

Enhancing research and teaching to support students in transition from school to university

Dong Yan

Beijing Normal University
People's Republic of China

dongyan99@hotmail.com

Mary Peat

The University of Sydney
New South Wales 2006
Australia

maryp@bio.usyd.edu.au

Abstract

This article aims to show how to help students in transition from school to university in China. The article is based on a first year experience that is rich in research and practice in the Faculty of Science at The University of Sydney and other universities in the western world. Together with the knowledge of contemporary educational theory and experience working in China, the authors point out three directions for improving student transition. The first is to enhance research into the first year experience. The second is to improve the quality of teaching and learning in first year classes. The third is to suggest some university-wide measures to improve the experience of all students entering the university.

Introduction

Research into the social and academic experiences of students in transition in the western world has raised a number of key concerns, and offered recommendations for improvements (for example McInnis and James 1995; Tinto 1975, 1987, 1996; Cohen and Hoberman 1983). In China it is also a special time for students. They have experienced rigorous entry examinations to gain a place at a prestigious institution. The cultural picture is of thousands of soldiers on thousands of horses passing a narrow bridge, marking the beginning of a great opportunity and a beautiful future. Moreover, China's 'One-Child' policy has resulted in parents caring more about their child's development and future than ever before. They wish them to become 'dragons' or 'phoenixes'. We, educators, also hope all of our students finish their degrees with high achievements and then become useful members of the community and the nation. However, some of our students do not settle in to their new environment very easily; some are failing courses in their first semester; and some are having difficulty getting along with their peers.

In July 2004, I (Dong Yan) came to The University of Sydney to take part in a staff development program to learn how to teach science in English using contemporary teaching methodologies. Early on in the program I heard about the work going on in Australia with respect to students in transition from school to university. I was introduced to the Faculty of Science's program and I was interested in investigating this further and seeing what aspects of this and other programs could be transferred to a Chinese situation.

Using the search engine Google, (<http://www.google.com/>), one of the most popular search engines on the Internet, and putting in 'the first year' and 'learning experience' and 'university' as search keywords, the result gave **49200** entries in **0.21** seconds. That means much has been written and discussed about how to support first year students, including during their transition from school to university.

Research groups concentrating on the first year experience (FYE) have been set up at many universities. They have explored how to help students form learning communities, how to develop and foster appropriate interest groups and other perspectives. Moreover most of them have put something tangible into practice. This includes measures such as a 'Welcome Day', student workshops, seminars on transition, mentoring programs (e.g., at the University of Connecticut), and 'Transition Courses' (e.g., at the University of Arkansas at Little Rock; Science 101 at The University of Melbourne in Australia). The research has been communicated within academic circles in the form of conferences and discussion forums related to aspects of the first year experience in higher education (e.g., First Year in Higher Education Conference in Australia, similar conferences in the USA and other western countries).

Why are academics and universities paying so much attention to this period of time when students are in transition from school to university? Fisher, Frazer and Murray (1986) express transition to mean the reconstruction of relations between a person and the environment, which may put individuals under pressure, and this pressure may be associated with mental and physical disorders. Students may have to leave home (and the face-to-face support of parents) and leave behind their high school friends (previous academic and social peers) when they go to university. They need to become familiar with the university and construct new relations with teachers and students. The university may be a strange environment for most first year students and this may have an impact on their settling in. In addition, university has more expectations of students than school. Students at university are required to be more self-motivated and more active independent learners. Universities require students to master the life long learning skills that will be needed to become a useful citizen of the future.

In the discussion forum, *Improving the First Year Experience*, held at The University of Sydney on Thursday 27 April 2000 (<http://science.uniserve.edu.au/workshop/fye/>), Mary Peat argued:

- Transition is complex—students need to re-establish support groups, peer groups, social groups.
- Students need a sense of purpose especially those in generalist degree programs.
- Students need to be shown how to manage their own learning.
- Students need to understand the value of collaborative learning and its relationship with working in the real world after graduation.
- Transition is a time for academic adjustment, integration and involvement within a new learning community.
- Since it is complex, we should support students during this important period of their degree program and in helping them, they will have a greater opportunity to succeed in their own academic endeavours.

Transition at The University of Sydney

The University of Sydney is a large university (by Australian standards) with 40,000 undergraduate students and 12,000 postgraduate students. It is also a research intensive university and belongs to what is called the 'Group of Eight' universities, the top universities within a total number of 38 public universities. It is also the oldest university in Australia, having been inaugurated in 1850, just 80 years after Australia was colonised in 1770, and thus celebrated its 150 birthday in 2000. Teaching of science in the University began in 1852, when the first professors (all based in the Faculty of Arts) arrived. The Faculty of Science itself was established in 1882, when government funding and a substantial bequest from John Henry Challis provided impetus for the University to expand. Fifty years later, there were 353 undergraduates and six professors in physics, chemistry, zoology, geology and physical geography, botany, and mathematics (pure and applied). By 1982 (the Faculty's centenary year) this had expanded to 31 professors; many of whom were in new disciplines. The Faculty now has nearly 600 academic staff (full-time

equivalent; with 37% in continuing positions), 340 general staff (full-time equivalent; with 51% in continuing positions), and over 5,500 students.

The Faculty of Science was quick to respond to the problems associated with students in transition as perceived by McInnis and James in their benchmark survey of 1995 (McInnis and James 1995). The survey stressed the importance of the initial experience of learning for first year students. The first few weeks at university are a time when habits and attitude are formed and a bad experience can subsequently lead to discontinuation or failure. One way to enhance the first year experience during the initial stages of the transition process is by helping students to establish supportive peer groups. Such groups provide a buffer against the difficulties of the initial period of transition as well as providing a structure for students to assist each other in academic study.

The Faculty of Science's response was to set up a transition workshop for students to attend before the beginning of classes. The argument for developing such a workshop centred on a recognition that those students who work and socialise together are more likely to succeed and more likely to continue their university studies (Tinto 1987; Tang 1993). At Australian universities, in science based degree programs, students are mostly school leavers who mostly live at home with their parents and brothers and sisters. Only a small percentage of students will live in residential colleges and these are mostly those students who come from outside of the Sydney basin. Suddenly students are travelling long distances (maybe up to two hours each way) to university and mixing with people they have never known before. This can be overwhelming. The primary aim of the workshop for the students is to give them the opportunity to meet other students doing their subjects and to manipulate the university timetable so that these students will be meeting one another every week of first semester in four to six hours of timetabled laboratory or tutorial time - time to be able to develop the social networks. Research at the end of the first semester of study shows that students who attend the workshop, compared with those who choose not to attend (attendance is voluntary), are: less likely to have thought about dropping out or deferring their studies; more likely to have been involved in social and academic activities with their new peer group; more academically motivated and directed; and have developed a deeper approach to learning during this first semester. Details of the transition workshop and the associated parents' program and the research outcomes are given in Peat, Dalziel and Grant (2001). These programs have been in place since 1996 and the model has been taken up by other faculties and departments within the University.

At the university level, a university wide transition program, SWOT (Student Welcome, Orientation and Transition) was developed in 2000. The SWOT initiative is convened by Student Services with some academic representation, and works to provide initial orientation plus ongoing support for students throughout their whole first year. SWOT is designed to help students to get to know the University and its services. Faculties, the Library and central student support services work together in the SWOT

Program. Prior to study commencing, the SWOT program offers an orientation week of talks and visits for new students. In addition to the SWOT Program, the University of Sydney Union also provides orientation activities to introduce students to the cultural, social and sporting activities available at the University.

The University of Sydney has an Institute for Teaching and Learning (ITL). The ITL has, among many responsibilities, the guardianship of a Working Party that was set up in 2000 to bring together representatives from every faculty and from several central units to work on improving the first year experience of students. Faculty representatives are appointed by the Dean and the focus is on faculty-level strategic planning and consists of academics from all faculties, and staff from student support services, with the brief to explore issues associated with the First Year Experience and for the individuals to take back ideas to their faculties. This group has been an important catalyst in speeding up the development of better learning environments for the first year students. It has used the following key principles:

- students will be familiarised with the University's physical environment, academic culture and support services;
- students' sense of purpose and direction will be developed by promoting their understanding of what their courses involve; where their course will lead them; and what their learning in those courses will involve;
- students' engagement with the University, including with their peers, will be promoted and supported; and
- students' learning will be enhanced by developing their knowledge and skills, including generic skills, and by taking into account students' diverse backgrounds and abilities.

Actions for Beijing Normal University

By using ideas from western universities there are three areas of activity that could be incorporated into student life at Beijing Normal University. The first is to research the needs of students and then consider how these needs could be addressed. If we want to help first year students during their transition period, then we must know more about them. The second is to improve the focus of teaching for first year students, such that they are exposed to the ideas of becoming self-motivated independent active learners, well on their way to developing the life long learning skills that employers are demanding of graduates in the 21st century. Good teaching can help students overcome difficulties they have both with the content of the discipline and the expectations of cooperative study. Thus, transition would be made easier for the students. The third is to show, through the work in one discipline that changes to the first year experience will be of benefit to all students in every faculty.

Action 1: To enhance our first year research and practice

Change the management group of students into FYE research group

In most Chinese universities, there is a major teacher for each class who is in charge of student management. In many disciplines all the major teachers in charge of undergraduates usually form a management group. The group members attend regular meeting to exchange information and discuss how to solve any problems that are occurring. These problems range from those associated with the academic content of courses to those associated with the well-being of students. To some extent, this helps major teachers to solve those problems, but only after they have appeared. This 'fire fighting' or crisis management approach does not help prevent the problems in the first place. In addition the major teachers usually only pay significant attention to students at the beginning of their courses, after that attention would decrease sharply. A new approach to student management is needed.

Knowing more about students as they enter the university, what their background is, what their interests are, how to encourage them to work together with their dormitory group etc. could have a significant impact on their overall well-being, satisfaction and performance.

Design and use a student course experience questionnaire

The Student Course Experience Questionnaire (SCEQ) used at The University of Sydney was designed to collect data for the university community on students' perceptions of their teaching and learning experiences as well as the administration and student support services. The analysis of these data provides a range of reports to academics that can help to inform them about areas of teaching and learning that need improving. Using the Sydney questionnaire a similar one will be developed for the students in at Beijing Normal University. The questionnaire will be used to model the way in which such information can help change the teaching and learning environment.

Explore the effectiveness of peer-support groups from the same dormitory or class

In the majority of Chinese universities, students are usually divided into many classes by their major subject. In addition, students in the same class will share a room (dorm) throughout their university years, have their classes together, and take part in university activities together (e.g., sports competitions). As a consequence of these intensive peer networks, it has been suggested that peer support might be of great value during the early period of adjustment for students in China (Tao, Dong, Pratt, Hunsberger and Pancer 2000). Students will influence each other in either positive or negative ways. Good influences may result in every member in a good dorm performing well academically, but vice versa with negative influences. Both work on how to establish positive peer groups in dorms and research on this aspect of student life needs to be done within the Chinese context.

Explore the effectiveness of parental support as a way to support students

When students leave home to enter university, the influence from their parents decreases as the influences from their new surroundings replaces the home influence. In fact, many parents do not have the ability to guide their child once in the university environment. Many university students are the first in their family to go to university. However, it is still important for students to maintain good contact with their parents through letters, telephone, and/or email. However, it is important that continuing parental support is available to help students to adapt to their new life and to cope with new experiences. The university and/or major teachers need to consider how best to involve parents. One way may be to hold a meeting like the Science Parents' Program or to develop a newsletter that is sent to parents during the students' first year at university. This might be especially important for those students with a special family background, for example those with only a father or mother at home or those from a socio-economically disadvantaged family.

Action 2: To improve teaching and learning in China

Experience shows that the difficulty in transition often occurs among those students with poor learning abilities. Some students find difficulty with the teaching methods adopted in university. Some students do not have the ability to engage in deep learning. Good teaching should encourage students to use a deep approach to learning and to discourage students from using a surface approach to learning (Biggs 1999). So as first year teachers, we should think about the way our teaching encourages and supports deep level learning.

Balance between the teacher-centred and student-centred approach

There is considerable discussion in the literature about students taking responsibility for their learning and that ways in which student-centred learning approaches can be encouraged. Early in transition is important that we do not neglect the importance of the direction given by teachers. Students entering the university come from a high school environment where they depend on teachers giving them strong guidance. It is important to create a balance between teacher-centred teaching and student-centred learning until the students have developed independent learning skills. To start with the teacher should play a central role in the classes. As students' knowledge and skills gradually develop, the teacher can provide more challenging tasks to students. For example, early in the semester teach students mainly with mini-lectures and recommended materials; later on in the semester encourage them to work collaboratively on tasks; and still later on assign difficult tasks for them to work on cooperatively, including presenting a final report. This form of scaffolding of a course will enable students to develop in a safe, student friendly learning environment that will encourage them to reach their potential.

Consider the best ways of evoking and maintaining students interest

Entwistle (1998) said that it is crucial, when planning a lecture course, to consider the best ways of evoking and

maintaining students' interest and motivation. Generally speaking, teachers always attract students with body posture, demonstration, good example/story, real life experiences, posing interesting or challenging questions. Now problem based learning and concept mapping are two popular strategies to be introduced in the class to stimulate students' interest.

Problem based learning uses problems to move students to acquire knowledge rather than through the exposition of discipline knowledge (Boud and Feletti 1991). This environment is frequently reported to increase student motivation, to develop their critical thinking skills and deepen their understanding of significant content (e.g., Sage and Torp 1997). Concept mapping will stimulate their interests because it logically links the new ideas with old knowledge in their mind with lines and nodes.

Add the opportunity of peer interaction and student involvement in the class as much as possible

Constructivists think that students will learn best when they are actively involved in the learning process, in class. At The University of Sydney, there are many examples of how to encourage peer interaction and students involvement in class. For example, in Mike King's lectures on educational theory, he often made use of group work to make our classmates think, discuss and report the group result. Group work can be effective to train learners' high-order learning skills, which are life-long learning skills such as critical thinking, problem-solving, cooperative learning, peer teaching, time management and oral presentation skills.

Another example is from the School of Physics where lecturers provide students with a personal response remote device in the class to transmit their answer to the lecturer's question. The questions are usually asking students to predict an outcome of a demonstration. With the predictions saved by the computer, the demonstration is done and then the answers predicted discussed by the lecturer. As the response system is anonymous, students are not embarrassed if they selected the wrong answer.

Pay attention to assignment design and GIVE feedback in detail and in time, not just a mark

Generally speaking, the purpose of an assignment is to consolidate the knowledge or to help students apply the knowledge into solving problems. So, we should consider the students' skills and abilities and prior experience. The assignment should provoke students to think and to solving problems. Before providing new tasks, the teacher should give feedback in detail and in a timely fashion. Entwistle, Hounsell, Macauley, Situnanyake and Tait, (1989) said that absence of adequate feedback is an important factor in student failure. Students need to have prompt and regular feedback on their academic progress, not just in the form of grades/marks, but also through detailed comments on the quality of their work. Effective learning depends on knowing precisely what may be wrong and how to overcome deficiencies (Hounsell 1987).

In science education, it is also important to create assignments for students to do by themselves since independent learning skills are also necessary for them.

Introduce peer assessment methods

Assessment drives learning and the quickest way to change student learning is to change the assessment system (Elton and Laurillard 1979). The assessment should be used to assist students in the learning process and to consolidate their knowledge, as well as to obtain a grade (Ramsden 1992).

Traditionally, self-assessment and teacher-assessment may be considered two effective methods to evaluate students. Peer-assessment (assessment of students by other students), however, is becoming more and more popular since 1996. Students assessed can get feedback from other students, which may be different from feedback from the teacher. Also assessing other students can help students improve their evaluating skills as well as critical thinking skill. Peer assessment and self-assessment should be encouraged so that students take responsibility for their learning.

Keep developing e-learning material to support teaching and learning

Technology-based learning materials potentially offer even greater advantages, both through almost instantaneous access to reference materials, and through the use of hypermedia techniques which allow progressively more detailed explanations and illustrations to be provided (Laurillard 1993). E-learning strategies are being used more frequently because they break the limitation of time and space and offer the opportunity of being updated immediately. E-learning supports students' flexible learning.

It is important that e-learning resources are evaluated by students and others and the feedback used to improve the resources. This is especially so for web-based courses which rely heavily on students working online either on their own or collaboratively with others.

Action 3: At the University level

It is crucial that we identify the difficulties and problems experienced by students during their time at the university. Research is needed to identify and quantify the experiences of students not only when they are in transition, but during the whole of their degree program. However, we should highlight the importance of first year research and practice. We need every faculty to consider and identify the first year academic orientation plan. We should explore how to run the tutorial system to be most helpful to students. A very recent study (Anderson 1997) has shown how the most effective tutors provide a climate within which students become relaxed and ready to contribute and then challenge the students to think more clearly and guide them towards a deeper understanding of the topics they are discussing. However, this would need time, ideas, a culture of change and cooperation between colleagues. However, in the context of the '211' reform plans, this can be done.

Conclusions

We need to continue to learn from the rich experiences discussed in research literature: research our own students and their learning; consider our own culture; practice in Chinese universities; and at last to promote the success of

all students (Tinto 1996). This is our responsibility of education and educators.

Acknowledgements

Dong Yan wishes to give grateful thanks to Mike King, Mary Peat, Mike Wheatland, Tim Bedding and other teachers at The University of Sydney who helped develop ideas and visions for the future during the four months of the staff development program. In addition thanks is given to the CSC (China Scholarship Council) for supporting this program.

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