

## **An on-line Pre-Induction Pack for Engineers (PIPE) in Chemical Engineering.**

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The Pre-Induction Pack for Engineers (PIPE) is an online tool designed to familiarise prospective students with the university environment, and in particular with the Chemical Engineering course at The University of Manchester, before they actually start their studies. While introducing prospective students to the university, the course and university life in general, the PIPE website helps to ease the communication between prospective students and the School. Through the *Ask Dr PIPE* section prospective students can make enquiries directly to staff within the School. The information from students enquiries and the students' responses to the pre-induction questionnaire allow staff within the School to get to know prospective students better so that adequate support can be in place upon their arrival. PIPE was introduced in August 2005 aiming to help bridge the gap between school and university. An evaluation of the scheme was carried out during the first weeks of the term to obtain information about students' experience with PIPE and also staff perceptions regarding its functionality and efficiency. Most students found that the information provided in the PIPE website was clear and useful. Most home students who responded the evaluation questionnaire found the section *Chemical Engineering at The University of Manchester* to be the most useful followed by the *Frequently Asked Questions (FAQ)* section. On the other hand, the section *Working to succeed* was found the most useful to the majority of overseas students who responded the evaluation questionnaire followed by *Ask Dr PIPE*. The majority of students using the site found it an easy and friendly way to communicate with the School at a more personal level. The scheme has been used successfully during the first attempt although the feedback from the evaluation reveals room for improvement.

### **1. Introduction**

Research has shown that school-to-university transition can have an important impact on academic achievement, skills development and attrition rates (Edward and Middleton, 1997 ; Edward, 2003; Grayson, 2003; Laing et al., 2005; Shobbrook, 2003). These findings have led to the development of different strategies and tools to improve the students experience during induction and their first year.

In general students' induction during the Freshers' week is traditionally a time in which universities overwhelm students with what is considered important information in a very short period of time. The induction week then becomes a very passive activity in which

students still trying to familiarise themselves with the new environment manage to retain very little information (Edward and Middleton, 1997; Edward, 2003).

Strategies and methods such as “The Challenge” used by Edward and Middleton (1997) considered the introduction of university life and the particular the course to students through an investigative activity over a period of a week in which students have to find their way around, learn about the university system and their particular programme and interact with peers, staff and outsiders at the same time. The activity provides opportunities for students to settle into university life and at the same time develop transferable skills and motivation. A similar idea to help students in the transition to university is used by Laing et al. (2005) in their “online Spiral Induction Programme (onSIP)”. Although the main aim of the “onSIP” is to provide real-time information on students that might be 'at risk' it also help students to adjust to university requirements effectively using a student-centred approach. The “onSIP” runs during the first six weeks of the semester and is extended throughout the year with targeted activities when required. The on-line learning activities used aim to help students to develop their skills and also to take responsibility about their own learning.

Parker et al. (2006) mentioned that students entering university from secondary school are generally under a great deal of stress. During that transition period students have to deal with change, from modifying friend and family relationships to entering a new learning environment and more facing the pressure of becoming independent adults. In their study they found that there is a link between emotional intelligence and academic retention in the first year that consistent with a successful transition from secondary to university education.

The above mentioned cases of “The Challenge” and “onSIP” are good examples of successful programmes aiming to improve the students experience during the induction period and subsequently. Shoobrook (2003) mentioned that if induction is to be linked with retention not only the strategies used for it will need careful consideration but also accounting for pre entry issues and first year teaching.

The work carried out in PIPE attempts to address in a way induction issues so that prospective students can become familiar with the university, the course and its demands, and the induction week itself in their own time and space prior to arriving to university. Hence, PIPE aims to reduce uncertainty levels and to ease the induction week experience so that students can adjust to university life early. At the same time, PIPE is also aimed to help staff to identify students' expectations and needs so that adequate support can be in place prior their arrival.

## **2. PIPE Design and Implementation**

### **2.1 Design**

The design of PIPE was mainly based on providing prospective students, both overseas and home, with useful information so that they could familiarise with the School and university environment easily. Few other aspects were taken into account that are

particular to the nature of the course and the students intake in Chemical Engineering and Manchester (SCEAS). A large proportion of the student intake in Chemical Engineering at Manchester is from abroad. This meant that an efficient and accessible way of providing information was required.

As mentioned previously, research indicates that school-to-university transition can create tension and stress (Parker et al., 2006). In the particular case of overseas students the transition from school to university life involves not only leaving family, friends and the habits of secondary school behind but also a change in country, culture and in many cases language. These can add extra uncertainty and tension to the transition. Therefore, having a mechanism that could potentially help reduce that tension allowing easy communication between prospective students and the School was desirable.

Traditionally at SCEAS, a Welcome Pack was sent to students prior their arrival to university by mail/airmail. It was felt that the process by which prospective students were given information and introduced to university prior their arrival required some improvement. Consequently, an on-line pack on a website that could maintain or minimise the amount of information sent by mail and deliver further information with a friendly and less formal approach was developed. To add functionality and allow for interactivity, a section in which prospective students could pose queries to the School through the site was also included.

As the main aim of PIPE was to familiarise students with the university, the course and the induction activities only basic information about the university was placed on the site with links to the main university site when appropriate. This intended to provide uniform information and at the same time make efficient use of resources.

As the first attempt and for the sake of simplicity the site will only contained information thought to be useful to prospective students based on previous experience. The site has a welcome page and four main sections: *Chemical Engineering at The University of Manchester (UoM)*, *Working to succeed*, *Questionnaire* and *Ask Dr PIPE*.

*Chemical Engineering at UoM* provides information about the course, its structure, timetables, methods of assessment, student support within the School and at university level and also the information about the induction week.

*Working to succeed* provides some guidance to some of the aspects that they will need to consider to achieve their goals, in particular regarding motivation and planning. This is intended to make students aware that they are responsible for their own learning and successes and compliments the self-assessment carried out in the Pre-Induction Questionnaire.

*Questionnaire* is a tool that prospective students can use to self-assess their competences and skills. Prospective students are asked about their previous experiences, skills and expectations. They are expected to complete the questionnaire prior their arrival to university. The information provided by them in the questionnaire is passed onto personal tutors and is used during personal tutorials as basis for

discussions and reflections. This information is also used by staff to organise adequate level of support for the students. Given the confidential nature of the information provided by prospective students in the questionnaire, it was necessary to restrict its access.

*Ask Dr PIPE* is the section that gives general information in the form of Frequently Asked Questions (FAQ) and also offers the possibility to contact Dr PIPE at the School for further enquiries. The FAQ set contains some basic information that both overseas and home students might find useful and is mainly based on questions that have been asked in the past. If the information is not present in the FAQ, prospective students are encouraged to email Dr PIPE with their query.

## **2.2 Implementation**

PIPE was implemented and used for the first time in August 2005 for the pre-induction of the academic year 2006-07. A cohort of 150 students was expected and as mentioned before a large proportion of them were from abroad. Information about PIPE and accessing instructions were included in the Welcome Pack sent out by mail to prospective students once they have confirmed their acceptance through UCAS. Prospective students were advised to contact the School if they did not have internet access, would prefer a hard copy or special format of the information.

There was a period of about one month between the information being sent out and the induction week at the start of the term in September 2006. During that period of time, most of the prospective students used the site in the two weeks before the start of the semester. At least 50% of the cohort used the site before arriving to university and some did use it to complete the Pre-Induction Questionnaire on-line after arrival. In total, at least 62% of the cohort used PIPE.

## **3. Evaluation**

An evaluation was carried out to obtain feedback from both students and staff. An students' experience questionnaire was used to obtain student's feedback in the second week of the semester whereas short interviews were carried out with the staff involved in the pre-induction and induction process after commencing the semester.

### **3.2 Students feedback**

The students' experience questionnaire used aimed to find out if prospective students encounter technical problems when using the site and whether or not they found PIPE's site useful. They were asked a series of general questions about the site and also to rank each of the sections of the site using a Likert scale from 1 to 5, 1 being "not useful at all" to 5 being "very useful".

119 students out of 139 in the first year (85%) provided feedback through the questionnaire and 74 of them reported to have used PIPE before arriving to university (62%). The comments from the respondents who did not access the PIPE site before

arriving to university refer to not knowing about the site or having obtained a paper copy of the information.

Only 14% of students who used PIPE encounter technical problems being the most common difficulty loading or submitting the pre-induction questionnaire, all other respondents found the site easy to navigate. This was most likely to be due to few problems that the School's network experienced during the first week of PIPE's implementation.

Most respondents found that PIPE was easy to use and provided useful information and guidance. Results from ranking each section of the site showed that the section *Chemical Engineering at UoM*, which gives information about the course and general aspects of the university life, was found useful mainly to home students (60% of respondents) whereas the section *Working to Succeed* was found useful to the majority (60%) of overseas respondents. The section *Ask Dr PIPE* was found particularly useful to both overseas and home students (82%), as some respondents commented on the fact that the site provides a good channel of communication with the School. Most respondents (80%) found the *FAQ* section was useful. The section that had a wider range of rankings was the Pre-Induction *Questionnaire*. Most of the comments regarding the pre-induction questionnaire were related to its length and questions being vague and confusing.

### **3.2 Staff feedback**

The staff involved in the Pre-induction and Induction process found that the site was a very good way of maintaining contact with prospective students. The fact that prospective students could communicate easily with the School helped staff to provide the correct support on their arrival, especially when it refers to any specific needs that they may have. This also helped in planning and preparing the induction week.

Completed questionnaires were passed onto personal tutors before they met their tutees during the induction week so tutors can have some information about their tutees' personal profile and helps to make the first tutor-tutee meeting more friendly.

## **4. Conclusions**

A Pre-induction Pack for Engineers has been developed and successfully implemented in SCEAS at Manchester. PIPE provided prospective students with information about the university, the course and the induction week in a friendly manner allowing them to access the material in their own time and space and prior to arriving to university. At least 62% of the students cohort used the site. Although not all prospective students used the site it is hoped that the number of users to the site will increase in the future.

Students found that PIPE was useful, in particular, as a communication channel with the School in a friendly manner. The information provided in the site is in-line with general information provided by main university site. The information about the course tried to introduce prospective students to expectations and management of the course at

Manchester. It also encouraged them to find out more about Chemical Engineering and its place in society.

Staff involved in the Pre-Induction and Induction week reported that PIPE helped to manage administration during the induction week and allowed them to have adequate provision of support for students prior their arrival to university. Staff also found that PIPE allowed them to communicate with prospective students very efficiently, in particular with those abroad. Feedback obtained from the evaluation will be used to make appropriate improvements to enhance accessibility, clarity and students' experience.

PIPE has been designed for a particular engineering course and with emphasis on the wide range of students intake, however it can be easily transferable to other disciplines taking into account any particular differences.

## 5. References

- Edward, N.S. and J. Middleton, 1997, Induction-A contextual approach to the start of engineers' formation. Scottish Educational Research Association Annual Conference, Dundee.
- Edward, N.S., 2003, Active Learning in Higher Education, 4, 3, 226.
- Grayson, J.P., 2003, Higher Education, 46, 411.
- Laing, C. , A. Robinson and V. Johnston, 2005, Active Learning in Higher Education, 6, 3, 243.
- Parker, J.D.A., M.J. Hogan, J.M. Eastabrook, A. Oke and L.M. Wood, 2006, Personality and Individual differences, 41, 7, 1329.
- Pre-Induction Pack for Engineers, 2006, SCEAS, The University of Manchester, (<http://intranet.ceas.manchester.ac.uk/LearnRes/drpipe/>).
- Shobrook, S., 2003, Progress Conference 3, The role of pre entry practices and induction strategies in relation to student retention (<http://www.hull.ac.uk/engprogress/Pro3Papers.htm>).