

IDEAL Issue Bin Questions from the Program Assessment Workshops at King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia and Sultan Qaboos University, Muscat, Sultanate of Oman; February 2012

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This set of questions and responses is dedicated to Dr. Ahmed Balamesh of KAU, as he contributed numerous insightful and complex questions and comments to the Issue Bin (in fact, he wins the record for both quality and quantity of questions!).

I, very much, like this “issue bin” idea. Thank you. There is an Arabic Proverb which means “The piper of the local band is not enjoyed.” It can be an effective facilitation strategy, particularly if there is a large group, and little time. To be effective, participants must trust that the workshop leader will respond to all issue bin questions during or after the workshop; otherwise, participants may feel silenced. The leader should always provide some time for question and answer even if the Issue Bin is used.

Accreditation Criteria, Processes and Procedures

The most updated ABET criteria and policies can be accessed at:
<http://www.abet.org/accreditation-criteria-policies-documents/> Other ABET accreditation related information can be accessed at: <http://www.abet.org/accreditation/>

1. How do you see ABET accreditation working across diverse cultures, languages and different nature of job market requirements?

ABET accreditation is rooted in the democratic values of constituent voice and vote and voluntary participation, which is reflected in common practices such as peer review. ABET Accreditation has contributed to the gold standard that ABET accredited programs are world renowned for: quality, diversity, flexibility, and innovation. ABET is a non-profit organizations with the goal of providing peer-expert evaluation against a set of standards established by professionals in the field from around the world.

ABET accreditation is both a process and a status. It’s the process of evaluating educational quality, in other words how well a given program or institution serves its students and society. When a program or institution achieves accredited status it means that students, their parents,

professional and licensing organizations, industry and the public can have confidence that the given degree or certificate has substantial value.

Worldwide, ABET accreditation symbolizes the gold standard in technical education. Students who graduate from ABET accredited programs possess currency in the form of knowledge, skills and attitudes that are valued across the globe. 85,000 students graduate from ABET accredited programs around the world each year.

This currency can function as tender for collaboration across disciplines, geopolitical boundaries, institutions and cultures to address complex, globally-scoped human and technical problems. A student graduating from an ABET accredited program can trust that they have developed the most current and relevant set of competencies as determined by technical professionals in their field.

ABET accreditation is a means to assure educational quality and to improve technical education programs. The role of ABET is not to standardize, but rather to outline the boundaries of professional qualification and to inspire excellence and stimulate innovation beyond accepted criteria. This flexibility allows programs to honor the context (culture, languages, institution, etc.) within which they exist.

Technical professionals from all over the world participate establishing the ABET criteria and implementing them during the program evaluation process.

2. Our department name is “Production Eng. And Mechanical Systems Design” but diploma issued as “Mechanical Engineer”. Do we need to satisfy Mech Eng and Product Eng criterion or only Mech. Eng. Criteria.

3. Do we have to teach in English to apply for ABET accreditation?

For questions 2 & 3, please email Dayne Aldridge, ABET Adjunct Accreditation Director for Engineering at daldridge@abet.org

4. Are ABET evaluators interested in course level assessment?

5. Are ABET interested in (or look at) the technical depth of a given topic?

For questions 4 & 5, please email Mike Leonard, ABET Adjunct Training Director at mleonard@abet.org

6. Is there any opposition to ABET in the US? How much, if any?

I'm not quite sure what you mean here as the term "opposition" can be interpreted in many ways. ABET is the only professional accreditation board for applied sciences, computing, engineering, and technology in the US. In order to become a professional engineer, one must have graduated from an ABET-accredited program. Many government agencies and industry stipulate that a requirement for application is to have graduated from an ABET-accredited program.

7. What about omitting math from CS?!

I think this may be a "joke" question regarding pre-requisites. If you are serious, please provide some context for me and send me an email at akranov@abet.org

8. I tend to find "mission statements" and other similar buzzwords usually dream-based statements and not realistic. Pls, comment.

Vision statements in particular can sometimes seem "dream-based" because they provide a vision of the future that has not yet been reached. Mission statements should be more specific and outline how an organization intends to reach its vision. I recently participated in a workshop by Rob Sheehan (<http://www.sheehannonprofitconsulting.com/>); his work on Mission Impact is stellar and very actionable. If you are interested, contact me at akranov@abet.org and I will send you the workbook and slides from the workshop.

What is critical is to have your faculty and priority constituents involved in mission development. Most strategic planning exercises help you do that. Here are some useful resources if you are interested in developing a strategic plan for your program or organization:

<http://managementhelp.org/strategicplanning/index.htm>

http://www.tccgrp.com/pdfs/per_brief_tenkeys.pdf

9. Can each dept have its own mission and vision?

Yes. A department or program's mission and vision should always be aligned with that of the school, college, and institution. ABET only requires program's to state the institution's mission.

10. Which is true?

PEOs → mission

or

Mission → PEOs

There should be a bi-directional relationship between mission statement, PEOs and SOs as they should not only be aligned but inform one another.

I would say it looks like this:

Mission ↔ PEOs ↔ SOs

11. We have normally 3 mission statements (university, college, & program). With respect to which one should we align PEOs?

12. How often do you find inappropriate mission statements?

I personally don't evaluate program's mission statements. I would say that an "inappropriate" mission statement is one that isn't a good fit with the program's climate, culture, constituents, resources and goals. One could say that an inappropriate mission statement is one that is not aligned with (or contradicts) that of the college or institution.

13. Is the external examiner part of the program constituents?

I'm not sure what you mean by external examiner – is this a consultant hired to examine your program? Any program can determine who constitutes their constituents. It will depend on the program's context. In general, constituents need to be involved in the program assessment process for the criteria that are closest to their needs and/or concerns.

14. Did I understand that we should develop student outcomes and then create PEOs so as to reflect the student outcomes spirit?

Student outcomes (SOs) are intended to establish a foundation of competencies that prepare graduates to attain the program educational objectives (PEOs). Many programs adopt the ABET Criterion 3 Student Outcomes for their given Commission (ASAC, CAC, EAC, or TAC), so there is no need to develop them, beyond determining the program's context specific definitions (and possibly performance indicators) of the outcomes. PEOs, as we discussed, are informed by the program's constituents who have needs and/or concerns related to what students should be able to know and do a few years after graduation (which usually means the following constituents: employers, institutions of graduate education, licensing or certification boards, etc.).

15. Is it acceptable to use student learning outcomes (SLOs) instead of Student Outcomes (SOs)?

For ABET reporting purposes, it's important to use ABET terminology so that communication between the program and the evaluation team is clear. So, in your Self-Study Report and **attending documentation, it would be good to use Student Outcomes.**

16. From the point of view that there is flexibility of changing SOs, can we omit some of ABET defined SOs (i.e., not define a replacement to what have been omitted)?

17. Leaving programs to define their own outcomes looks problematic when we consider mapping to the ABET A to K. This mapping is usually debatable and opinion based. Pls comment.

Each commission requires programs to show the extent to which students have attained the Criterion 3 Student Outcomes. The 2012-2013 EAC Criteria, has changed its wording for Criterion 3 to be: "Student outcomes are outcomes (a) through (k) plus any additional outcomes that may be articulated by the program." If narrowly interpreted, this means that a program must use EAC Criterion 3 a-k, plus any additional ones should it wish. If broadly interpreted, then a program could have slightly different wording that fits their program an overt mapping to the criteria.

I would recommend that programs invest time in defining the ABET student outcomes to fit their programs' contexts rather than developing different student outcomes. The other commissions do not have the same wording as EAC. Be sure to check the most updated criteria at: <http://www.abet.org/accreditation-criteria-policies-documents/>

18. I have some understanding of student outcomes H & J. I have the feeling that they are intersecting with each other. Could you please elaborate on the boundary between these two outcomes. (Actually, in my course, I am supposed to assess outcomes H, I, J).

EAC Outcome "h" refers to the impact of engineering solutions on a variety of contexts. Some programs expand their definition to include the impact of the context on the problem scoping/problem identification, recognizing that a "one-way" impact is of limited use. Outcome "j" focuses on contemporary issues, which is a broader focus and could indeed cover contemporary societal, global, environmental and/or economic contexts. Some programs choose to define it with 2 performance indicators – an awareness of contemporary technical issues and non-technical issues (political, etc.) that are appropriate to the given problem at hand.

First, it's important to recognize that all criterion 3 student outcomes were written by a team after much vigorous discussion over a series of months, with a period of public review and comment.

It's important to remember that programs are free to define the outcomes in ways that reflect their program's context and curriculum. One way to do this is through the development of program indicators. It's also important to remember that the ABET student outcomes establish the minimum. It could be, for example, that a program very much values what is expressed in outcome "h" or "j" or any other outcome and integrated the development of that competency throughout the curriculum. In that case, the program may develop performance indicators that use action verbs at the higher cognitive levels, such as design solutions that address real and perceived negative impacts on global, economic, environmental, and societal contexts.

19. Some of the student outcomes overlap. How to deal with this?

First, it's important to recognize that all criterion 3 student outcomes were written by a team after much vigorous discussion over a series of months, with a period of public review and comment. It's also important to remember that programs are free to define the outcomes in ways that reflect their program's context and curriculum. One way to do this is through the development of program indicators. Defining student outcomes to fit the program's context is one way to deal with the issues of perceived or real overlap. It's also important to remember that the ABET student outcomes establish the minimum boundaries.

In addition, the boundaries between some of the outcomes are somewhat artificial because it makes it seem like they exist separate from one another, when in reality many of them depend upon one another and interact in complex and important ways.

Assessment Methods, Measurement Tools and Processes

20. The way you present "course assessment" makes it look like a heavy burden and almost impossible!! Do we need assistants to help?

Goodness, that certainly was not my intention! My intention was, rather, to show that assessment is something that all faculty conduct regularly in their courses for formative

purposes (to meet the needs of their students during the course of the course itself) and summative purposes (to assess student attainment of outcomes, as well as to assess the overall course itself for curricular and pedagogical relevancy, accuracy, and currency). I had hoped that in showing the relationship between course and program level assessment, then faculty could see the similarities and differences and that that would be helpful.

21. Normally we do not include students in establishing, assessing, and evaluating PEOs. In this a correct approach?

See the answer to question 8. Students and their parents may be involved in assessment of criteria, but usually not PEOs, unless the students are alumni (often times in the US, a program's industrial advisory board has alumni among its membership).

**22. What is the suitable number of performance indicator we can identify for S. outcomes?
23. Is it ok to use one performance indicator?**

There is no magic number for the number of performance indicators, but as a general rule: no more than four and no less than two – this is manageable. Quality and program/discipline fit should be considered first, then one can prioritize and reduce numbers by determining which PIs are subsidiary to others.

24. What other methods of assessment can be used on PEOs besides alumni surveys?

25. Collecting data from external constituencies particularly for PEOs.

26. When do we need to change the program educational objectives? And which assessment process relate to this matter?

Recall that general criterion 2 definition states:

“The program must have published program educational objectives that are consistent with the mission of the institution, the needs of the program's various constituencies, and these criteria. There must be a documented and effective process, involving program constituencies, for the periodic review and revision of these program educational objectives.”

Alumni are one constituent. Many, if not most, programs have an industrial advisory board whose members sometimes comprise alumni from local, national and/or international companies (gov/not for profit/for profit). Those industrial advisory board members can be

asked via survey or in face to face meetings (or focus groups) about their perception of the relevancy and/or currency of the program's educational objectives. In addition, many disciplinary societies, as well as national organizations such as the National Academy of Engineering or the National Science Foundation, publish Vision reports that forecast anticipated skill sets/competencies. Faculty could use those reports to inform development of relevant program educational objectives.

Your program should change or revise your objectives when those who are involved in their review, assessment and evaluation find that they are no longer current, relevant or a good fit with the program. PEOs should be consistent with the mission of the university/institution. There is no requirement to show consistency with the college or department mission, although one would expect there to be consistency.

I've heard that some programs have Industrial Advisory Boards, who essentially "own" the employer survey (both data collection and analysis). This is an example of a third party participant to ensure confidentiality and anonymity where needed/appropriate.

27. Do all faculty members should be involved in assessing SOs?

Faculty role is critical to program improvement

- a. Collective ownership of student outcomes and performance indicators
- b. Evaluating evidence of student learning
- c. Making decisions based on evidence of outcomes
- d. Implementing improvements
- e. Assessing impact

A sustainable assessment process cannot be the responsibility of one person, but leadership is vital.

All faculty should have a voice in deciding on performance indicators and target performance. This does not mean that all faculty have to be involved in the development process. An assessment committee may generate a draft set of PIs, pilot them to test their "goodness of fit" and then provide the opportunity for other faculty to comment and vote for adoption.

All faculty do not have to be engaged at the same level.

- Use those who are eager/willing to help with evaluation and closing the loop, but don't burn them out.
- Use those less willing, to provide evidence from their course – even if it's just once every three years.

Other successful ideas:

- Break each outcome into small sub-committees of 2-3 faculty.
- Provide web-based data entry and automated data analysis.

28. Multidisciplinary teams. How to make sure that all students go through this exercise?

Some programs offer multidisciplinary (2 or more disciplines within or beyond engineering) design courses, or other courses where students can develop multidisciplinary teamwork skills. In general, “multidisciplinary teams” doesn't mean teams from one discipline tackling a multi-disciplinary problem, although I imagine some programs could make the case for that given their context and constraints.

29. Would please give us some examples of implementations of course assessment and program assessment processes? If time permits, provide references.

30. What is the best frequency of data collection/assessment?

31. How may time (frequent) do we have to assess each PI?

32. Is there any exemplary assessment process for a particular discipline?

Because assessment processes and plans should be tailored to one's own program (informed by best practices in assessment and evaluation and from the discipline), what may be exemplary for one, wouldn't necessarily be for another.

It's important to conduct a needs assessment, to leverage what your program is currently doing (or what faculty are doing that you may be unaware of that could be used for program assessment), as well as see what resources are available at the college or institutional levels.

I suggest visiting with colleagues in other departments or in your discipline at other institutions and find out what they are doing. You may know of a program that has similar attributes/characteristics to yours; that would be a good place to start.

The ABET Symposium is a great place to see what others are doing, both from presentations and the Self-Study Report room where you can review well-prepared self studies and talk with representatives from the programs. ABET Symposium: <http://www.abet.org/symposium/>

The frequency of data collection/assessment is highly dependent on the program context. Things to consider when determining frequency are number of students in the program, size of faculty and their ability to collect data, resources available, such as data storage (either electronically or hard copies), institutional requirements (does the university require an annual assessment report?). Three years is the lowest frequency that you should use. This allows you to complete two assessment cycles between each ABET visit.

The reference section of your workshop handbook provides real program examples of assessment cycles, data collection, and data reporting.

33. We got accredited 2008 by different assessment tool. How can we compare that time results with the new rubrics system assessment?

34. If we use two different assessment tools, how do we report these results? Examples if we have direct and indirect assessment.

Assessment data should be given the same considerations as technical research data. If you conduct an experiment and measure the same endpoint with two different methods then data are reported separately, not aggregated or averaged between the two data sets. They are essentially mutually exclusive. The same is true for assessment data; results should be reported in separate tables or charts. Note that reporting of data is different from interpreting data and that the evaluation stage requires interpretation of data results in your program's context. It's important to capture and articulate the context within which the data was collected, the statistical analyses used and why, as well as the potentially confounding variables when interpreting assessment data.

35. What should be an average makes of a class of students (of any sufficient number)? Is it 70%; why?

36. How to determine sample size?

I'm not quite sure what question number 35 is asking.

Choosing a sample size will depend on the total number of students you have, the confidence interval and the confidence level. Creative Research Systems offers a free sample size calculator online that can be used to determine how many students need to be assessed to give a representative sample of the entire population. <http://www.surveysystem.com/sscalc.htm>

Revisit the slides in your handbook on sampling.

ABET does not specify targets for student attainment, although the program should set a realistic target for each outcome and attainment of PEOs. The target levels do not have to be set at the same level for each outcome but should be representative of the importance that the program places on each SO/PEO. ABET is concerned with continuous improvement; it is more important to show that assessment and evaluation is improving student learning rather than students are meeting an arbitrary target.

ISSUE BIN Questions and Responses Part II will be coming towards the end of March, 2012.

Thanks for your patience.

