



Higher Education Research and Development Society of Australasia, Inc

Learning for an Unknown Future

Proceedings of the

26th HERDSA Annual Conference

6-9 July 2003

Christchurch, New Zealand

Jamie, I., Fraser, S., Haklani, C. (2003) Catalysing the transition into the unknown: A student advocate in chemistry education, in *Learning for an Unknown Future, Proceedings of the 26th HERDSA Annual Conference, Christchurch, New Zealand, 6-9 July 2003: pp 316.*

Published 2003 by the
Higher Education Research and Development Society of Australasia, Inc
PO Box 27, Milperra, NSW 2214, Australia
www.herdsa.org.au

ISSN: 0155-6223
ISBN: 0 90 8557 55 8

This research paper was reviewed using a double blind peer review process that meets DEEWR requirements. Two reviewers were appointed on the basis of their independence, expertise and experience and received the full paper devoid of the authors' names and institutions in order to ensure objectivity and anonymity. Where substantial differences existed between the two reviewers, a third reviewer was appointed. Papers were evaluated on the basis of originality, quality of academic merit, relevance to the conference theme and the standard of writing/presentation. Following review, this full paper was presented at the international conference.

Copyright© 2003 HERDSA and the authors. Apart from any fair dealing for the purposes of research or private study, criticism or review, as permitted under the Copyright, Design and Patent Act, 2005, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the publishers, or in the case of reprographic reproduction in accordance with the terms and licenses issued by the copyright Licensing Agency. Enquiries concerning reproduction outside those terms should be sent to the publishers at the address above.

Catalysing the transition into the unknown: A student advocate in chemistry education

Ian Jamie

Macquarie University, Sydney, Australia
ian.jamie@mq.edu.au

Sharon Fraser

Macquarie University, Sydney, Australia
sharon.fraser@mq.edu.au

Caroline Haklani

Macquarie University, Sydney, Australia
chakl001@mq.edu.au

***Abstract:** In lectures, the presence of a senior student who is knowledgeable in subject material and willing to speak on behalf of learners can benefit both teachers and students. Potentially, this ‘student advocate’ can both strengthen the voice of students and increase the engagement by teachers in reflective practice. The student advocate’s role is to ask questions on behalf of the students, conduct student surveys concerning their learning experiences, and relay this information back to teachers, providing timely feedback on their teaching practices. Having a fellow student gather comments encourages more candid feedback than might otherwise be obtained. In addition, having a person other than the teacher obtain the feedback reduces the work required of the teacher, potentially catalysing the uptake of reflective practices. This paper explores the possibilities for student advocacy in higher education, and discusses the outcomes of an advocacy programme piloted in a first-year chemistry unit.*

***Keywords:** student learning; student voice; reflective practices*

The initial experience of university for many commencing students is one of confronting the unknown, an experience that requires a period of adjustment and transition (Gadd, 2000; McInnis, James & Hartley, 2000). This experience contributes to high dropout rates in, and low continuation rates from, first-year chemistry, (Hill & Cross, 2001). Research findings suggest that when students acquire a sense of satisfaction and achievement in their studies, they are more likely to persist with a unit and continue to further units of study (Center for Supplementary Instruction, 1992). There is also considerable evidence to indicate that using senior students to help junior students in a

learning support/assistance context (e.g., Peer Assisted Learning) is valuable and leads to higher achievement, and greater satisfaction with the unit and degree programme (Tien, Roth & Kampmeier, 2002). Additionally, 'pastoral' (i.e., non-academic) mentoring of junior students by senior students, whereby the former benefit from the knowledge and experiences of their senior, has also been shown to be successful (Dickson, Krause & Rudman, 2002).

However, to enhance the student learning experience it is not sufficient that attention be focussed solely on supporting students and their learning. A scholarly approach to teaching requires the teacher to engage in reflective practice (Schön, 1983), as this is essential for the provision of a quality learning experience. Brookfield (1995, p. ?) suggests that there are four "critically reflective lenses" that inform scholarly teaching: 1) the academic him/herself, 2) the students, 3) colleagues and 4) educational theory. Which or how many of these lenses are used by teachers in higher education is difficult to determine. The second of these lenses however, the students, provides an obvious way of investigating the impact of one's own teaching on student learning and satisfaction. It is common for teachers to only obtain student feedback through the use of end-of-semester surveys, and while these instruments are useful, they are not without problems (Ramsden & Dobbs, 1989). One problem is that such surveys are not necessarily timely, and so cannot be acted upon to improve teaching for *that* cohort of students. Another problem with collecting feedback in this manner is that its interpretation rests with the teacher alone. Students approach their learning in an individual manner, and maintain a world-view that may be different from that of the teacher (Biggs, 1999; Prosser & Trigwell, 1999). It is sometimes difficult, therefore, for the teacher to accurately interpret the student voice in a manner that is not prescribed by his or her own viewpoint, which may or may not correspond with those of the students.

The presence of a senior student in lectures, one who has completed the unit of study and preferably subsequent related units, may provide a way of addressing both the above-mentioned issues, i.e., teacher engagement in reflective practice, and the interpretation of student perceptions. More senior students potentially have a world-view that is more closely aligned with that of junior students than that of the teacher, whilst their own more extensive learning experiences can provide them with a wider perspective on the subject material and teaching practices.

The senior as student advocate

The presence of a senior student, as an evident and integrated part of the unit, serves two main purposes:

- to use their experience and knowledge of the subject to ask questions in lectures, and
- to gather student feedback concerning the teaching of the unit.

In performing these functions the senior student is acting as an "advocate" for students, giving or restoring to them their voice, where otherwise they might be silent. Thus the senior student is given the title of 'Student Advocate'. The advocate should have

relatively good grades in the subject, possess good communication and interpersonal skills, and have the ability to be metacognitive about their own learning.

Encouraging students' voice

Junior students are often reticent to ask questions in lectures for fear of embarrassment, or due to their inability to identify 'important' topics that require further clarification. More senior students are often less reluctant to interrupt lecturers, and have a more extensive knowledge of the subject with respect to which sections of material are significant, and how they relate to subsequent subjects. Thus, the student advocate can act as an informed voice for those students who might otherwise lack one.

Gathering student feedback

The advocate gathers student feedback, and conveys it to the teacher allowing them to act upon it within the timeframe of the unit. The advocate can also express the feedback in a way that more closely matches student intention. Through dialogue with the advocate, a teacher can thus obtain information regarding the effectiveness of their teaching, and their students' learning, in a manner that allows them to more fully understand the student perspective. By having the role of the advocate made explicit to the students, and by he or she being visible before, during and after the lecture, the advocate is recognised by the students as their representative. Knowing that the advocate is acting as an intermediary and maintaining confidentiality can promote a sense of confidence in the students and help them feel less intimidated by the subject, so that they feel that they can frankly express their opinions.

Stimulating a culture of critical reflection

Another intention of this scheme is to encourage teachers who have not previously engaged in critical reflection, to do so in an ongoing basis. Although 'peer observation' serves as one of the lenses of reflective practice, it is not necessarily one that teachers find easy to adopt (Atwood, Taylor & Hutchings, 2000). In this scheme, a primary aim for the student advocate is to engage in *a form* of peer observation, from the student perspective. Simply introducing the teacher to the concept of critical reflection, through the presence of the student advocate, may also lower a barrier to the teacher engaging with it. As the presence of the Advocate removes much of the burden of obtaining student feedback from the teachers' shoulders, a further barrier to their engaging in reflective practice is lowered. In this way the Advocate is acting as a catalyst for the uptake of critical reflective practice.

The student advocate in first-year organic and biological chemistry at Macquarie University

A third- year Chemistry student was employed to act as a Student Advocate, and attend the lectures (two per week) in CHEM103 *Organic and Biological Chemistry*. This unit is considered to be particularly important to students' decision to progress into higher-level chemistry units, as, for the majority of them, CHEM103 is their final first-year chemistry subject. A positive experience in this unit is more likely to persuade students to continue with a chemistry stream. The unit is team-taught, with three lecturers teaching sequentially. These lecturers also lead the tutorial sessions. Laboratory sessions come under the direction of a demonstrator.

Implementing the programme

The student advocate was paid to perform the advocacy function in CHEM103, and was concurrently studying for a Bachelor of Science with Diploma of Education. The lecturer introduced her to the class during the first lecture of the unit, and the advocate explained her role to the students. Also during that lecture, students were asked to volunteer to complete regular surveys of the unit, focussing on their experiences in lectures, laboratories, tutorials and 'other' aspects of the unit. Six students were ultimately recruited to do so. Whilst the lecturers were primarily interested in the students' 'experience of lectures', student responses to the other items were also conveyed to the lecturer-in-charge. The surveys were initially conducted weekly, but this was amended to fortnightly, as the students found it too onerous to complete them on a weekly basis. Students also felt that a fortnightly survey made more sense, as it matched the fortnightly schedule of tutorials and practical sessions. However, the advocate continued to elicit informal comments from the students after each lecture.

The advocate met with the current lecturer and lecturer-in-charge on a weekly basis, and through discussion with them passed on the results of the surveys and conversations with the students. During these meetings, she also expressed her own opinion of the lectures. The advocate also kept a journal of administrative details, summary of discussions with students and staff, personal observations on the project, and on teaching and learning practices relevant to the advocate's own studies. In addition, she had weekly meetings with the project coordinator to discuss the progression of the scheme, and the latter also had on-going discussions with the lecturers, and lecturer-in-charge concerning the project.

Evaluating the pilot programme

As a result of the comments provided on regular surveys, areas of concern in various aspects of the unit were noted, and there was the potential to act upon these concerns if it was considered desirable to do so. Comments ranged from extensive discussion of style and substance of aspects of the unit, to simply 'on'. Positive comments provided confidence that the methods being employed were effective.

In addition to the fortnightly surveys, a general survey consisting of seven Likert-scale questions, and two free-form questions, was undertaken in the last lecture of the semester. Of the 220 students enrolled in the unit, approximately 75 attended the final lecture, and of these, 59 completed and returned the survey. Such low attendance at the final lecture is not an unusual occurrence. This in itself indicates that the project did not influence the behaviour of the students in this aspect of their attitude to the subject.

Student satisfaction

It should be noted that the responses to the final survey indicated that many of the students were not familiar with, or even aware of the advocacy programme. The majority of responses to the closed questions fell into the 'neutral' or 'not applicable' groups. For example, responses to the question, "*The presence of the student advocate at the lectures was beneficial*", indicated that only 22 percent (n = 13) 'strongly agreed' or 'agreed' with

the statement, whilst 14 percent (n = 8) 'strongly disagreed' or 'disagreed', with the remaining responses being either 'neutral' (39%) or 'not applicable' (25%).

Some students were explicit about their lack of knowledge of the programme in the free-form responses, "*Didn't even know about it*" and "*I don't know anything about the student advocate programme*". It is likely that these students were not present when the Advocate programme was introduced and described in the first lecture. This points to a weakness in the conduct of the programme and will be discussed in more detail later.

Only a small number of students commented in the free-form questions. Of those who responded to "*What features of the Student Advocate programme were good?*", few indicated a strong opinion either way, with only nine (15%) commenting positively and seven (12%) negatively. Although the majority of students provided no comment (n= 43, 73%), one student felt that the programme did have a positive impact, in that it helped to reduce anxiety:

"Lecturers can be scary!! This way a student doesn't have to feel intimidated when asking any questions. Especially for first year students."

To the question "*What features of the student advocate programme could be improved?*", the same student replied:

"They need to be in more subjects!!"

Comments about the programme that could be categorised as negative were generally non-specific. As discussed above, many of these comments simply indicated that the students did not know about the advocacy programme. In fact, seven of the ten comments were of this kind.

Anecdotal evidence also suggests that for some students at least, their satisfaction with the unit was improved by the presence of the advocate. For instance, a student who had a relatively trivial administrative question was unwilling to approach the lecturer with it, for fear of being admonished for "*not listening in class*". The advocate was able to obtain the required information on behalf of the student. In another case the advocate received an early indication that a student was considering withdrawing from the unit, and subsequent discussions with that student were influential in retaining the student in the unit.

In the opinion of the Advocate, who had studied CHEM103 previously, the recent changes to the unit's organisation and teaching methods (specifically, a modified tutorial format, and the re-ordering of the lectures, and therefore the material the individual lecturers presented) were more beneficial to increasing student confidence and interest in the unit than the implementation of the advocacy programme. She felt that the effect of the advocate programme on student satisfaction with the unit was difficult to identify amidst these other influences.

Similarly, with such a small sample of students, and without a follow-up study, it is not possible to state with any confidence whether or not the advocacy programme had any

effect on the continuation rate in chemistry. A survey of the second-year chemistry students following from this first-year cohort would be useful in determining if the programme had any influence on their decision to continue in the chemistry stream.

The advocate as the student voice in lectures

In this pilot project, the advocate did not speak on behalf of the students in lectures for two reasons; firstly, the 2002 student cohort was not reticent about asking questions, a trend recognised by other chemistry colleagues (*personal communications from first-year lecturers in three Australian universities*). This might be attributed to the different teaching style and expectations of the New South Wales Higher School Certificate curriculum, implemented in 2000 (NSW, 2002), in which the “capacity to manage [the students’] own learning” is a stated purpose. Secondly, the advocate did not consider that there was any shortcoming in the teaching that required her intervention. From experience with higher-level units, she felt that the material was presented in an appropriate manner and level for commencing chemistry students.

The advocate as a catalyst for the uptake of reflective practice

Student feedback concerning the lecture component of the unit was generally favourable, and required little action from the lecturers. Unfavourable comments centred on aspects that were already recognised as problematic by the teaching team, who felt that little additional information was gained from this more regular feedback. For instance, when there was a request for further discussion of a particular topic, the response from the lecturer was that there was not enough flexibility in the syllabus to allow any deviations, and repeating a topic would result in unacceptable disruption to the progress of the unit. On another occasion however, the lecturer-in-charge was alerted to a specific laboratory issue, which allowed the problem to be addressed before student dissatisfaction rose to unacceptable levels. There was, perhaps, a greater emphasis placed on addressing such problems because of the immediacy of the feedback from the advocate.

Overall, there was little evidence of an increased engagement in reflective practice by the lecturers as a result of the presence, or feedback received from the student advocate.

While it was comforting for the lecturers to be informed that their lectures were being well-received, they also felt that there was little other benefit to having this information. One lecturer noted that there was little in the feedback that could not have been obtained through a ‘suggestion box’ arrangement. However, as such a box was not in place at the time of this pilot, this comment might be taken as evidence that the lecturer has at least begun to consider some forms of reflective practice! Another lecturer expressed concern that the feedback of the unit was focussed on ‘micro’ aspects of individual lectures, when they would have preferred to have information on the larger-scale aspects of the unit, such as topic order. This might have been addressed through more focussed discussion with, and better direction of, the advocate. This was not undertaken, and the comment by the lecturer might again be taken as some small evidence of an engagement in reflective practice.

Benefits to the student advocate

The advocate felt that there had been a significant personal benefit from participating in this programme. As she was studying for a Diploma of Education, the opportunity to

observe teaching and learning in action, without having to concentrate on the unit content, proved to be worthwhile. Comments in the journal kept by the advocate, such as “*this is a great technique as ...*” attest to her engagement in the observation of teaching and learning in action. In addition, the experience of listening to first-year material was useful for the advocate’s concurrent chemistry studies at third-year level. On the other hand, there was a cost to the advocate in terms of the time required to undertake this activity, and for this to be a worthwhile exercise for the advocate, compensation in some form must be provided. In this project the compensation was a wage, which had implications for the departmental budget.

Financial costs of the programme

As the student advocate was paid to act in this capacity throughout second semester, 2002, some chemistry staff questioned whether the advocate was the most appropriate way of using departmental funds. The lecturers teaching in the unit, and particularly the lecturer-in-charge, thought that more benefit might have been gained by employing another laboratory demonstrator rather than the advocate. However, it is possible for a student advocate to influence far more students than could a laboratory demonstrator, i.e., potentially the whole cohort as against ten to twenty students, but such benefits may be less tangible and more diffuse, and not necessarily compatible with a content-driven notion of curriculum. While the monetary cost to the department was relatively small, for a department with a limited budget, any budget item must be seen to provide a tangible return. Overall, in purely monetary terms, the cost-to-benefit ratio is probably not sufficiently favourable if funds are limited. To make this type of activity more attractive to departmental managers, the issue of other mechanisms for compensating the advocate should be explored. Experience from peer assisted learning schemes have relevance here, where compensation may, for instance, be offered in the way of credit towards the advocate’s own units.

The future for a student advocacy programme

There is an opportunity for a synergetic relationship between the student advocacy programme and peer assisted learning (PAL) programmes, in which senior students (PAL leaders) work with groups of more junior students to help facilitate their learning. As most of these programmes require the leaders to attend the unit’s lectures, and subsequently report back to the PAL coordinator, then it seems a relatively straightforward step to extend their duties to include those performed by the student advocate, in which they take a more active and vocal role *during* lectures, and provide a voice for the student body with respect to wider aspects of the course unit. There may be a place for student advocates separate to PAL programmes, however, as the latter are relatively expensive, due to the need for one or more PAL leaders for every tutorial group. The student advocate is cheaper in that only one person is required for each unit. The unit within which the advocate is situated must be carefully chosen however, and the promotion of the programme made a priority.

The responses to the end-of-semester survey indicated that a significant portion of the students did not know of the programme. If such a programme were to be adopted, it needs to be more fully integrated into the unit structure, and the culture of the department. This would require far better promotion by the lecturer(s)/tutor(s) and

demonstrators throughout the semester, and incorporated into their course unit outlines. It is essential that all parties participating in the programme, students, teachers and the advocate themselves, must be aware of, and understand the programme's goals and expectations. Formalised documentation in this regard, would assist all parties to achieve the best outcomes.

Those lecturers who are most likely to be favourably disposed towards the advocate programme are those who are already engaged in reflective practice, and are therefore those who would be more likely to use other, less costly, methods of receiving feedback. Whether or not the lecturers involved in this programme have recognised the need for, or changed their engagement with reflective practice, will be gauged by a follow-up survey in subsequent teaching periods. An improvement in student satisfaction with the unit might be considered a good return for the cost, but it might be argued that student satisfaction may be better increased through providing stronger learning outcomes, such as could be provided through a PAL programme.

Although this pilot programme has indicated that there are some benefits to be had by strengthening the student voice in first-year chemistry units, without follow-up studies, it is not possible to state with any confidence that the desired outcome of increased student retention and continuation, and the promotion of adoption of reflective practice by teachers has been achieved. To address this issue, this pilot study is being used as the basis of funding requests for a larger project, incorporating appropriate analysis of the efficacy of the student advocate approach and implementation.

References

- Atwood, C. H., Taylor, J. W. & Hutchings, P. A. (2000). Why are chemists and other scientists afraid of the peer review of teaching? *Journal of Chemical Education*, 77 (2), 239-243.
- Biggs, J. (1999). *Teaching for quality learning at university*. Buckingham: Society for Research into Higher Education & Open University Press.
- Board of Studies NSW. (2002). *Chemistry Stage 6 Syllabus*. Board of Studies. NSW.
- Brookfield, S. D. (1995). *Becoming a critically reflective teacher*. San Francisco: Jossey Bass.
- Center for Supplementary Instruction. (1992). *Supplemental instruction: Theoretical framework. Review of research concerning the effectiveness of SI from the University of Missouri-Kansas City and other institutions from across the United States*. Center for Academic Development, University of Missouri-Kansas City. Retrieved 20-Jan-2003 from <http://www.umkc.edu/cad/si/Sidocs/sidata97.htm>.
- Dickson, J., Krause, K.-L. & Rudman, S. (2002). *Making the transition to university - An evaluation of academic orientation*. Paper presented at the 6th Pacific Rim First Year in Higher Education Conference Proceedings, The University of Canterbury, Christchurch, New Zealand.
- Gadd, K. (2000). *The secondary/tertiary interface*: Royal Society of Chemistry.
- Hill, J. O. & Cross, R. T. (2001). *A report on a comprehensive review of the year 1 chemistry course in Australian universities*. Wodonga: La Trobe University & University of Melbourne
- McInnis, C., James, R. & Hartley, R. (2000). *Trends in the first year experience in Australian universities*. Canberra: DETYA.
- Prosser, M. & Trigwell, K. (1999). Relational perspectives on higher education teaching and learning in the sciences. *Studies in Science Education*, 33, 31-60.

- Schon, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Tien, L. T., Roth, V. & Kampmeier, J. A. (2002). Implementation of a peer-led team learning instructional approach in an undergraduate organic chemistry course. *Journal of Research in Science Teaching*, 39(7), 606-632.

Acknowledgements

The cooperation of the lecturers on students of CHEM103 is gratefully acknowledged, as is the financial support of the Department of Chemistry, Macquarie University.

Copyright 2003 © Ian Jamie, Sharon Fraser and Caroline Haklani. The authors assign to HERDSA and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The authors also grant a non-exclusive licence to HERDSA to publish this document in full on the World Wide Web (prime sites and mirrors) on CD-ROM and in printed form within the HERDSA 2003 conference proceedings. Any other usage is prohibited without the express permission of the authors.