Enhancing Student Communication Skills-the Case of the International Students Spring Symposium

George Eleftherakis, Konstantinos Dimopoulos, Anna Sotiriadou

City College, 13 Tsimiski Str, Thessaloniki, Greece, {eleftherakis, k.dimopoulos, sotiriadou}@city.academic.gr

The development of communication and organisation skills in undergraduate students is an issue that has always been of concern in all academic departments. The Computer Science Department of City College has put great emphasis on developing these skills throughout the Bachelors academic program. One approach that has been very successful over the past years was the organisation and hosting of an annual international student symposium. Students from the College but also from other national and international academic institutions, present their work on a variety of subjects related to technology. Emphasis is given on multi-discipline, and as such students from departments not directly related to computer science are welcomed. In addition, the symposium is organised by volunteer undergraduate and postgraduate students, not only from the Computer Science Department, but from departments of diverse disciplines. This paper presents the international student symposium and demonstrates how the appropriate skills of the students are enhanced. In addition, the paper highlights how the participation of the students to this event heightens their involvement in an academic environment.

Keywords

Communication Skills, Multi-discipline, Student Conference Organisation

1. Introduction

In an academic environment it is not sufficient to provide undergraduate students with only technical knowledge. Employer groups and professional societies stress the importance of good communications skills and at the same time the lack of those skills in computer professionals. In our effort to develop and enhance communication skills to our computer science undergraduate students, one of the approaches we have adopted is the organisation of an annual international student symposium, which we believe greatly contributes to the preparation of students for their professional careers. Students perform a small amount of research and they write a research-style paper; they prepare presentations for the symposium and they actively participate in all aspects of the organisation of the conference, therefore also improving their interpersonal skills.

The major aim of the undergraduate programme offered by our Department of Computer Science is to produce high calibre graduates, well equipped to successfully follow fulfilling and exciting career paths in many diverse areas in industry. Towards the fulfilment of this aim, our students are exposed to the theoretical foundations in all areas of the field, they gain an understanding of the principles that underlie development of systems, benefit from the research-led environment in which the programme is taught, apply their knowledge on real

life projects and acquire the necessary knowledge and skills to cope with the astonishing rate of change of the specific discipline.

Definitely a computer science graduate should possess a thorough and in depth knowledge in many areas of the discipline. However, this element alone is not enough and it does not guarantee a successful career. Surveys reveal that employers rank strong communication skills as one of the most desirable quality in applicants seeking employment [1-3]. Specifically, the University of Sheffield analysed over 10,000 graduate recruitment advertisements in a number of national newspapers [3]. The survey showed that the desired attributes that recruiters looked for in an applicant, in order of importance, were: oral communication, teamwork, enthusiasm, motivation, initiative, leadership, commitment, interpersonal skills, organisation and foreign language competence. In our department we recognise the high value of these skills and we comply with the recommendations of employers groups and professional societies [4, 5] on that matter by incorporating the development and enhancement of communication skills in our programme of study.

In this paper we present our experience of successfully running the International Student Spring Symposium (S3 for short) for the past six years. The aim of the S3 is the active involvement of the students to the academic life, and the enhancement of the experience of being involved in an academic community. This way, the students improve their oral communication, organisational, research and interpersonal skills. In addition the students that are in the organising committee improve their teamwork and leadership skills, in an environment that recognises and rewards initiative, motivation, and enthusiasm in a person.

The paper is structured in the following way: first we present the different approaches that the Computer Science Department (CSD) in the College follows in order to develop the communication skills of the students. Next, we present how S3 was developed and analyse the organisation and structure of the symposium, focusing on the role of the students. The observations gathered over the last six years that the symposium is running are presented in the fourth section of the paper. In this section we present the feedback obtained from the students that organised the symposium, the participants, the lecturers and the industry and societies. Finally, we present the conclusions and future discussion.

2. The development of Communication Skills in the CSD

The skills that are mentioned as the top requirements of a graduate student in [1-3], are complex and interdependent. As such there are no clear definitions in the literature. This is probably one of the reasons why such skills are very difficult if not impossible to teach, except by example. In order to formulate our approach, we consider the following categorization of communication skills:

Interpersonal Skills: Computer professionals do not work isolated from their working environment or the rest of the world. They meet clients and they also need to effectively cooperate within teams towards the goal of completing projects successfully and within given deadlines.

Writing Skills: Computer professionals face the challenge of writing reports and proposals due to their involvement in projects of various types. So it is fundamental that they are able to successfully convey their ideas in a concise, meaningful and persuasive way.

Presentation Skills: In many occasions computer professionals have to prepare and give presentations on a variety of topics and audiences and should be able to successfully put across complex information in a clear way.

In order to infuse communication skills to the undergraduate students, a number of actions are taken throughout their attendance at the college. Starting at the first semester of the fist year, the students take the unit of “Communication Skills and the Internet”. In this unit, through the means of introducing the Internet, the basic skills of report writing, working in a

group and making oral presentations are implanted to the students. During the next years, these skills are honed in most CS units, by requiring the students to do group practical assignments, as well as a number of group or individual presentations and demonstrations. In particular during the unit “Software Development in Practice and Research Methods”, which is taught in the fourth semester, the students form groups and develop a software product from conception to final delivery. Throughout the development of the software, the students assume the role of a developer in a software company, some members of staff assume the role of a client, and the unit lecturer the role of the company boss. Through a series of interviews with the clients, reports and presentations to the unit lecturer, the students develop their skills further. In the final year the students undergo a similar process but this time working with a real client, doing projects for industrial partners in the unit “Industrial Project”. In a number of units in the second and third year, the students have to prepare subject specific research and reviews that are presented in departmental mini-conferences. Towards the end of their studies, the students have to undertake the final year project, which although individual in nature, requires the delivery of a number of formal progress reports, and presentations in addition to the dissertation.

In addition to the previously stated means for enhancing communication skills to students, the CSD has adopted the approach of organising an annual student conference, the International Student Spring Symposium (s3symposium.org). This is an open event and takes place every spring for the last six years. There are mainly two reasons for having the symposium in spring. Firstly, it is the right season to have an event in good spirit. Secondly, we want to encourage third level students and postgraduates to present the work they did for their dissertation projects in the symposium. The symposium is organised by students and student societies under the supervision of academic staff members, and is free (no participation fees are required). Computer science departments in various institutions have followed a similar approach by organising student conferences in order to enhance the communications skills of their students [6-10]. This is a similar approach to the mini-conferences that are created in a number of second and third year units in the College. However, in these attempts the conferences are organised either on a very narrow specific topic of a discipline, with a major aim to access students knowledge on that topic or it takes place within specific courses offered in the curriculum.

Some of the aspects that differentiate our approach are:

- The symposium is not tied to a narrow topic but its theme is rather general (such as Internet & Web Technologies or Contemporary issues in IT or Contemporary Issues on Technology and Social Sciences) and it covers a wide range of topics. This way, students from any year of study can participate, independently of advanced or less advanced mastery of the knowledge. At the same time they have the opportunity to participate every year during the three years of their study.
- Students are actively involved in all activities related to the organisation, publicity and sponsoring of the event.
- It has an interdisciplinary element; students from other departments such as the Business Administration and Psychology Departments are invited to participate.
- Students’ involvement in the event is not compulsory and their performance does not contribute to the assessment in any of their courses. We managed to convey to them all the benefits they have by participating in the symposium and they also view it as a chance to enhance their curriculum vitae, especially those who aim to pursue postgraduate studies.
- The symposium is also open to students from other universities in the region, enabling in this way the interaction and exchange of experience among students from different institutions.

A more detailed description of the S3 is presented in the following sections.

3. Developing the Organisation and Structure of S3

3.1 The development of S3

The first International Student Spring Symposium was organised in May 2002, by a group of students known as the AcademiX led by a lecturer (George Eleftherakis). This group was formed by involved students initially from mostly the first level that showed interest in the academic life. As a result of a genuine interest about the effective and efficient dissemination of knowledge during the "Communication Skills and the Internet" unit, the idea of organising a student conference was born. Even from the very first one, the whole organisation of the conference was from the students, under the supervision and guidance of one staff member, using the resources of the college. In addition, all work was presented by students, thus it was from the beginning a conference made by students for students. The aspect of organising and participating to a conference was appealing to students from other departments of the college, who joined the idea and under the open and flexible topic of Internet technologies they found common ground with the computer science students. Every year the multi-disciplinary aspect has grown and in the last two events it was formally introduced to the symposium with a more dynamic structure that was adopted to facilitate it.

From the second time the event was organised, the significance of the symposium was underlined with the support of a research centre (SEERC) and a national computer society (GCS). From the 3rd one and on a second lecturer (Konstantinos Dimopoulos) joined S3 providing more focused supervision to the computer science aspect and at the same time providing the opportunity for S3 to become broader and cover better other disciplines. This gave rise to today's structure that facilitates a more dynamic and multidisciplinary environment for the students. Especially in the last one (6th) we emphasised on that aspect having three thematic areas (Computer Science, Business and Administration, and Psychology) accommodated in the event. The sessions were a mix of papers from all these areas and the results were very promising for the years to follow. The latest structure is described in detail in the following section.

The International Student Spring Symposium has so far been organised, with great success and impressive participation, by students and student societies in our department, under the supervision of members of the academic staff acting as a steering and scientific committee. A number of both official and unofficial student bodies have been behind the organisation of this event over the years but the main student body is the Greek ACM Student Chapter and overall the students of the College.

3.2 Organising the Symposium

The organisation of the conference is split in three phases: preparation, duration and post-event. The preparation phase begins at the beginning of the second semester, after the fall exam period, and is the longest and most difficult phase. During the preparation phase, three groups of students (one group for each discipline Computer Science, Psychology and Business Administration) are formed under the direction of three lecturers, one from each discipline, who take the role of Thematic Chairpersons (TCP). The three thematic chairpersons are co-ordinated by the Symposium Chairperson (SCP). This structure is modular and can easily be expanded to support more thematic areas. The structure is displayed in figure 1. The whole process is voluntarily for both students and lecturers.

The SCP assigns tasks to the three TCPs, according to their speciality. For example the Computer Science TCP is responsible for the technical organisation of the symposium (poster preparation, call for papers and participation, etc), the Business Administration TCP is responsible for organising the sponsor support, awards and other. Each TCP will break

down the tasks assigned to him/her and will form groups of 2-4 students and assign the co-ordination of the sub-tasks to leaders in the groups. Usually, third and second year students that have had experience from the previous events are assigned the roles of group leaders.

The preparation phase is by far the longest in length, and it contains the largest number of tasks. Among the most important are: deciding on the important dates for the symposium (paper submission, acceptance notification etc), the setup of appropriate information and advertisement mechanisms (mail-lists, website, sponsors, press releases), program and session organisation and others. All these tasks are attended by the student groups under the supervision of the TCPs.

The quality of the preparation phase is paramount as it leads to the duration phase. The duration phase is very important because it is through the work done in this phase, that the participants will mostly judge the symposium. In this phase, student groups handle tasks that range from managing the registration desk, providing computer support to the guests and taking care of the coffee and lunch breaks.

After the symposium is completed, the last phase is initiated. In this phase, a re-count of the event is performed, analysing the feedback forms received from the participants and attendees and updating the website.

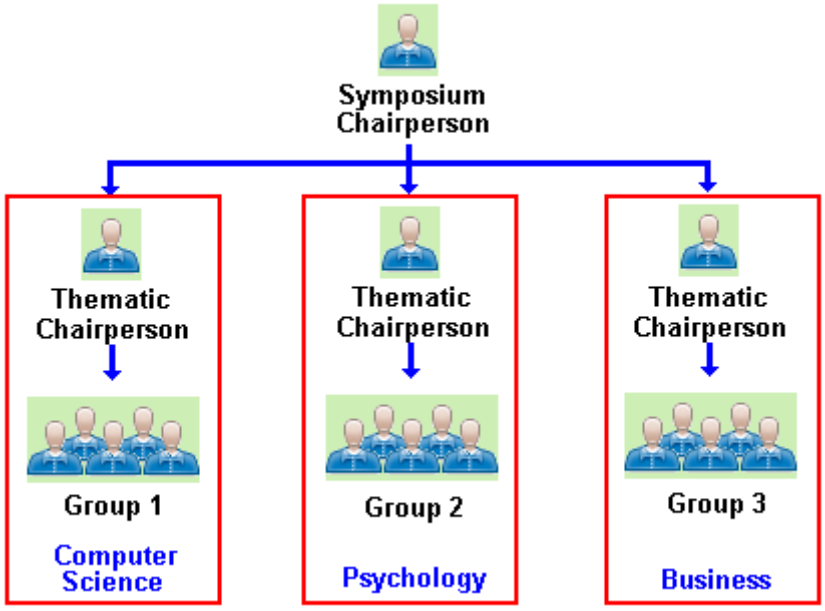

Figure 1: the organizational structure of the S3

3.3 Structure of the Symposium

One of the most important tasks of the preparation phase is that of determining the structure of the symposium. This task is performed by the Programme Committee (PC), which is formed by the SCP, the three TCPs and the students that are of advanced level (usually second or third level and postgraduates). Depending on the number of papers accepted the tutorials and the guest speakers, the PC decides on how many sessions are necessary, the duration of the sessions, and the papers that will be presented in each session. The sessions must have a common theme, without loosing perspective of the multi-discipline. This was achieved by incorporating presentations from all the different disciplines in every session, but binding them together under one subject. This is a most challenging task, and requires a large effort from all parties involved, from all the disciplines giving feedback on how the tie can be made. Parallel running sessions, are avoided if possible.

Because of time limitations, the symposium is running on a weekend, starting on Friday afternoon, and including all Saturday. This allows for approximately four to six sessions, including tutorial sessions and guest-speakers. If more sessions are required, the symposium can extend to include Sunday morning. Between the sessions, coffee breaks are arranged for the visitors. These are arranged in the preparation phase, and are handled by the students.

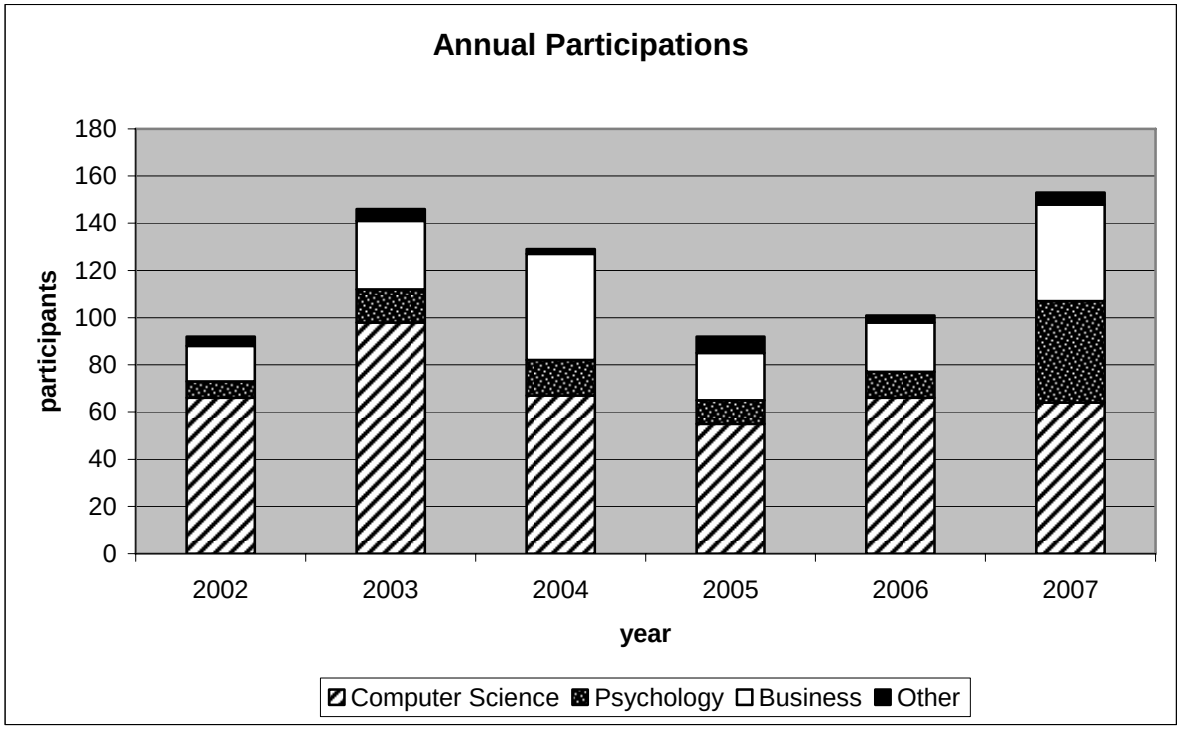

Figure 2: Annual participations to the S3 event from 2002 to 2007.

4. Observations and feedback

Over the two days of the symposium an average of 130 students from many different institutions participate from various different countries (e.g. Greece, F.Y.R.O. Macedonia, Serbia, Montenegro, Ukraine, Romania, Albania, Bulgaria, UK and USA as well as others) and an average of 20 high quality presentations given by students take place, along with a number of invited talks and a round table discussion. In figure 2 the participation from the three disciplines in every year of the symposium is displayed. In figures 3 and 4 the averages from all events of country origin and academic level of the participants is shown. At the end of the conference all participants anonymously evaluate the presentations and they vote for the best presentation award.

The significance of the conference is demonstrated by the fact that the Greek Computer Society and the Thessaloniki-based South East European Research Centre (SEERC) have supported it since 2003, along with a number of companies who are sponsoring the event and students from all the universities in the area participate.

4.1 Benefits of the S3

All these years the Organising Committee was formed by students only. Almost all students that actively participated in organising the symposium in the past are now either very

successful professionals working for well-known international companies around the world or they followed an academic career. One of the highlights of the 5th symposium was the invited talk of a former student, who had presented and helped organise the 1st event. The invited talk was about his PhD thesis.

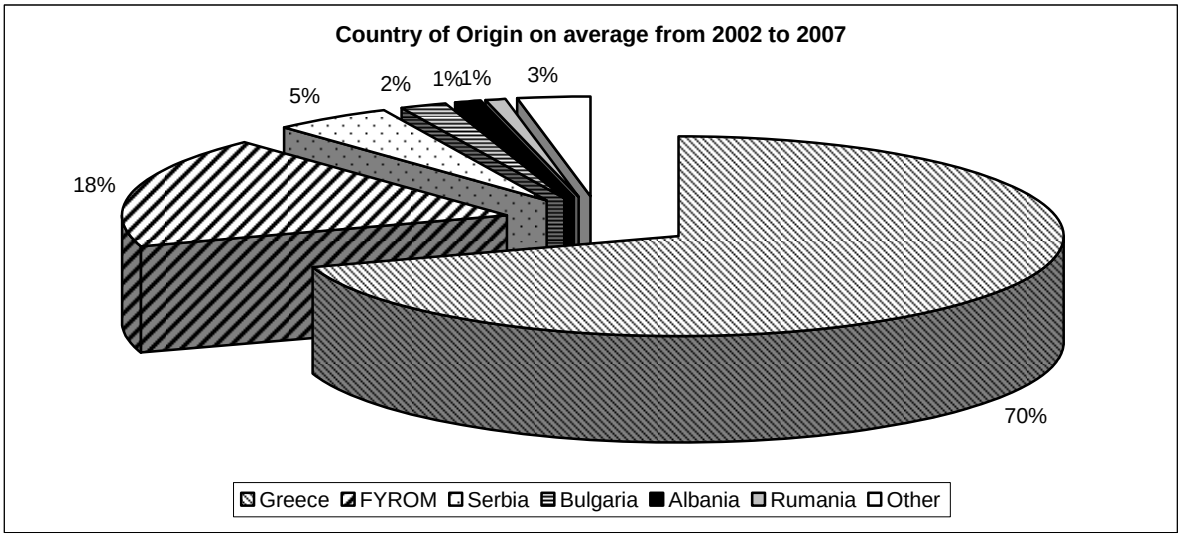

Figure 3: Averages of the country of origin for the events from 2002 to 2007

Students that present their final year project or MSc thesis to the S3, receive feedback on how to improve their work, and are inspired and built self-confidence to submit their work to other International Scientific conferences. This has been observed over the past years, as many of these students have accepted papers in International Scientific. Before the S3 events, no students had ever submitted their work in International conferences, even though they had done work of high quality. This proves that the S3 events are the driving force for developing research skills, motivation and inspiration to these students.

Another important result of the S3 is the co-operation of students from different disciplines. The discussions that followed each paper and each session were very active, with students from all departments participating. This active dialogue raised by the students led already to co-operations between the departments in the student level but also through that it facilitated co-operation in the academic staff level. For example, our College's ACM Student Chapter volunteered to implement a web page for a non profit organisation related with Children with Cancer that the psychology department was working with, to inform and support the parents of these children better.

4.2 Feedback from third parties

Until now the symposium also generated excellent feedback from all the participants. In all years a post-conference feedback questionnaire was given to the participants. The results demonstrated that all participants unanimously answered (100%) that they wanted to participate in the next symposium the following year. Also almost all participants (85%) felt that the conference was very well organized and were impressed by the excellent quality of presentations. The questionnaire also reveals that students consider the event full of fun and excitement, and an event that provides them with the opportunity to not only learn many things important for their future careers as professionals but also to feel and act as computer scientists.

The analysis of the data gathered from the questionnaire we distribute the last four years at the end of the event pointed clearly out that all the participants were more than satisfied with the quality of the organisation, and that they will definitely attend the following ones. The feedback we had from the personal discussions with the participants and then through their answers to the questionnaire made S3 an annual event.

From discussions with the lecturers from all involved departments of the college, it became clear that they the students that actively participated in S3 (either organising, or presenting, or both), were all top students. This is to be expected, however the lecturers commented on the positive attitude that these students gained after the event, and how it affected their effort in class as well as the positive affect they had to their fellow students.

Another interesting observation made by the lecturers was that most of the students participating in the organisation of S3 later on demonstrated leadership skills in group assignments. Finally all lecturers observed that participating students had improved dramatically their presentation skills after the event.

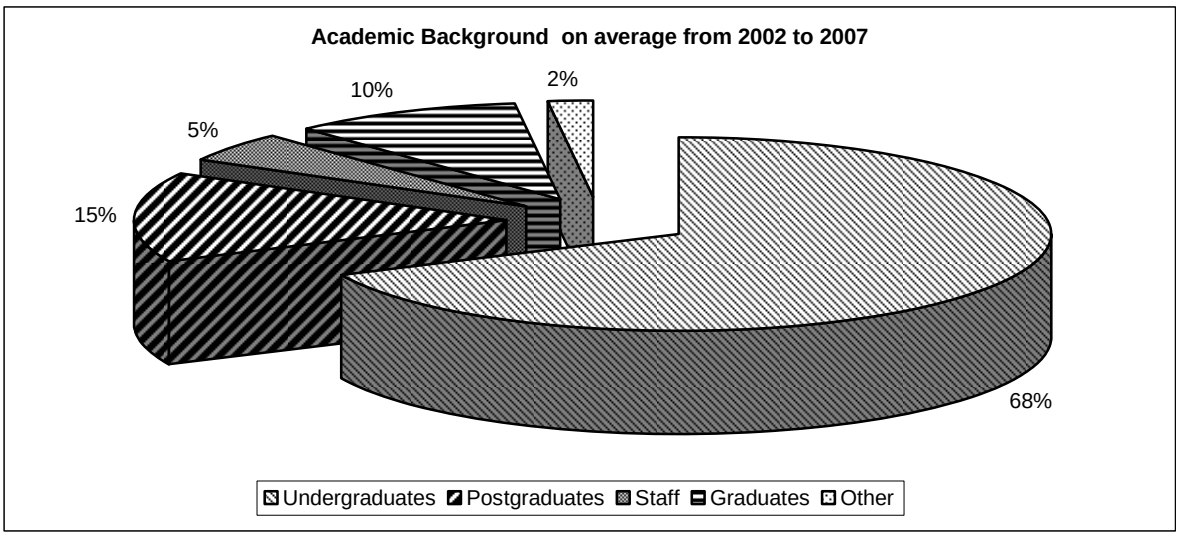

Figure 4: Averages for the academic background of the participants to the events from 2002 to 2007

Two key aspects in today's higher education is research informed teaching and strong connection of academia and industry. The fact that from the 2nd year and on the Greek Computer Society and a research centre (SEERC), both support the event every year proves the high quality of the event and its importance in the region. Also the motivation and the development of research skills to the alumni students is demonstrated with the example mentioned in a previous section of undergraduate students actively participating to S3 that already graduated with a PhD and others that joined SEERC and they are now PhD students following a pure research career.

But the industrial link is also very strong something clear from the number and size of companies supporting all these years the event, like SUN Hellas, Singular (one of the biggest software development companies in Greece), Papasotiriou (The biggest technical bookstore in Greece) and many other.

5. Conclusions and Future Directions

We have presented our experience of successfully organising the International Students Spring Symposium (S3) as one of the approaches we adopted for developing and enhancing the academic skills of our students. The academic skills we are trying to develop are

interpersonal, writing and presentation skills. The interpersonal skills are mainly developed through the process of organising the symposium, and more specifically by arraigning students in to teams and assigning to them important tasks that are necessary for the accomplishment of a successful event. Writing and presentation skills are developed by submitting an extended abstract of their work to the programme committee and by doing a formal presentation in front of an unknown audience.

We thoroughly discussed the structure of the symposium, the issues concerning its preparation and organisation and students' involvement in all these aspects. In addition we presented the type of guidance provided to students, the role of the academic staff in the whole process. We have analysed our observations and feedback received from the students and staff concerning the symposium.

In the future, we aim to include more thematic areas, in order to expand the multi-discipline aspect of the symposium.

References

1 Hagan, D. Employer satisfaction with ICT graduates. In Proceedings of the Sixth Conference on Australasian Computing Education - Volume 30 (Dunedin, New Zealand). R. Lister and A. Young, Eds. ACM International Conference Proceeding Series, vol. 57. Australian Computer Society, Darlinghurst, Australia, 2004;119-123.

2 Bailey, J. L. and Stefaniak, G. Preparing the information technology workforce for the new millennium. *SIGCPR Comput. Pers.* 20, 4 2002; 4-15.

3 Allen, M. (1991). Improving the Personal Skills of Graduates. Final Report, Action-Research Project, Personal Skills Unit, University of Sheffield.

4 Lee, C. K. Transferability of skills over the IT career path. In *Proceedings of the 2005 ACM SIGMIS CPR Conference on Computer Personnel Research* (Atlanta, Georgia, USA, April 14 - 16, 2005). SIGMIS CPR '05. ACM Press, New York, NY, 2005;85-93.

5 CC 2001 Task Force, Computing Curricula 2001: Final Draft, http://www.computer.org/education/cc2001/cc2001.pdf

6 ACM/IEEE, The Joint Task Force for Computing Curricula 2005. Computing Curricula 2005: The Overview Report. ACM/IEEE, 2005. http://www.computer.org/portal/cms_docs_ieeecs/ieeecs/education/cc2001/CC2005-March06Final.pdf

7 Börstler, J. and Johansson, O. The students conference—a tool for the teaching of research, writing, and presentation skills. In *Proceedings of the 6th Annual Conference on the Teaching of Computing and the 3rd Annual Conference on integrating Technology into Computer Science Education: Changing the Delivery of Computer Science Education* ITiCSE '98. ACM Press, New York, NY, 1998;28-31.

8 Norris, C. and Wilkes, J. Computer systems "conference" for teaching communication skills. In *the Proceedings of the Thirtieth SIGCSE Technical Symposium on Computer Science Education* SIGCSE '99. ACM Press, New York, NY, 1999189-193.

9 Havill, J. T. and Ludwig, L. D. Technically speaking: fostering the communication skills of computer science and mathematics students. In *Proceedinds of the 38th SIGCSE Technical Symposium on Computer Science Education*. SIGCSE '07. ACM Press, New York, NY, 2007;185-189.

10 Sivilotti, P. A. and Weide, B. W. Research, teaching, and service: the miniconference as a model for CS graduate seminar courses. In *Proceedings of the 35th SIGCSE Technical Symposium on Computer Science Education* (Norfolk, Virginia, USA, March 03 - 07, 2004). SIGCSE '04. ACM Press, New York, NY, 2004;487-491.