS-O module on Implementation.

Assessment and Evaluation (Stage 6 of 7)

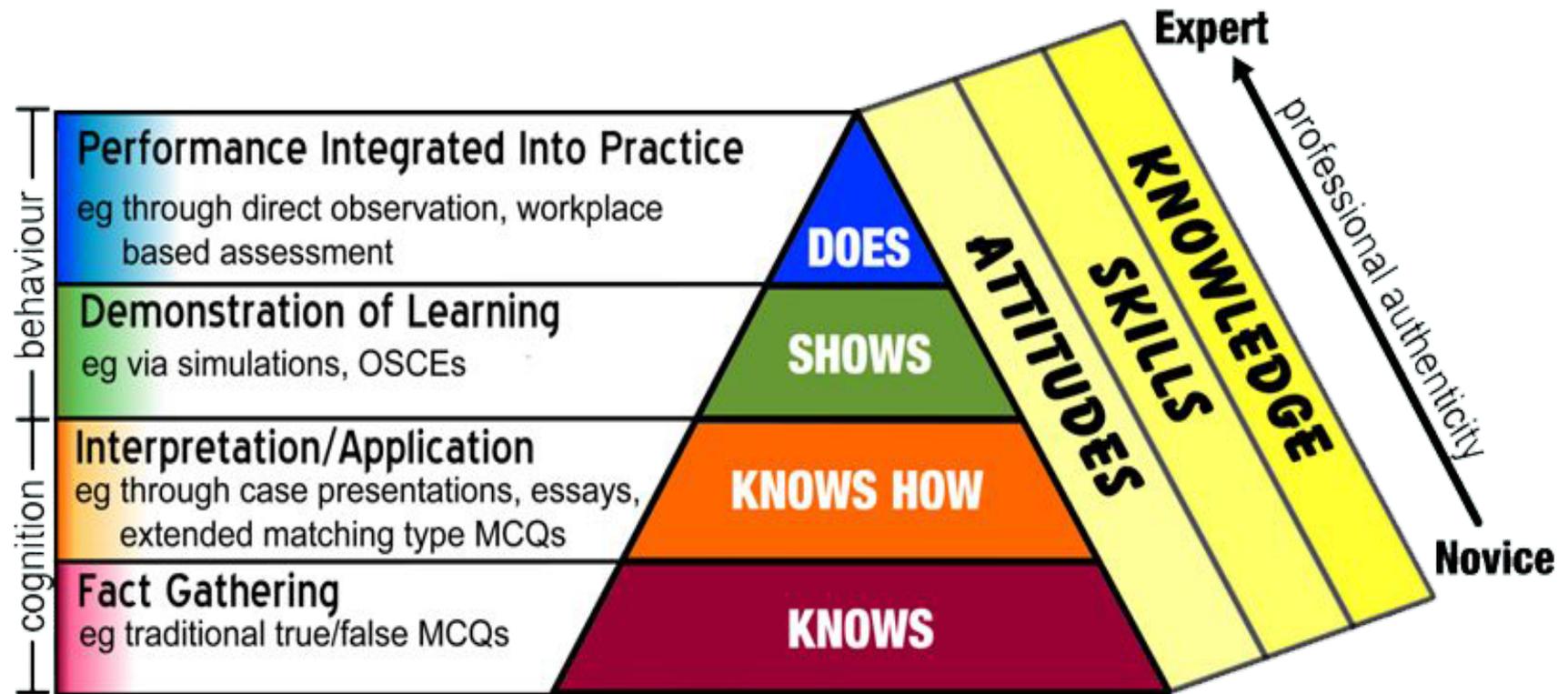
- With Assessment and evaluation, we really want to know two things:
 - Did our learners achieve the objectives?
 - What as the quality of our curriculum and were there any lasting results?
- We may want to use this data to help us maintain and enhance future teaching sessions (Stage 7 of 7)

Helpful Evaluation Models: Miller's Pyramid

- Miller's Pyramid is a skills acquisition model that is used to measure clinical competence. (Just as Bloom's Taxonomy was use to measure cognitive/knowledge outcomes).
- The levels of the pyramid include
 - Knowledge: Learner knows the basics (cognitive)
 - knows how: Learner can describe the skill
 - shows how: can demonstrate the skill
 - Does: uses the skill in general practice

MILLER'S PRISM OF CLINICAL COMPETENCE (aka Miller's Pyramid)

it is only in the "does" triangle that the doctor truly performs



Based on work by Miller GE, *The Assessment of Clinical Skills/Competence/Performance*; Acad. Med. 1990; 65(9); 63-67
Adapted by Drs. R. Mehay & R. Burns, UK (Jan 2009)

Helpful Models: Kirkpatrick Levels

(Kirkpatrick, 1996)

- While many evaluation tools evaluate the learner, you may also be interested in evaluating the curriculum. Did learners like it? Did it change clinic practices?
- Donald Kirkpatrick offers a helpful level system to evaluate learning outcomes attributable to a curriculum. Ideally, curricular produce meaningful clinical or systems changes (higher levels).

Helpful Models: Kirkpatrick Levels

Level 1: Reaction

To what degree participants react favorably to the learning event

Level 2: Learning

To what degree participants acquire the intended knowledge, skills, and attitudes based on their participation in the learning event

Level 3: Behavior

To what degree participants apply what they learned during training when they are back on the job

Level 4: Results

To what degree targeted outcomes occur, as a result of learning events(s) and subsequent reinforcement

Evaluation Tools: Learners

- Tests of attitudes
 - Surveys, interviews, peer reports
- Tests of knowledge
 - Multiple choice, short answer, or other knowledge questions
 - Applied case exercises, oral exams
- Tests of skills/competence
 - Direct observation: simulations or real world
 - Indirect evaluations – e.g. chart reviews
 - Patient and peer reports

Self-Reflection

- What evaluation tools do you currently use when you teach? How valid and reliable do you think these tools are?
- What was the last time you were evaluated? How fair do you think it was? How could that “tool” have been improved?

Considerations When Selecting A Tool

- What is my intended learning outcome? If your goal is to build skills, you need a skills-based assessment tool.
- How much will it cost?
- How much time will it take?
- Does the tool address the correct level of Bloom's Taxonomy, Miller's Pyramid, or Kirkpatrick level?

Evaluation Tips

- Develop the evaluation plan/tools as you develop the curriculum. Evaluation provides critical data and shouldn't be an afterthought.
- Go for more than learner satisfaction or self-report if possible.
- Don't expect perfect evaluations on the first attempt and be willing to revise and improve your materials if they are not well received. Think of it as continuous quality improvement.

Clinical Supervision: The One Minute Preceptor

- Precepting is often less predictable and less structured since the teachable moments often depend on the patient.
- However, a structured approach to precepting and supervision can help you make the most out of the precepting time.
- The One Minute Preceptor is one of the better know models to improve the quality of clinical supervision (Furney at al., 2001).

One Minute Preceptor

- Get a commitment
 - What is the learner's diagnosis or plan?
- Probe for supporting evidence
 - What does the learner know? What evidence are they using?
- Teach general rules (about this kind of case/pt)
 - What is the take home point?
- Reinforce what was done right
- Correct mistakes with constructive criticism

Curricular Development Example: Screening, Brief Interventions, and Referrals to Treatment (SBIRT)

1. Identify Problem (global issue): a busy outpatient, adult primary care clinic noted that the alcohol and drug section of most patient's electronic health record was blank. Patients weren't being screened and problems were being missed. Staff and provider behavior needed to change.

SBIRT Example

2. Targeted Needs Assessment: the local SBIRT “champion” sent around a simple survey monkey survey to assess current attitudes, knowledge and skills around SBIRT. She also asked about preference for how staff would like to be trained (e.g. online vs workshops). To improve tailoring problem solving, she asked about “wish lists” and potential obstacles.

SBIRT Example

3. Goals and Objectives: staff seemed receptive to SBIRT and saw its value even before being trained (attitudes). Biggest need was for brief intervention skills and more knowledge about the local referral options. Additional goals of efficiency and improved patient satisfaction were added.
4. Educational strategies: online modules, video demonstrations, in-person workshops with role plays.

SBIRT Example

5. Implementation: created clinic approved timeline, enlisted “trainers” to help do workshops and role plays, included clinic operations manager, created new data collection forms.
6. Evaluation and feedback: used learner satisfaction questionnaire and chart audits to verify SBIRT usage and fidelity.
7. Curriculum maintenance and improvement: initial results used to revise next iteration.

Summary

- Just as we strive to provide evidence-based treatments, we should also use educational research to select the most effective (and efficient) teaching strategies and evaluation tools.
- A structured approach to curriculum development can save time, resources, and improve outcomes.

Please Click the Link Below to Access the Post Test for the Online Module

Upon completion of the Post Test:

- You will receive an email detailing correct answers, explanations, and references for each question.
- You will be directed to a module evaluation, upon completion of which you will be emailed your module Certificate of Completion.

<http://www.cvent.com/d/k4q8yg>