

Developing an inclusive stakeholder consultation process: A case study

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***Abstract:** One of the two aims of the Australian Learning and Teaching Council (ALTC) funded Define Your Discipline (DYD) project is to develop an efficient, inclusive, simple and systematic stakeholder consultation process that can be used by discipline stakeholders to define their discipline. During 2010 the DYD stakeholder consultation process was developed and then trialled nationally to develop a draft set of Graduate Outcomes for the environmental engineering discipline.*

The first part of the paper describes the DYD stakeholder consultation process which uses both divergent and convergent strategies to ensure that the individual voices of the participants are captured, as well as group perspectives. Data was gathered on the tasks undertaken by graduates during their first two or three years of practice. Once the 2010 stakeholder consultation workshops had been completed the data were synthesised to define a draft set of Graduate Outcomes for the discipline. Two different types of workshop are being used during 2011 to refine the draft set of Graduate Outcomes.

Throughout this process each outcome remains linked to all of the identified tasks from which it was derived, and the people who submitted those tasks. Thus, the project team can review the importance of the contributions from the various groups of participants (such as academics, graduates and practitioners) as well as some of the characteristics of those groups such as location, and gender.

The second part of the paper discusses the feedback received from members of the stakeholder groups who participated in the DYD stakeholder consultation process: 50 of the 110 workshop participants; the project team; and the client - the Environmental Engineering College Board. Overall, the feedback from all parties was very positive. The feedback from the 2010 workshops was used to fine-tune the DYD consultation process for the 2011 workshops.

Introduction

This paper discusses the development of a consultation process, the first of two aims of the Define Your Discipline (DYD) project:

1. To identify and develop an efficient, effective and inclusive consultation process that can be used by discipline stakeholders to define practitioner-authenticated Discipline Graduate Outcomes.

2. To use the consultative process to deliver nationally agreed Discipline Graduate Outcomes for an engineering discipline.

During 2010 the DYD stakeholder consultation process was developed and then trialled nationally to develop a draft set of Graduate Outcomes for the environmental engineering discipline. The project team worked closely with an Environmental Engineering Discipline Reference Group which was formed by Engineers Australia's Environmental Engineering College, which is regarded as the client. It is expected that the resulting set of Discipline Graduate Outcomes will be adopted by the College in 2012 and published and maintained by Engineers Australia. They will then be used by Engineering Schools to inform curriculum development and as a guide for members of future Accreditation Panels. This should ensure that they are reviewed on a regular basis, applied in curriculum renewal, and sustained into the future.

This paper begins with a description of the DYD stakeholder consultation process that has been used to capture the views of environmental engineering stakeholders (academics, practitioners and recent graduates) about the tasks undertaken by graduates during their first two or three years of practice. It then discusses and evaluates the effectiveness of the process by drawing on the perspectives of the stakeholders who participated in the process.

Research Questions

While conducting the project, the team is seeking to validate the authenticity of the deliverables by conducting research to test the following hypotheses:

- The DYD stakeholder consultation process is an effective, efficient and inclusive process;
- The DYD stakeholder consultation process enables new and future perspectives to be synthesised with traditional constructs in the development of authentic Graduate Outcomes.

This paper reports on the preliminary outcomes of an evaluation of the first hypothesis.

Theoretical Framework

Numerous tools have been used to develop and authenticate Graduate Outcomes, particularly for the development of competency-based curriculum in the vocational education sector. For example, occupational analysis tools can be used to observe and document the tasks undertaken by workers. A curriculum can be developed using the DACUM process (CETE, 2011), and the Delphi technique can be used to iteratively gather and synthesise data from stakeholders until consensus is reached.

The DYD Stakeholder Consultation process is based on the Modified Delphi Technique (Custer, Scarcella, & Stewart, 1999), and uses aspects of the DACUM job analysis method. The design of the process was based on an issue (the definition of a set of Graduate Outcomes) rather than a method (Gregory, Fischhoff, Thorne, & Butte, 2003), and was informed by the results of a stakeholder analysis (Reed et al., 2009). The analysis determined who had a legitimate stake, based on their knowledge and interest.

The self-appointment method was adopted to recruit workshop participants and a selection method was used to form the group of experts who are overseeing the process (Catt & Murphy, 2010). The process ensures that the input from each stakeholder is equally valued so that the opinions or biases of individuals or groups do not impact on the final outcome. For example, the individual nature of the data gathering process ensures that dominant personalities, the professional standing of individuals, or group thinking do not influence the raw data.

The DYD consultation process

During 2010 a total of 11 stakeholder consultation workshops were held around Australia: one in Adelaide; two in Brisbane, Perth and Sydney; and four in Melbourne, including a trial workshop for the Discipline Reference Group. The organisation of these stage 1 workshops was coordinated by the Chair of the Environmental Engineering College who had access to the membership database, with members in each city assisting with participant recruitment for their meetings. Generally academics and practitioners attended separate workshops in each city although, because of scheduling problems,

a small number of academics attended practitioner workshops. Seven of the workshops were held in Engineers Australia's offices, with the remaining four being held on university campuses.

Each DYD stage 1 workshop begins with an introduction given by the Chair of the College. This is followed by a brief description of the project and an overview of the workshop activities, both given by one of the team members.

The consultation process then commences with a divergent phase, where each workshop participant is asked to write down the *tasks* that they believe a graduate should be able to do in their first year or two after graduation, including supervised tasks, while keeping a 'future-proofing' mindset that focuses on the skills graduates may need in 10 to 20 years rather than current requirements. After an initial period (usually about 30 minutes) the participants at each table collaborate to generate additional tasks.

Participants then begin the second phase of the consultation process, the convergent phase, by performing a cluster analysis. This involves laying out all the tasks on a large flat surface and looking for commonalities. The tasks are then clustered and ordered as shown in Table 1 which shows some of the tasks that workshop participants wrote, and two of the clusters identified at one of the workshops. The participants then review the lists and write new task statements to cover any perceived gaps. The workshop concludes when the participants agree on the clusters, the names of the clusters, and the order of each task in a cluster.

Table 1 - Tasks performed by recent environmental engineering graduates

Clusters	Examples of identified tasks
Audit and compliance	Audit the environmental compliance of a small, low complexity project against its environmental approval or management plan. Undertake audits of specific sites or parts of an organisation to identify adequacy of current practice against significant environmental aspects of the operation.
Design	Contribute to contaminated site remediation design/strategy. Design a catchment management plan for both groundwater and surface water catchments.

The DYD stakeholder consultation process ensures that the contributions from each participant are captured as the data supplied by each person is identified and each task is numbered. This will enable the project team to track each task through the clustering and synthesising process and, at the end of the project, assess the influence on the defined set of Graduate Outcomes of each data set and each stakeholder group.

Results

To date 110 people have participated in a stage 1 workshop: 61 academics, 42 practitioners and eight recent graduates. More than 1000 tasks have been submitted by the participants at these workshops.

The 2010 data was analysed for consistency and differences before being synthesised by the project team. The resulting tables were then reviewed and refined by the members of the Environmental Engineering Discipline Reference Group to form a draft set of Graduate Outcomes. This draft set of Graduate Outcomes was completed in November 2010 and reviewed by the participants in a workshop held during the 2010 AaeE Conference.

The draft set of Graduate Outcomes is being refined in 2011 using two types of workshop. Firstly, 10 additional stage 1 workshops were held, mostly at new locations. Secondly, some stage 2 consultations are being held at university campuses where the draft Graduate Outcomes are reviewed by teaching staff and industry advisory committee members to evaluate their alignment with existing environmental engineering programs. As some people had not previously participated in a stage 1 workshop, a stage 1 workshop was held at some venues just before a stage 2 workshop. This enabled those people to contribute to that phase of the project, and to gain an insight into the process. The data from the 2011 stage 1 workshops will be synthesised into the draft set of Graduate Outcomes before the comments from stage 2 workshop participants are considered.

The clustering process used by the participants in the stage 1 workshops yielded quite unexpected

results. The project team's hypothesis was that clusters would form around application areas in environmental engineering such as: *soil problems, water, energy, noise, air pollution* and so on. Instead, the clusters consistently formed around six major work types, or processes: *investigation, impact assessment; design; modelling; audit and compliance; and environmental planning and management*. Of these, half are quite generic skills – investigation, design and modelling. The remaining three have a distinctly environmental feel – impact assessment, audit and compliance, and environmental planning and management.

Stakeholder perspectives

In the following section the perspectives of the three key stakeholder groups are given about the DYD stakeholder consultation process.

Client perspectives

Since it was established in 2004 the Environmental Engineering College has had considerable confusion and uncertainty regarding what should be labelled as an environmental engineering program and what is really a civil or chemical engineering program. Shortly after its formation it developed the first set of guidelines to help universities in the development and renewal of environmental engineering programs. While these have greatly helped universities and Engineers Australia accreditation panels, more detail is required to ensure that accredited environmental engineering programs would actually be clearly distinguished from civil or chemical programs that have an environmental flavour.

The College was therefore quick to respond to the invitation to be the 'client' discipline for the DYD project. There have been a number of significant advantages in using the DYD stakeholder process as it has allowed academics and industry representatives to be consulted in most capital cities, and provided an opportunity for the College Chair to meet with members face-to-face in their home city. Many commented that this was the first time they were offered an opportunity to be involved with one of the learned Colleges of Engineers Australia.

Many industry representatives have provided extremely valuable information into this process and in particular their expectations of what a recent graduate should be able to do, two - three years after graduation and under supervision. This information will provide valuable input into curriculum renewal at the universities that deliver environmental engineering programs.

There has also been strong support for the DYD project from the universities preparing for up-coming accreditation visits. They have welcomed the opportunity to provide input into this process and to talk to some of the College Board members who are involved with accreditations.

The only shortcoming with the process to date has been our inability to get a good turnout of members at the workshops in some locations. It appears that some practitioners do not see that this project is something that they need to get involved with, but rather as something that the universities should be concerned with. We also found that many college members were not used to getting emails from a College of Engineers Australia and the emails were often considered to be spam!

The Graduate Outcomes delivered by the DYD process will enable industry and universities to have a more unified and clearer view of what capabilities an environmental engineer would possess after graduation. They will facilitate curriculum change and renewal, and ensure that all subjects contribute to building the necessary capabilities over the four years of the degree to arrive at the stated program outcomes.

Participant perspectives

At the end of each stage 1 workshop the participants are asked to fill out a questionnaire about the various aspects of the consultation process. Participants use a five point Likert scale to indicate their responses to 10 questions, where 1 indicates '*Strongly Disagree*' and 5 indicates '*Strongly Agree*'. To date, fifty participants have submitted a valid evaluation sheet at the meetings, a response rate of 45%. The questions and the average response for each question are shown in Table 2.

Two questions allowed the participants to write an open-ended response. The responses indicated that the participants valued the opportunity to work with their colleagues to identify the tasks that a graduate environmental engineer undertakes in their first two or three years of practice.

Table 2 Average of responses to the stage 1 workshop evaluation questions.

Questions	Mean
1. The workshop allowed me to identify and state the tasks I believe a graduate should be able to complete under supervision	4.4
2. The information I provided was valued by the Project Team and the other participants	4.2
3. I believe that our group identified the key tasks a graduate should be able to complete under supervision	4.1
4. I was happy with the task clusters we adopted at the workshop	4.1
5. I was happy with the way the tasks were allocated to clusters	4.0
6. Using a separate label for each of the tasks allowed us to easily order the tasks and allocate them to clusters	4.1
7. There was adequate time for discussion and exchange of ideas	3.9
8. I was happy with the outcomes of the workshop	4.0
9. The Project Team did a good job in facilitating the workshop	4.3
10. I believe the workshop process enabled the aims of the workshop to be achieved	4.0

The first open-ended question asked the participants to note the aspects of the workshop that they found most interesting. The following responses are representative:

“Causing me to concentrate and articulate the key outcomes we want to achieve in our BE(Env Eng) degree by writing down what they have to be able to do.”

“Being asked our own opinions of graduate attributes before being influenced by others.”

“Involvement in discussion, contribution to the team, knowledge sharing.”

“Listening to where other participants ‘came from’.”

“Discussing outcomes with the working group. Clustering worked well.”

“The process which integrated a diversity of opinions.”

“Talking to people from EA Environmental Engineering College.”

The responses indicate that the participants valued the workshop and enjoyed the clustering process and discussing these issues with their colleagues.

The second open-ended question allowed participants to write any other comments they had about the workshop. Some representative comments are clustered under three headings. Firstly, the organisation and recruiting process:

“Thanks for organisation and invitation.”

“A better cross section of academics in terms of numbers.”

“Hard to do but further involvement by more practitioners – possibly shorter or partially within working hours?”

“A difficult task to contact people and encourage them to attend.”

These comments highlight the low number of attendees at some meetings and the difficulties of recruiting both practitioners and academics.

Secondly, comments related to the stakeholder consultation process:

“Good initiative. I have always felt that Env Eng is a difficult field to define and study for.”

“Possibly prior briefing, but the spontaneous thinking and discussion in the workshop was a good process.”

“Great to think about things that we often take for granted. Also good to hear about the differences in approach/outlook between industry and academics.”

“Not enough time to discuss with participants.”

“More time, more structure.”

“Worked well – no suggestions.”

“Very necessary task. Good luck.”

The comments about the duration of the workshops are interesting as they suggest the need for further discussion between the participants. While the time at some meetings was constrained by the host organisation, there was normally ample opportunity for discussions to occur. However, most participants left once the task allocation and clustering process had been completed, and they perceived the aim of the workshop had been met.

Finally, some people commented on post workshop activities, and their responses are being acted upon: For example: “*I would like to see a final workshop debrief.*”

Team member perspectives

The members of the project team are pleased with the way the workshop phases of the DYD consultation process worked, and the outcomes the process delivered. The informal feedback has been extremely positive during the project activities undertaken in 2010. However, two problems were encountered, both relating to the recruitment of participants. The first problem was the low participation rates at some of the meetings, where low numbers made them unviable from both workshop and economic perspectives, particularly when the travelling costs of team members are considered. The difficulty of recruiting participants has already been discussed, but this was exacerbated in some cities when only about half of those who had advised they would attend actually attended. The second problem was that only one recent graduate attended the workshops so this group was under-represented.

The members of both the Environmental Engineering Discipline Reference Group, and the Project Reference Group, discussed these issues at their September and December meetings and identified a range of alternative strategies which are being trialled in 2011. For example, some special workshops are being held for recent graduates to ensure their perspectives are captured.

Conclusions

The DYD stakeholder consultation process proved to be an effective and inclusive consultation process that has enabled the project team to develop a draft set of practitioner-authenticated Graduate Outcomes for Environmental Engineering programs. The responses from the participants were very positive and indicated they valued highly both the workshop process and the project. The data resulting from this process has been surprisingly consistent in scoping the role of an environmental engineering graduate. Finally, the potential efficiency of the DYD process was not fully realised due to the low numbers of participants in some locations. This has been addressed in 2011 as different recruitment strategies are being used.

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