# Quality Assurance / Quality Improvement Programme for Academic Units 2003-2004


## Peer Review Group Report for the School of Chemical Sciences

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## Introduction

This Quality review has been conducted in accordance with a framework model developed and agreed through the Irish Universities Quality Board (IUQB) and which complies with the provisions of Section 35 of the Universities Act (1997). The model consists of a number of basic steps.

1. An internal team in the School being reviewed completes a detailed self-assessment report (SAR). It should be noted that this document is confidential to the School and to the Review Panel and to senior officers of the University
2. This report is sent to a team of peer assessors, the Peer Review Group (PRG) – composed of members from outside DCU and from other areas of DCU – who then visit the School and conduct discussions with a range of staff, students and other stakeholders.
3. The PRG then writes its own report
4. The School produces a response, in consultation with the Dean of the Faculty, in response to the various issues and findings of the SAR and PRG Reports.
5. The PRG Report and the School response are then considered at a meeting of the relevant Senior Management of the University (Deputy President, Registrar, Vice-President for Research etc.) who address recommendations in the Peer Review Group Report, that fall outside the control of the School or that require additional resources. Arising from this meeting, School and University based action plans are approved. Together, these are termed the Quality Improvement Plan (QuIP)
6. A summary of the Quality Review is sent to the Governing Authority of the University, who may approve publication in a manner that they see fit. Following the approval of the summary report by the Governing Authority, it is published on the University website. The full text of the Peer Review Group Report is also published on the Quality Promotion Unit website.

- **This document is the report referred to in Step 3 above.**

## 1. Profile of the School

Location of the Unit

The School shares a building with the School of Biotechnology, the Centre for Sports Science, and the School of Mathematical Sciences. An approximate floor-space of 2624 $m^2$ is assigned to the School. This is allocated to research (1096 $m^2$; 42%), teaching (1144 $m^2$; 44%) and admin/general (384 $m^2$; 14%).

Staff

The School currently comprises fifteen permanent and four contract academic positions (including one on secondment as Vice President for Research) and seventy-two researchers (postgraduate and post-doctoral), supported by nine technical and one administrative staff member. The full-time permanent staff of the School of Chemical Sciences (SCS) is given in Table 1.1. As can be seen the staff numbers have been relatively stable over the last ten years. Over this period a relatively high number of the permanent academic staff have taken up key administrative positions within the University. These people, and academic staff seconded out of the school for other reasons, have been replaced by contract staff.

**Table 1.1** Staff development over the last thirteen years of the SCS

| | 31.12.1990 | 31.12.1995 | 31.12.2000 | 01.10.2001 | 31.12.2002 | 30.11.2003 |
|---|---|---|---|---|---|---|
| **Prof.** | 1 | 2 | 3 | 3 | 2 | 2 |
| **Ass. Prof.** | 0 | 1 | 2 | 3 | 3 | 3 |
| **SL** | 3 | 2 | 1 | 2 | 2 | 2 |
| **L** | 4 | 7 | 7 | 7 | 8 | 8 |
| **AL** | 1 | 1 | 1 | 1 | 1 | 0 |
| **Total Academic** | 9 | 13 | 14 | 16 | 16 | 15 |
| **Tech** | 5.5 | 7.5 | 8.5 | 8.5 | 8 | 8 |
| **Admin** | 1 | 1 | 1 | 1 | 1 | 1 |
| **Totals** | **15.5** | **21.5** | **23.5** | **25.5** | **25** | **24** |

Programmes/Outputs

The taught programmes which the SCS is involved in, and the current enrolment on these programmes, are given in Table 1.2. The current enrolment on research degrees is given in Table 1.3.

**Table 1.2** Enrolment of taught programmes

| | 1 | 2 | 3 | 4 | Total FTE |
|---|---|---|---|---|---|
| BSc in Analytical Science | 38 | 44 | 42 | 37 | 72 |
| | | | | | |
| BSc in Chemical & Pharmaceutical Sciences | 34 | 39 | 8 | 16 | 60 |
| | | | | | |
| BSc in Chemistry with a Language | | | 8 | 4 | 6 |
| | | | | | |
| BSc in Science International | 20 | | | | 5 |
| | | | | | |
| BSc in Science Education | 30 | 15 | 18 | 13 | 24 |
| | | | | | |
| Common Entry into Science | 59 | | | | 17 |
| | | | | | |
| BSc in Biotechnology | 31 | 41 | | | 14 |
| | | | | | |
| BSc in Environmental Science & Health | 14 | | | | 5 |
| | | | | | |
| Grad. Dipl. in Instrumental Analysis | 22 | - | 8 | - | 8 |

**Table 1.3** Current enrolment figures for research degrees

| Year of Study | 1 | 2 | 3 | 4 | 5 | 6+ | Total FTE |
|---|---|---|---|---|---|---|---|
| **M.Sc.** | 13 | 12 | 7 | 3 | 1 | 0 | 108 |
| | | | | | | | |
| **Ph.D** | 0 | 2 | 8 | 8 | 5 | 5 | 84 |

The first degree group of 11 students graduated in 1984, with a B.Sc. in Analytical Science. To date there have been 673 bachelors degrees awarded in Analytical Science. The Pure and Applied Chemistry degree produced its first graduates in 1995. To date there have been 135 bachelors degrees awarded in Pure and Applied Chemistry. In 2000 this degree was augmented with a pharmaceutical strand, and re-titled the B.Sc. in Chemical and Pharmaceutical Sciences. The B.Sc. in Chemistry with German took its first intake in 1992, followed by the B.Sc. in Chemistry with French in 1995. To date there have been 52 bachelors degrees awarded in Chemistry with German and 21 in Chemistry with French, giving a total of 73.

The M.Sc. in Instrumental Analysis is a taught masters degree programme run by the School since 1987, it has produced a total of 166 degrees. Students who do not qualify for the masters receive a graduate diploma in Instrumental Analysis, a total of 3 diplomas have been awarded.

Since 1984, 141 students of the SCS have received a PhD and 44 have received an MSc by research.

## 2. The Self-Assessment Process

<u>The Co-ordinating Committee</u>

Table 2.1 gives the members of the SCS Quality Co-ordinating Committee. As can be seen, the membership of the committee does not follow the composition as recommended by the QPU in that it does not include technical staff, administrative

staff or students. Table 2.1 also gives the number of meetings attended by each member and the number of tasks assigned to each member.

**Table 2.1** Composition of the Quality Co-ordination Committee and allocation of tasks

| Name | Grade | No. of Meetings Attended | No of Tasks Assigned | No of Tasks Completed |
|---|---|---|---|---|
| Long, Conor (Chair) | AP | 10 | 14 | 14 |
| Brougham, Dermot | L | 10 | 9 | 9 |
| James, Paraic | SL | 9 | 13 | 13 |
| Kenny, Peter | L | 3 | 7 | 7 |
| Keyes, Tia | L | 8 | 12 | 12 |
| Paull, Brett | L | 6 | 4 | 4 |
| Pryce, Mary | L | 8 | 3 | 3 |
| Vos, Han | P | 0 | | |

Methodology Adopted

The SCS Quality Co-ordinating Committee Chairperson presented an initial allocation of the tasks outlined in the terms of reference to the Committee. This allocation took account of a number of factors including the particular experience and/or expertise of the Committee member, and their career status. Attempts were made to minimise the impact on the younger staff at the start of their academic careers.

The task allocation was agreed at the first Committee meeting, and the tasks were then divided into sub-tasks. These sub-tasks were then defined as discrete or contingent (i.e. requiring other sub-tasks to be completed first). In addition an estimate of the time-scale required to complete each task was then made. This information was then assembled and a Gantt chart constructed. This chart was used to monitor progress of the project.

The Committee agreed that it should meet on a frequent basis at the start of the project, but this frequency became lower as the tasks progressed. It was agreed that the minutes of the Committee meeting should be circulated widely amongst the School staff after the Chairperson had signed them. In addition it was agreed that the University's Research Support System (RSS) should be the mechanism for the collection of the academic profiles and other academic output and this was agreed at a subsequent School Meeting.

Upon completion of each of the tasks, the task leaders assembled a report to an agreed template. These documents were then assembled into the report document and the supporting appendices were assembled into the appendix document.

The resulting draft document was circulated electronically to all members of the Quality Co-ordinating Committee with a copy also going to the Chairperson of the Strategic Planning Committee. The amendments to the draft document were then discussed and included into a second draft that was circulated in hard copy format for further comment. The resulting third draft document was placed in the School office for all staff to view.

The final draft was then printed and copied each member of the School receiving a copy as well as the required number submitted to the Quality Promotion Unit.

## 3. The Peer Review Group Process

Overview of the Process

The review process consisted of three discrete activities:

1. Familiarisation with the self-assessment report provided by the School in advance of the site visit.
2. The comprehensive site visit by the Peer Review Group (PRG) conducted over a period of two and a half days, to review and validate the details of the self-assessment report, finishing with a presentation of the preliminary findings and recommendations by the PRG
3. The preparation and delivery of this review report documenting the findings and making recommendations for future development.

Site Visit Programme

*Day 1 (Wednesday, 31 March 2004)*

| | |
|---|---|
| 14.00 – 15.30 | Meeting of members of the Peer Review Group and briefing by Director of Quality Promotion. |
| 16.00 – 17.30 | Consideration of Self-Assessment Report with School Quality Committee |
| 19.30 | Dinner for members of the Peer Review Group, Head of School and School Quality Co-ordinating Committee |

*Day 2 (Thursday, 1 April 2004)*

| | |
|---|---|
| 09.00 – 12.00 | Further consideration of Self-Assessment Report and other inputs from other School staff. |
| 12.00 – 13.00 | Visit to core facilities of School |
| 13.00 – 14.00 | Brief Discussion with the Director of Quality Promotion and lunch |
| 14.30 - 17.00 | Meetings with selection of students and recent graduates |
| 17.30 – 18.30 | Meeting of Peer Review Group to identify remaining aspects to be clarified and to finalise tasks for the following day |
| 19.30 | Dinner for members of the Peer Review Group only |

*Day 3 (Friday, 2 April 2004)*

| | |
|---|---|
| 09.00 – 09.45 | Meeting with President, Deputy President, Secretary, Director of Human Resources and Director of Finance and the Vice- |

| | |
|---|---|
| | President for Learning Innovation (Registrar) (Director of Quality Promotion in attendance) |
| 09.45 – 11.00 | Consideration of inputs to date and initial findings |
| 11.00 – 11.30 | Meeting with the Vice-President for Research |
| 11.30 – 12.00 | Meeting with the Dean of the Faculty |
| 12.00 – 12.30 | Meeting with Head of School to clarify any outstanding issues |
| 12.30 – 13.00 | Meeting with Lecturing Staff, SCS |
| 13.00 – 13.30 | Brief Discussion with the Director of Quality Promotion followed by working lunch for members of Peer Review Group |
| 13.30 – 15.30 | Preparation of 1st Draft of Final Report |
| 15.30 – 16.15 | Exit presentation to all staff of the School to be made by the Chair of the Peer Review Group summarising the principal findings and recommendations of the Peer Review Group |

Methodology

The Review Group met initially with the Director of the Quality Promotion Unit. This was followed by a brief meeting of the Review Group itself at which the visit was discussed in outline. The Review Group then had an in-depth meeting the SCS Quality Review Committee. This was followed by an evening meal with members of the Review Group and the Quality Review Committee. Requests were made for data missing from the Self Assessment Reports and this information was quickly provided.

The second day started with a review of the work to be done by the Review Group. Key questions were identified and areas of expertise within the Review Group identified. This was followed by meetings with the following people:

- Prof. Han Vos, Head of School
- Prof. Conor Long, Group representative of Research & Scholarship
- Drs. Paraic James & Odilla Finlayson, Group representatives of Teaching and Learning
- Mr. Mick Burke, Senior Technician

The Review Group were then given a tour of the core facilities of the SCS led by Mr. Mick Burke.

The tour was followed by lunch and a meeting with the Director of the Quality Promotion.

After lunch, the Review Group met with students. It first met with eight students ranging from Year 1 to Year 4 of the two main undergraduate programmes of the SCS. Unfortunately, no students of the Chemistry with a Language programme were available. This was followed by a meeting two research post-graduates and two recent graduates - one of whom had completed a PhD in SCS (currently a post-doc in DCU) and the other the postgraduate taught Master's programme (he is also a technician in the department). Unfortunately, no graduates or post-graduates who had left DCU or, more importantly , employers were available to meet the Review Group. Furthermore surveys of past graduates, postgraduates and employers were not included in the report . This was followed by a meeting of the Review Group where the issues that emerged during the day were captured and questions formulated for the meetings on the following day. This was followed by a dinner attended by the Review Group.

The third day started with the Review Group meeting with the President and Deputy President of DCU along with the Vice-President for Learning Innovation (Registrar), Secretary, Director of Human Resources and Director of Finance with the Director of the Quality Promotion in attendance. This was followed by individual meetings with:

- The Vice-President for Research
- The Dean of the Faculty of Science & Health
- Member of the Lecturing Staff, SCS

There was also a second meeting with the Head of School at which outstanding matters were clarified.

The Review Group then had a working lunch at which the main findings and recommendations were discussed. Finally, the Review Group met with the staff of the SCS at which the chair of the Review Group gave a presentation on the main findings and recommendations of the Group.

Review Group's view of the Self-Assessment Report

Overall, the Review Group considered the Self-Assessment Report to be a highly detailed document which obviously required a very large expenditure of time and energy to put together. Along with the Appendices, the Self-Assessment Report amounted to over 350 pages.

The Review Group questioned the appropriateness of a report of this size to the task in hand. Most of the relevant information in the Self-Assessment Report was contained in the Executive Summary. As will be seen, it is recommended that, in future, members of the Review Groups should receive in advance only the Executive Summary with the facility to request further information. (As noted above, some information was missing from the Self-Assessment Report – this was requested and quickly provided.) It is envisaged that the Self-Assessment Report in its current form could become an internal document and that the Quality Co-ordinating Committee could concentrate on what it wanted to say to the Review Group in the Executive Summary.

It should be pointed out that the non-Irish member of the Review Group was very appreciative of the background information provided on both DCU and the Irish university system.

The Self-Assessment Report would have been strengthened by the inclusion of input from the Technical staff, students and the chemical/pharmaceutical industry.

Review Group's view of the Process

Overall the Review Group wishes to record that the Review Visit was very well organised. The initial briefing from the Director of Quality Promotion was detailed and comprehensive. Very good and willing back-up was given by the administration staff both in the SCS and in the office of the Director of Quality Promotion. Staff of the SCS gave their time freely and they answered, sometimes difficult, questions with honesty and professionalism.

**4. & 5. Findings of the Review Group & Overall Analysis of Strengths, Weaknesses, Opportunities and Concerns**

Background and Context

*Strengths*

- High regard for Graduates of SCS by Industry
- Premier school of Analytical Science in the country
- Deputy Head who focuses on teaching

*Weaknesses*

- A plethora of degrees – many with small enrolment numbers - this leads to fragmentation of teaching effort
- Lack of breadth especially in Organic Chemistry
- Senior staff taking secondments weakens School

*Opportunities*

- Formalised "hands-on" liaison with industry with regard to placement (INTRA) and collaboration on research (latter could open funding opportunities)

*Concerns*

- Lack of policy regarding the role of the School in the context of development of Executive Faculty and National Research Centres

Organisation and Management of the School

*Strengths*

- Strong line management of technical staff by Senior Technician
- A number of successful organisational initiatives taken by technical staff such as waste control, new stock control system, micro-scale experiments and safety training

*Weaknesses*

- Roles of Dean of Faculty and Head of School are not clear
- Roles of Head of School and Directors of National Centres are not clear
- Headship of School seen as unattractive position by staff (Position not filled for five months in recent times)
- No defined policy of interface between School and National Centres leading to poor collaboration and no reaping of expected benefits to both. The current situation seems to generate tensions, especially over internal resources and access to equipment
- Some of the central functions of the University (e.g. HR and Finance) are seen as slow and cumbersome in their decision making. It is feared that new faculty structures will add another layer of bureaucracy which will delay and frustrate initiatives coming from the School

*Opportunities*

- Faculty wide administration services (such as stock control, ordering, waste, etc.) may become more stream-lined with the new faculty structures

*Concerns*

- A number of the formal School structures (school meetings, post-graduate affairs committee, research management committee) do not seem to be functioning in any productive manner – this leads to School Head and Deputy Head engaging in reactive rather than proactive management
- Head of School informed Review Group that he does not want the position for a number of valid reasons. Review Group informed that other candidates for Headship were prepared to undertake this position. SCS staff supported one candidate but this person was deemed unacceptable to the University.
- Management issues need to be resolved between National Centres and School
- Lack of management training (especially in HR) for Heads
- Time of Head taken up with basic administration tasks – little administrative back-up for Head
- Status of Head seen as diminishing (with Head losing out to Dean of Faculty and Directors of National Centres) – this makes this position even less attractive to staff

Programmes and Instruction

*Strengths*

- Student:Teacher Ratios are reasonable
- Deputy Head with responsibility for teaching gives focus and cohesion to teaching in the School
- Students see the quality and quantity of their laboratory practicals as a major strength of SCS programmes. A high level of confidence in the laboratory skills they acquired were evident in both the undergraduate and post-graduate students
- Students see the laboratories as well resourced

*Weaknesses*

- Retention Rates are poor especially in first year
- Extra tutorials provided for first year but effect of this tutorial provision on retention rates is not evaluated
- There would seem to be an element of picking up and dropping of initiatives e.g. use of multi-media in teaching; bringing in speakers from industry
- Teaching responsibility with one person may let other academic staff to be less engaged in their teaching responsibilities
- Decreasing undergraduate contact with senior academic staff
- Inadequate formal support and training for staff (especially new staff) in Teaching and Learning
- Inadequate training provided for demonstrators
- Limited range of teaching methods and forms of assessment
- Full range of graduate skills not catered for (e.g. communication skills, team working skills, etc.)
- Little attention would seem to be paid to results of the surveys of student opinion
- The way that the student surveys are conducted (administered at the end of a lecture period) is not conducive to obtaining good student feedback

*Opportunities*

- Potential to use Research Centres as a focus to create novel inter-disciplinary modules
- Potential to track career paths of graduates and benefit further from industry links

*Concerns*

- Prior study of chemistry for Leaving Certificate would seem to be criterion for successful completion of core SCS programmes – this seriously affects students who enter without prior knowledge of Chemistry
- Equitable workload system operated by SCS would seem to have negative effect on teaching in SCS as teaching responsibilities are allocated last making it something of a 'Cinderella' in the School
- Priority is not given to first year teaching, for example, first year teaching is not carried out by senior staff
- No opportunity given to Review Group to investigate potential problems (as suggested by student surveys) of Chemistry with Languages programme
- Students expressed concerns at the availability and quality of computers (Computers available could not run programs they were meant to be using)
- There would seem to be little engagement of academic staff in placement of students on INTRA and therefore neither students nor the School are deriving maximum benefit of the student's time with the companies. Some student placements would seem to be badly selected and/or supervised and therefore unproductive for students.
- Major concern in this area is that teaching is not seen as a priority in SCS and the commitment in SCS to research may be leading to a failure in its responsibility in the area of teaching

<u>Scholarship and Research</u>

*Strengths*

- Strong Research Orientation in School
- Strong emphasis on Analytical Chemistry
- Relatively high level of research output in terms of publications
- High level of output of research degrees
- Students report good relationship with academic staff and that they are approachable and helpful

*Weaknesses*

- Areas other than Analytical Chemistry are weak (especially Organic Chemistry)
- Lack of data on annual research expenditures compared to peer Schools or Departments of Chemistry at other Irish Colleges and Universities
- Funding data incomplete (e.g. funding with major chemistry contributions in Centres not captured)
- Publications from DCU faculty under reported in Self Assessment Report (Web-based GENIUS does not seem to capture all staff CV and Annual Report data)
- True impact of research publications compared with peers is incomplete
- The unresolved tension between the School and National Centres hinders individual and collaborative research links. (This affected even the counting of post-doctoral students in SCS and the assignment of publication credit to the SCS or the Centre)

*Opportunities*

- Two imminent appointments create an opportunity to rectify weaknesses in Organic Chemistry
- Opportunities exist to collaborate with industry in research projects and involve industry in guest lecturing to post-graduates

*Concerns*

- Weakness in the area of Organic Chemistry is of particular concern as this continues to weaken the ability of the SCS to develop and deliver its newly introduced Chemistry and Pharmaceutical degree as well as its potential to interact with the Pharmaceutical industry

Social and Community Services

*Strengths*

- Involvement of SCS in Chemistry demonstrations to Leaving Certificate students
- Involvement of SCS in the University community is very strong

*Weaknesses*

- Lack of formalised industrial participation in SCS. In the School's objectives, listed in the Self Assessment Report, there is no specific mention of industry
- Lack of formalised industrial input into syllabi and on-going curriculum revision (especially Pharmaceutical Industry)

*Opportunities*

- The presence of a strength in Science Education and Science Communication in DCU creates an opportunity for the SCS to get involved in community based science education and outreach, at both student and staff level
- Potential exists for the use of publicly available Web-based multi-media presentations as a way of promoting both Chemistry in general and the SCS in particular, especially to secondary schools

*Concerns*

- No evidence of an IP strategy in the Self Assessment Report

Staffing, Accommodation and Resources

*Strengths*

- Excellence of the Technical Staff especially the Senior Technician
- Some of the School's major strengths (such as quality of student practical work) arise from initiative and commitment of technical staff
- Accommodation is adequate and, in some cases, very good. (However, the space available to attract two new positions in Organic Chemistry is limited.)

*Weaknesses*

- The relatively high number of staff on short term contracts gives rise to lack of continuity in teaching – these staff (and new) staff perceive themselves as having large teaching burdens – while this perception would not seem to

concur with actual teaching contact hours this perception probably reflects poor status of teaching within SCS

*Opportunities*

- The reactivation of the Chemical Services Unit has the potential to generate a new revenue stream
- Develop an equitable and unified policy of researcher access to available research instrumentation within the Schools, Centres and University

*Concerns*

- There is a need for better promotional paths for technicians in order to retain and reward this critically important human resource
- No strategy of maintenance of major pieces of equipment either by budgetary provision or formalised charging structure
- Access to equipment is uneven

## 6. Recommendations for Improvement

The following notation is used in the recommendations for improvement:

- P1: A recommendation that is important *and* requires urgent action.
- P2: A recommendation that is important, but can (or perhaps must) be addressed on a more extended timescale.
- P3: A recommendation which merits serious consideration but which is not considered to be critical to the quality of the ongoing activities in the School.

Additionally, the Review Group indicates the level(s) of the University where action is required by using the following:

- S: School
- F: Faculty
- U: University Executive/Senior Management

<u>Organisation and Management of the School</u>

- *P1-U:* Immediate requirement to clarify roles of Dean of Faculty, Head of School and Directors of National Centres
- *P1-US:* Immediate requirement to clarify roles of School and National Centres and to develop policies which ensure that School and Centres interact to the benefit of both; while Schools and Centres will need to develop ways of interacting that suit local conditions, this requires guidance and engagement from the University as it oversees increasing competition for internal resources
- *P1-U:* Strong recommendation to make Headship of School a more attractive position by providing administrative support, research support, clear definition of role and appropriate training and development in necessary management skills
- *P1-U*: Install a practical and effective performance management system and provide adequate training and support to ensure timely and efficient implementation of same.
- *P1-U:* Establish a robust mechanism to ensure implementation of the recommendations emerging from quality review process

- *P1-S:* Formal management structure of the School needs urgent definition, including functions of staff meetings, post-graduate affairs committee, research committee, staff-student committee. The efficacy of these structures should be reviewed and more effectives structures and/or procedures put in place, where appropriate
- *P2-S:* In the context of the School's new strategic plan, a more realistic mission is required for the School in terms of what its ranking should be (long tem and short term) nationally and internationally and meaningful performance indicators developed

Programmes and Instruction

- *P1-U:* Comprehensive training in teaching and learning should be provided to all academic staff
- *P1-S:* The balance of priority between research and teaching needs to re-evaluated to ensure high-quality teaching:
    - Every member of academic staff should have specific teaching and learning responsibilities
    - First year teaching should be given the highest priority. Senior staff and the most talented teachers should be lecturing on first year courses
    - Development of teaching and learning materials should be given due recognition in time allocation
    - The potential of multi-media learning materials to enhance student learning should be investigated
    - Need for greater range of learning objectives for the programmes including presentation skills and group/teamworking skills. In addition, students on under-graduate programmes should be given at least three opportunities to develop their presentational and communication skills and these should be formally assessed
    - Need to improve and broaden mechanisms by which student feedback is collected from both lecture and laboratory experience
    - Need formal procedures to evaluate student feedback and respond to concerns – not only should this be done but students informed of actions that arise from their expressed concerns
- *P1-S*: Consideration should be given to putting extra support to students who did not do Chemistry in their Leaving Certificate
- *P1-S:* Training to be provided to all laboratory demonstrators
- *P1-S:* New staff and contract staff should be mentored by senior staff
- *P1-S*: Industry should be involved in the revision of all syllabi possible through the establishment of a formal liaison committee

Social and Community Services

- *P1-S:* The School should put formal structures in place to ensure on-going effective liaison with industry. This could take the form of an Industry-School Liaison Group.
- *P1-S*: New and junior staff should be mentored in their liaison with industry contacts
- *P2-S:* The Chemistry Society needs to be resuscitated

Staffing, Accommodation and Resources

- *P1-U:* Provision should be made for the promotion and reward of the technical staff
- *P1-U:* All contract staff should be on contracts of three year duration
- *P1-U:* Running and maintenance costs of major pieces of equipment need to be resourced
- *P1-U/S:* If the two expected appointments in Organic are not filled in this round, they must be actively pursued without delay
- *P1-U/F/S:* A more formal uniform and transparent system must be developed to provide access to research instrumentation within the Schools, Centres and University. The charges put in place for this access could be used to pay for the maintenance of the research instruments.

Quality Review Process

- *P1-U:* The composition of the Quality Co-ordinating Committee should follow more closely the QPU recommendations – the absence of technical staff and students and lack of involvement of Head of School weakened the SCS Self Assessment Report
- *P1-U:* Self Assessment Report should be simplified and streamlined. The Executive Summary proved adequate. The Summary, along with the potential for members of the Review Group to request further information, should be sufficient in advance of the Quality Review Visit.
- *P1-U:* A short presentation (20 minutes) at the beginning of the Quality Review Visit by the School would be very useful