TPD·CATALYST

TOPIC INDEX / TPD Curriculum Topics and Aligned Learning Outcomes

Below is the expanded list of TPD topics (bold) including aligned learning outcomes (*italics*). Each learning outcome listed per topic is intended to be TA-centric. That is, each implicitly begins with the phrase, *"By the end of this session, TAs should be able to…"*. Occasionally, additional context is provided [in brackets] in or after the listed outcome, to explore ways of tailoring it to your specific audience. This is an ever-evolving index of TPD topics and outcomes, and ECB Scholars will be vital collaborators in reviewing, revising, and expanding it – so that it might better serve other TPD practitioners.

ESSENTIALS

1. **The First Day of Class**
   a. *Establish a network of colleagues for holistic professional development*
   b. *Envision the qualities of an inspiring and effective teacher*
   c. *Reflect on the unique strengths and experiences you bring to this role*
   d. *Identify goals and challenges of your teaching that you can impact on the first day*
   e. *Describe the purpose, value, and composition of a comprehensive syllabus*
   f. *Enact proactive strategies to set the tone for a great [course, lab, term, semester, etc.]*

2. **Presence and Public Speaking**
   a. *Normalize expectations about our relationship to public speaking*
   b. *Describe characteristics of great "presence"*
   c. *Articulate reasons you're passionate about teaching biology!*
   d. *Present yourself as a calm, organized, approachable authority on your first day of class!*

3. **Effective Presentations**
   a. *Identify tools available for use when presenting and evaluate their pros and cons*
   b. *Enact strategies to create and deliver engaging presentations*
   c. *Reflect on the effectiveness of your presentations and analyze potential areas for further improvement*

4. **Fostering Healthy Learning Environments**
   a. *Describe characteristics of healthy learning environments*
   b. *Conceptualize the role of the instructor (and the students) in establishing and maintaining a healthy learning environment*
   c. *Create and enact concrete strategies for establishing and maintaining a healthy learning environment in your own teaching context*
   d. *Justify the value of reflection for growing as individuals and institutions with respect to diversity and inclusion*

5. **Active and Collaborative Learning Strategies**
   a. *Define "active learning" and justify its use in college classrooms*
   b. *Enact collaborative learning techniques to engage students, to challenge them at an appropriately high level, and to support their learning*

6. **Student Engagement**
   a. *Explain the importance of fostering student engagement*
   b. *Define engagement by specific traits of engaged students (to know what to look for)*
   c. *Evaluate the reasons (academic, logistical, and personal) why engagement might be lacking*

d. *Enact strategies to anticipate barriers and nudge students toward higher levels of engagement*

7. **Teaching the Scientific Process**
   a. *Define key aspects of the "scientific method" for your students in a way that is clear, concise, and engaging*
   b. *Justify the importance of science and scientific thinking*
   c. *Identify "trouble spots" in teaching about the scientific method due to knowledge gaps and misconceptions in our students (and the public)*

8. **Facilitating Class Participation and Discussions**
   a. *Articulate your role and responsibilities when acting as a facilitator of class participation or discussion*
   b. *Identify the goals of discussion and evaluate when it's useful (and when it's not)*
   c. *Analyze the components of whole-class discussions and propose characteristics of effective discussions (with respect to those components and your goals)*
   d. *Employ concrete preparation and facilitation strategies to get people engaged, keep the conversation going, and provide a sense of synthesis*

9. **Holistic Student Support (*i.e.*, Academic and Emotional)**
   a. *Justify the relevance of understanding holistic student development as an instructor*
   b. *Describe your role as a TA in supporting your students, including the responsibilities and boundaries of that role*
   c. *Explore multiple types of teacher-student interactions and their importance to student success*
   d. *Identify components of identity and experiences that contribute to holistic student development*
   e. *Propose actions you can take to foster positive student development experiences in the discipline*
   f. *Identify the signs of distressed students and respond appropriately to support these students*
   g. *Connect students to institutional resources that are relevant to their specific needs*

10. **Grading Strategies and Giving Feedback to Students**
    a. *Identify the purpose of assignments to be graded and establish priorities for grading/feedback*
    b. *Establish and normalize the instructor's expectations for grading [based on the course and student audience]*
    c. *Enact strategies to balance the inherent trade-off between effective and efficient grading*

11. **Teaching (and Grading) Scientific Writing**
    a. *Describe the style and composition of a scientific paper, and compare and contrast this with other forms of writing*
    b. *Articulate realistic expectations for introductory biology students and qualities of effective scientific writing*
    c. *Prepare students to submit quality scientific writing*
    d. *Provide effective and efficient feedback on student writing and evaluate student writing fairly and equitably*

12. **Time Management (in- and out-of-class)**
    a. *Normalize the difficulty of time management during [graduate] teaching assistantships*
    b. *Reflect on and analyze your weekly time use in practice (in-class and out-of-class)*
    c. *Calibrate time expenditure expectations for your teaching assistantship*
    d. *Envision proactive and reactive strategies to manage in-lab time effectively*

e. *Identify major teaching "time sinks" out-of-class time, and find ways to use a finite amount of time as effectively as possible*

f. *Balance your drive to succeed with setting reasonable boundaries, and find a means to stay healthy during your graduate education*

13. Soliciting Feedback for Improvement

a. *Identify forms of feedback available to us in our teaching*

b. *Articulate the value of feedback from students for improving our teaching*

c. *Solicit constructive mid-term feedback and follow up with students appropriately*

14. Self Observation and/or Colleague Consultation for Improvement

a. *Justify the value of the [self observation or peer consultation] process for improving as teachers*

b. *For self observation:*

   i. *Apply the self observation protocol [which may include a specific process and/or observation protocols such as LOPUS] to critically evaluate your own teaching*

   ii. *Compare and contrast your initial impressions about specific aspects of your teaching with what you actually observed during the self observation process*

   iii. *Reflect upon feedback from a self observation to continue growing as a teacher, and apply relevant insights gained from this process to improve your future teaching*

c. *For peer consultation:*

   i. *Apply the peer consultation protocol [which may include a specific process and/or observation protocols such as LOPUS] to provide quality instructional feedback to a fellow teacher*

   ii. *Compare and contrast your initial impressions about specific aspects of your teaching with what your colleague actually observed during the peer consultation process*

   iii. *Reflect upon feedback from a peer consultation to continue growing as a teacher, and apply relevant insights gained from this process to improve your future teaching*

ADVANCED TOPICS

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15. Critical Thinking and Student Development

a. *Define critical thinking and metacognition*

b. *Evaluate measurable characteristics of critical thinking (to know what to look for)*

c. *Summarize theoretical frameworks for the development of student critical thinking skills*

d. *Create activities and assessments to "nudge" students toward more critical thinking*

16. The Science of Learning

a. *Summarize the current scientific understanding of how individuals learn and retain information*

b. *Apply insights the science of learning to design or improve instructional materials in a way that enhances student learning*

17. Evidence-based Teaching

a. *Define evidence-based (scientific) teaching, and describe the purpose and value of this approach*

b. *Identify and apply evidence-based instructional strategies to achieve specific instructional goals*

c. *Utilize the various forms of evidence available to instructors to assess and improve their own teaching methods in an iterative manner*

18. Equity, Diversity, and Inclusion in STEM

a. *Compare and contrast the concepts of diversity, equity, and inclusion (DEI)*
b. *Justify the value of diversity in STEM disciplines (and in life)*
c. *Evaluate institutional and disciplinary values with respect to DEI*
d. *Reflect on the role and responsibilities of individuals in our institutions, as well as your own personal framework for thinking about DEI in STEM*

19. Mentorship in Teaching (and/or STEM)
a. *Describe the role of mentorship at large, as well as in your personal development as both a teacher and scientist*
b. *Evaluate characteristics of effective and ineffective mentors and mentees*
c. *Reflect on the value of representation of diverse identities in STEM*
d. *Explain the unique role of TAs as mentors*
e. *Envision a way forward to provide and receive effective mentorship in your own teaching and scientific communities*

20. Scientific Communication
a. *Identify and evaluate strategies for communicating science effectively*
b. *Weigh the benefits and challenges of communicating science in different modalities and to different audiences*
c. *Formulate realistic expectations for scientific communication among undergraduates and set students up to succeed in these assignments [for TAs facilitating undergraduate assignments relating to scientific communication]*
d. *Construct evaluation criteria for diverse forms of scientific communication, and propose solutions to evaluate these modalities equitably [for TAs facilitating undergraduate assignments relating to scientific communication]*

21. Science and Society (and/or Teaching with Socio-scientific Issues)
a. *Identify examples of issues at the interface of biology and society [especially as it is relevant to the specific course(s) TAs are teaching alongside their TPD]*
b. *Justify the value of integrating socio-scientific issues into course curricula*
c. *Reflect on the role of individual science instructors when dealing with issues at the interface of science and society (socio-scientific issues)*
d. *Anticipate challenges that may arise as a result of incorporating socio-scientific issues into curricula, and enact instructional strategies to mitigate those challenges*

22. Problem-based Learning (and/or Teaching with Ill-structured Problems)
a. *Define problem-based learning and justify its use for STEM education*
b. *Apply problem-based learning to engage students, apply course content, and challenge them to think critically*
c. *Define ill-structured problems and justify the value of using these kinds of problems as an instructional framework*
d. *Identify pitfalls and enact strategies to overcome them when coaching students to think critically about ill-structured problems*

23. Assessment Design (Formative and/or Summative)
a. *Identify different forms and formats of assessments and evaluate their trade-offs*
b. *Compare and contrast formative and summative assessments, and justify the value of each*

c. *Describe the purpose of assignment rubrics and design them to function effectively*

d. *Evaluate the implications of assessment format and requirements, and consider ways to ensure equitable assessment of student learning*

24. Curriculum Development via Backward Design

a. *Define key elements of course design: backwards design, learning outcomes, formative and summative assessments, curricular alignment*

b. *Critically evaluate the alignment of course outcomes, assessments, and instructional materials*

25. Universal Design for Instruction (UDI)

a. *Describe the fundamental principles of the "Universal Design for Instruction" (UDI) model and justify the use of UDI as an instructional framework*

b. *Apply the UDI model to analyze the accessibility of existing course offerings [ideally in a relevant instructional context, e.g. the specific courses taught by TAs]; identify ways that course materials are consistent with UDI, and propose modifications to make a course more consistent with UDI*

c. *Reflect on the responsibility and capacity of instructors to make their curricula accessible to diverse learners*

26. Managing Student Peer Review

a. *Defend and clearly communicate the value of peer review – for science and the success of your students in general*

b. *Identify challenges and potential pitfalls when requiring students to engage in peer review*

c. *Enact preemptive strategies to set students up for constructive and appropriate peer review*

27. Teaching with Technology

a. *Identify the diverse ways that technology can be used to further a teacher's instructional goals*

b. *Evaluate the pros and cons of different technological solutions for organizing course materials, presenting course content, and grading student work [you are encouraged to tailor this to your TA audience's specific duties and experiences]*

28. Unexpected Circumstances

a. *Evaluate the limitations of preparation, normalize expectations about the extent of preparation that is realistic, and develop confidence in dealing with uncertainty in your teaching*

b. *Develop a general action plan for how to respond to unexpected situations in your teaching*

c. *Envision ways to effectively regroup your class after an unexpected disturbance*

29. Student Frustration (and/or Distressed or Disruptive Students)

a. *Manage instructor expectations and normalize that feelings of frustration occur in and out of the classroom*

b. *Analyze frustrations that people (both TAs and students) experience in educational settings; evaluate the impact of those frustrations on the learning environment*

c. *Enact strategies to overcome feelings of frustration (of both TAs and students) in a productive way that allows students to achieve the relevant learning outcomes*

d. *Compare and contrast the signs of distressed and disruptive students, analyze their impact on the learning environment, and create a plan to respond that supports these students accordingly*

30. Handling Controversial Topics and Conflict in the Classroom

a. *Articulate your role and responsibilities as a facilitator when navigating the class through difficult content or conversations*

b. *Identify potential hotspots in class content or discussions*

c. *Identify the range of participant reactions and experiences to difficult content or conversations*

d. *Develop strategies to recognize, respond, and follow-up to tense or traumatic moments in the classroom*

31. Academic Integrity and Misconduct

a. *Define academic integrity and justify its importance for teachers, students, science, and society*

b. *Analyze the reasons why a student may engage in academic misconduct*

c. *Describe the process at your institution to document and respond to academic misconduct*

d. *Enact strategies to minimize the potential for academic misconduct and respond appropriately as these issues occur*

32. Ethics in Teaching (and/or Professional Ethics broadly)

a. *Define professional ethics and discuss nuances that can make it surprisingly difficult to do so*

b. *Identify the many kinds of sources (individual, societal, institutional, governmental, etc.) that may inform one's understanding of what constitutes ethical behavior*

c. *Analyze the values described in [a formal statement(s) on academic ethics, e.g. the AAUP Statement on Professional Ethics or your institution's ethics statement (if present)]*

d. *Create your own personal code of teaching ethics*

33. Creating a Statement of Teaching Philosophy (and/or Teaching Portfolio)

a. *Explain what a teaching philosophy statement is and why it is useful*

b. *Describe characteristics of effective teaching philosophy statements*

c. *Articulate the core values of your teaching philosophy and identify examples you could use in creating your philosophy statement*

d. *Describe the purpose, value, and composition of a teaching portfolio*

e. *Identify possible forms of evidence to reflect on and improve our teaching, including examples and artifacts from your teaching experience that you could include in a teaching portfolio*

f. *Create a plan to document your teaching experience and growth in order to improve as an educator and advocate for yourself professionally*

34. Creating a Curriculum Vitae (CV) or Résumé

a. *Compare and contrast the structure and purpose of a curriculum vitae (CV) and a résumé*

b. *Categorize the kinds of information you may want to include in a CV or résumé [as relevant]*

c. *Apply strategies to develop (or update) your CV or résumé [as relevant] in a way that is useful to readers and accurately portrays your professional identity and experiences*

35. Careers In and Beyond Academia

a. *All tracks:*

i. *Identify the kinds of career opportunities your education could enable you to pursue*

ii. *Reflect on and articulate the role of teaching in your future career trajectory*

b. *Academic tracks:*

i. *Categorize the different kinds of academic career positions and analyze the role of teaching in those respective positions*

ii. *Summarize the academic hiring process, including the most common forms of teaching evidence requested in the different stages of hiring*

c. *Non-academic tracks:*

       i.   *Reflect on and articulate the role of teaching in your future career trajectory*
     ii.   *Analyze ways that your teaching skills will be transferable to that profession, and how your teaching experiences have prepared you to succeed in that profession generally*

SPECIAL or RECURRING SESSION IDEAS

36. TA "Roundtables" (Q&A with TPD facilitator, returning TAs, or other mentors)
    a. *Share advice about strategies that have worked well for you in your teaching*
    b. *Identify areas for growth and improvement in your teaching*
    c. *Enact effective methods in subsequent teaching experiences for aspects of your teaching that have challenged you*

37. Faculty Panel (Q&A with faculty, ideally of diverse identities and position types)
    a. *Normalize expectations and experiences of [graduate] teaching assistants*
    b. *Reflect on trouble spots in teaching, academia, and work-life balance*
    c. *Envision the next steps in your career, wherever that may lead you*
    d. *Enact strategies to successfully navigate your teaching, research, and personal [or graduate] life*

38. Reflections on the Term/Year
    a. *Reflect on your relationship to [teaching, or to specific TPD topics as relevant] and how it relates to your own teaching and learning journey*
    b. *Celebrate "triumphs" (instructional successes) and propose "future triumphs" (goals for continuing development) in your teaching [in general, this term, this year, etc.]*
    c. *Compare and contrast your teaching now with where you began [e.g., at the end of the year versus the beginning of the year]*
    d. *Synthesize teaching theory and practice covered in a [workshop, course, year, etc.] of teaching professional development by addressing challenging instructional scenarios*

Lastly: Custom Topics Tailored to the Specific TA Audience
- Generally, think about ways to adapt the topics/outcomes above to the target TA audience, the contexts of the course(s) they teach, the student population, TA or student experiences, etc.
- In addition, you may also want to create dedicated TPD sessions (and outcomes) for more specific topics than those listed, based on the instructional duties of TAs, as is relevant in their course(s); e.g., if TAs are facilitating specific assessments such as a term-long scientific research project, teaching in a specific modality, dealing with challenging course content, etc.

TPD ASSIGNMENT IDEAS

Examples Currently Developed for the TPD Catalyst:

- Reflective Teaching Blogs
- Class Capture Self-Observation (with Pre- and Post- Reflections)
- Peer Consultation (with Pre- and Post- Reflections; both qualitative and quantitative approach options)
- Teaching Philosophy Statement (with Development Scaffolding and Post- Reflection)

ECB Scholars are encouraged to think of new options for their TPD Catalyst Products, to help expand this list!