I’m a girl, you’re a boy. You study Social Science, I study Natural Science: How different are we?

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Abstract

In this multiple case study (n= 8) with process orientation (Yin, 2003) in-depth interviews were conducted annually over a three-year period with undergraduate students from eight countries at an international university. They had been purposely selected to reflect a mix of learning approaches, gender and discipline areas. Interviews probed students about their instructional experiences, such as evaluation of teaching, assessment preferences and preparation, adaptation of learning approaches and plans for the future. The systematic content analysis was aimed at comparing responses across learning approaches, gender and discipline areas.

Results indicated commonalities across learning approaches, gender and discipline areas in terms of assessment preparation, certain elements of satisfaction with teaching, motivation for study and changes in career plans. Differences emerged concerning preferences of assessment methods, reasons for dissatisfaction with certain elements of teaching and the degree of adaptation of the learning approach depending on the course taken.

Keywords
Assessment, instruction, international students, change over time, multiple case study, learning approaches

Introduction

Much research concerning international students has focussed on the challenges they face in terms of intercultural learning or acculturation (e.g. Ellis, Sawyer, Gill, Medlin, Wilson 2005, Luzzo, Henao & Wilson 1996, Rahman & Rollock 2004, Ward, Leong & Low 2004), sense of identity of these students (e.g. Allan 2003, Dolby 2005, Grimshaw & Sears, 2008) and the corresponding need and implementation of support services (e.g. Andrade 2008, McClure 2007, Terkla, Etish-Andrews & Roscoe 2007). However, less research has focused on specific aspects of the instructional experience such as satisfaction with teaching experiences, preferences regarding assessment methods and preparation, changes in approaches to learning over time as well as their motivation as a precursor and plans for the future as a successor of their tertiary studies.

One of the early studies to point out the importance of good teaching for international students was reported by Gatfield, Barker and Graham (1999). They found that intellectual stimulation and access to lecturers which formed part of a construct of “academic instruction” were rated as being significantly more
important than guidance (incl. university handbook, career guidance) or campus life (incl. cultural activities, food and health services) for both American and international students.

Ramsay, Barker and Jones (1999) interviewed twelve local and eight international students to gain insights into positive and negative critical incidents that had an effect on the learning experiences in their first year of tertiary studies. The most mentioned positive critical incidents included the learning assistance centre, particularly for the international students, tutors/tutorials and study groups. The latter two, however, were also among the three most mentioned negative critical incidents, emphasizing the importance of how tutorials and group work were designed and implemented. The most frequently mentioned negative critical incident, however, related to lecturers and lectures, because students found them difficult to follow, either because of speed and complexity of language or because they found them to be dull.

Zhao, Kuh and Carini (2005) conducted a study of more than 71,000 American and 2,700 international students to compare the engagement in effective educational practices between the two groups. Results for first-year students saw international students reporting higher levels of active and collaborative learning as well as interaction with faculty than their American counterparts. For seniors, higher levels of academic challenge were still recorded by international students whereas the intensity of student interactions with faculty was no longer significantly different between international and American students. Likewise, American and international students were similar in their views of how supportive they found the campus environment. The two groups differed, however, with respect to their overall level of satisfaction in that international students were significantly less satisfied than their American peers both in their first year and as seniors.

In a study using the Delphi technique (Robertson, Line, Jones & Thomas 2000), concerning activities inside the university, 20 international students came to a consensus whereby they rated feelings of isolation and books being too expensive as being the most important problems, whereas different learning styles and employing strategies other than memorizing were perceived least important. In terms of language-related issues, lack of confidence in verbal skills and difficulty in writing essays were the two most important problems whereas lecturer speaking too fast or unclearly were the least significant issues. The 28 faculty members who were teaching these students came to the consensus that students’ poor concepts of multiple answers as well as poor critical thinking and analysis were the two most important problems, whereas issues concerning technical language were ranked as being the least important.

In terms of changes in undergraduate students’ learning approaches, Gow and Kember (1990) analyzed data from first- and final-year degree students of various disciplines using multiple regression with age, year of study and time since leaving school as predictors. Results showed that older students used the deep learning approach significantly more often than younger students. In addition, students at the beginning of their studies appeared to prefer an achieving approach compared to students who were further advanced in their
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In addition, the more time that had elapsed since leaving school the less students displayed characteristics of the surface approach. In another study, Kember and Gow (1994) reported that younger students showed a preference for a more superficial approach in a comparison of first, second and third year students. He also found that first-year students showed significantly higher scores on the deep approach to learning than second and third year students.

Watkins and Hattie (1981) included academic year as a variable in a multiple analysis of variance of data from a sample of undergraduate students. Contrary to the results of the aforementioned studies they found that the longer students had studied the more they displayed characteristics of the deep approach to learning.

Biggs (1987) reported some changes in learning approaches over time. He observed a general decline in the deep approach from the first to final year of study in a sample of undergraduate students in Australia but no significant changes in the other learning approaches. He suggested that this decline was a consequence of the high workload which students experienced that resulted in a pragmatic reduction of the motives and strategies associated with deep learning.

Zeegers (2001) followed 200 students in a chemistry class over a 30-month period and tested them on five occasions. Results showed a significant decline in the achieving strategy and a significant increase in the surface strategy. For the deep approach no statistically significant changes emerged over time.

Regarding motivation, Ramburuth and McCormick (2004) reported differences between 78 newly arrived international students from Asia and 110 domestic students at an Australian university whereby domestic student showed a higher use of deep strategies and surface motivation while Asian students reported a higher deep motivation, that is, the quest for genuine understanding of the subject matter.

Altbach (2004) also mentions the fact that many students, especially from developing countries, are leaving their home countries to pursue areas of study that are either not offered or which have only a very limited number of places at their domestic universities. However, Altbach (2004) also emphasizes the desire of many international students to obtain degrees in order to gain entry to further study or desired careers.

As regards the career plans of international and domestic students, Singaravelu, White and Bringaze (2005) conducted a study to compare the career plans and the extent to which families, fathers, counsellors and friends influenced these plans between 70 domestic, 94 Asian international and 50 non-Asian international students of a linguistics department in a US university. They found that the three groups were similar in terms of how certain they were regarding their career plans. However, they differed with respect to whether family, school counsellors or friends influenced their plans. Thus, domestic undergraduate students reported the strongest influence by friends, whereas for non-Asian students, reported the strongest influence by school counsellors as was the case for Asian students while family and fathers had less influence. Other analyses indicated no gender differences in career plan certainty across the three groups while the intention to finish the degree was highly correlated
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with the certainty concerning career plans, as could be expected. However, Manese, Sedlacek and Leong (1988) found that female international undergraduate students were more likely to seek career counselling than their male counterparts.

In summary, relatively few studies have investigated specific aspects such as satisfaction with teaching experiences, preferences regarding assessment methods and preparation, changes in approaches to learning and motivation and career plans of international undergraduate students. The current study seeks to contribute to the understanding of these aspects through the analyses of in-depth interviews of eight undergraduate international students who differ in terms of culture, gender and learning approach.

Objective

The objective of the study was to identify differences and commonalities across learning approaches, gender and disciplines regarding international undergraduate students' teaching and learning experiences, in terms of:

a) Evaluation of teaching
b) Assessment methods preferences
c) Assessment preparation
d) Adaptation of learning approach

In addition, the study sought to compare systematically students' motivation for tertiary studies and plans for the future as these were considered important precursors and successors of students' tertiary experiences.

Methodology

A multiple case study (n= 8) with process orientation (Yin, 2003) was adopted for this investigation which formed part of a larger longitudinal project aimed at investigating approaches to learning and values of students at an international university in Germany where English was the language of instruction from 2004 to 2007 (see Lietz & Matthews, 2010; Matthews, Lietz & Darmawan, 2007).

The “typical case” (Yin, 2003) approach meant that, for each of the four approaches to learning (i.e. deep, achieving, deep-achieving and surface), one student was selected as a “typical case” (for details on case selection, see “sampling” below). In addition, for each approach to learning, one male and one female student were selected in order to allow comparisons in the analyses according to gender. A by-product of this sampling design was an even number of students from the natural sciences and the social sciences in that four students were enrolled in a Bachelor of Science program and four students were enrolled in a Bachelor of Arts program.

Sampling
Interviewees were selected according to a purposive sampling technique (Sarantakos 1998). From the total pool of 137 students who had participated in the first quantitative wave of the project, eight students were drawn who, based on their responses to an item battery developed by Biggs (1987), could be identified as following one of four approaches to learning, namely the achieving, the deep, the surface or the deep-achieving approach. In order to be able to compare responses by gender, four male students and four female students were selected.

The steps taken to select the interviewees based on learning approach and gender are described below.

1st step: The raw scores for the six subscales, namely achieving motivation, achieving strategy, deep motivation, deep strategy, surface motivation, and surface strategy were calculated for all participants of the quantitative phase of the study. As each subscale consisted of seven items, raw scores on each subscale could range from seven to 35.

2nd step: Information from the tables of norms reported by Biggs (1987) was used in order to ascertain how “typical” a score was. Four norm tables were considered to be the most appropriate for participants in the current study, namely for University Arts females and males (both Biggs 1987, p. 31) as well as for University Science males and females (both Biggs 1987, p. 34).

In these norm tables, raw scores were translated into deciles which, in turn were used to classify a person into being “below average” (deciles 1, 2, 3), “average” (deciles 4, 5, 6, 7), or “above average” (deciles 8, 9, 10). Then, “below average was assigned a “1”, “average” a “2” and “above average” a “3”. Information on this classification for the students that ended up being selected for inclusion in the sample is provided in Table 1.

3rd step: Ideally “typical” cases would have been participants who were above average (i.e. a “3”) on the subscales relating to their learning approach (e.g. deep motive and deep strategy for the deep approach) while being below average (i.e. a “1”) on the other subscales. However, an examination of the classification information revealed that few such ideal cases existed. Instead, patterns whereby students were above average on two related subscales but also average on other subscales, indicating that they were leaning towards more than only one approach.

4th step: A decision was made to select participants that were closest to the ideal case. In general, this meant that the highest scorers for all learner types were highlighted. For example, a student for whom two “3”s were recorded for the deep strategy and the deep motive while being as low as possible on all other subscales (but not necessarily a “1”) would fall in the “deep approach” category.

5th step: The highest scorers for each learner type were separated into male and female students and the highest scorer was selected for each
gender. Where more than one student showed a similarly high score, one participant was randomly selected. Table 1 shows the classification on each subscale for those participants that were selected based on their learning approach and gender.

### Table 1  Participants based on learning approach and gender

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Surface motive</th>
<th>Surface strategy</th>
<th>Deep motive</th>
<th>Deep strategy</th>
<th>Achieving motive</th>
<th>Achieving strategy</th>
<th>Gender</th>
<th>Approach to learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>f</td>
<td>Achieving</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>m</td>
<td>Achieving</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>m</td>
<td>Deep-achieving</td>
</tr>
<tr>
<td>Di</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>f</td>
<td>Surface</td>
</tr>
<tr>
<td>G</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>m</td>
<td>Surface</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>f</td>
<td>Deep</td>
</tr>
<tr>
<td>J</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>f</td>
<td>Deep-achieving</td>
</tr>
<tr>
<td>R</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>m</td>
<td>Deep</td>
</tr>
</tbody>
</table>

It can be seen that only interviewees “I” and “R” matched the ideal typical case in that they were rated above average on two subscales and below average on the other four subscales. All others had average ratings (i.e. “2”s) on at least one of the other subscales. The highest score for a male following the surface approach showed a pattern that was furthest from the ideal case in that he showed average ratings on five subscales and a “3” for the surface motive only. Hence, he might be considered more of a “mixed” type than a straightforward “surface learner”. These characteristics need to be kept in mind when analyzing the information obtained from the interviews.

As further contextual information, Table 2 provides information on selected characteristics of the interviewees. As can be seen, seven of the eight interviews were sojourner students (Ward, Leong & Low, 2004) who had left their country of birth to undertake tertiary studies elsewhere. What is further interesting to note here is that, although the interviewees had been selected on the grounds of learning approach and gender, four of them were enrolled in a Bachelor of Science (BSc) while four were enrolled in a Bachelor of Arts (BA). Interestingly, two of the learning approaches grouped together for each type of Bachelor program: Students who followed the deep and the achieving approach were enrolled in a BSc program whereas students who followed the deep-achieving and the surface approach were enrolled in a BA program. This coincides with results of the multivariate analyses of the quantitative component of the study which indicated that students enrolled in the BSc program followed the deep learning approach to a greater extent than students enrolled in the BA program (Lietz & Matthews, 2006).

### Table 2  Characteristics of interviewees, ranked by GPA*

*GPA: Grade Point Average*
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<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Approach to learning</th>
<th>Overall GPA*</th>
<th>Enrolled in BSc or BA**</th>
<th>Country of birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>***</td>
<td>Deep</td>
<td>1.42</td>
<td>BA-&gt; BSc</td>
<td>Czech Republic</td>
</tr>
<tr>
<td>J</td>
<td>Deep-achieving</td>
<td>1.50</td>
<td>BA</td>
<td>Germany****</td>
</tr>
<tr>
<td>D</td>
<td>Deep-achieving</td>
<td>1.62</td>
<td>BA</td>
<td>Bulgaria</td>
</tr>
<tr>
<td>A</td>
<td>Achieving</td>
<td>1.63</td>
<td>BSc</td>
<td>Poland</td>
</tr>
<tr>
<td>G</td>
<td>Surface</td>
<td>2.05</td>
<td>BA</td>
<td>Russia</td>
</tr>
<tr>
<td>Di</td>
<td>Surface</td>
<td>2.31</td>
<td>BA</td>
<td>Turkey</td>
</tr>
<tr>
<td>B</td>
<td>Achieving</td>
<td>2.69</td>
<td>BSc</td>
<td>Macedonia</td>
</tr>
<tr>
<td>R</td>
<td>Deep</td>
<td>3.14</td>
<td>BSc</td>
<td>Romania</td>
</tr>
</tbody>
</table>

Notes:
* GPA after first semester. The university’s grading system ranges from ‘1.00’ indicating highest performance to ‘4.67’ indicating a fail.
** BA Bachelor of Arts (with majors in Art and Literature, Integrated Politics and History, History, Integrated Social Sciences, Psychology); BSc Bachelor of Science (with majors in Biology, Biochemical Engineering, Biochemistry and Cell Biology, Chemistry, Earth & Space Science, Computer Science, Electrical and Computer Engineering, Mathematics, Physics)
*** Changed to BSc by after the first year.
**** As the international university was located in Germany, this student should be considered a domestic student.

Thus, the resulting sample was a diverse set of students in terms of their learning approaches, discipline areas, gender and cultural background. As a consequence, while any results would not be generalizable in the statistical sense, any commonalities emerging from the analyses could be considered to be rather robust findings (Lincoln & Guba 2000, Olesen 2000).

**Interviewing**

Interviewers utilized the interview guide approach as outlined by Quinn-Patton (2002). This meant that – on each of the three occasions – a common interview schedule (available upon request from the first author) was followed which ensured that all interviewees addressed the same questions to facilitate the subsequent comparison of responses. At the same time, the interview schedule was flexible in that, if interviewees addressed a question at another point during the interview without it having been asked explicitly, the interviewer would skip that question later on in the interview in order to avoid repetition. In addition, interviewers did not interrupt respondents to get them “back on track” in order to facilitate the free flow of the conversation. Finally, interviewers were allowed to explore further potentially interesting information an interviewee would mention by asking follow-up questions. In that way, “the same basic lines of inquiry [were] pursued” and interactions were kept focused while “individual perspectives and experiences” were free to emerge (Quinn-Patton, 2002, p. 344). All interviews were recorded with a tape or MP3 recorder with the informed consent of participants.

**Transcription**
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Subsequently, interviews were transcribed literally, allowing for departures from standard orthographical rendering in a meaningful and coherent manner (e.g. transcribing the sound of various dialects, like “you” turning into “ya”). This type of transcription also takes account of additional information like the distribution of pauses - as reflections during the planning of utterances, for example - and other interruptions of the speech flow both inside or between words and in larger speech structures (Ehlich 1993). In order to check the accuracy of the transcripts, two interviews for each interviewer were not only transcribed by the person who had interviewed the participant but also by the second interviewer. The research coordinator then read the two independently generated transcripts in order to check for omissions or discrepancies. However, only minor divergences, mostly in the form of spelling mistakes (“then” rather than “than” or “it’s” when it should be “its”) were found.

Coding

For the purpose of coding, transcripts were imported into MaxQDA (Kuckartz 2001). Codes were developed inductively (Boyatzis 1998) because it allowed the two coders to stay close to the data and, at the same time, required “careful attention to all of the issues and processes used in [other possible] approaches” (Boyatzis, 1998, p. 45). For each of the three occasions, one of the coders developed a coding scheme after reading two randomly selected transcripts and proceeded to apply these codes. In the next step, the second coder applied the coding scheme to the same two transcripts and marked any problems with the application of the coding scheme and suggestions for additional codes or the rephrasing or existing ones. At a joint meeting, the discrepancies, problems and suggestions were discussed in order to arrive at a common understanding of all codes and their application.

Then, both coders proceeded to code the remaining six interviews. At a second meeting, results of the coding were compared and, for each interview, the number of diverging codes counted. This number of discrepancies was then set in relation to the number of options per code (two as all codes were either applied with a “yes” or not applied with a “no”) as well as the total number of codes applied. This resulted in an inter-coder agreement that ranged from 60 per cent to 67 per cent for the 2005 interviews, from 71 to 86 per cent for the 2006 interviews and from 69 to 83 per cent for the 2007 interviews. According to Landis and Koch (1977, p.165) most of the inter-coder agreement in this study could be considered substantial (from 61 to 80 per cent). The complete coding schemes are available upon request from the first author.

Analyses
I'm a girl, you're a boy. You study Social Science, I study Natural Science: How different are we?

The focus of the analyses was on identifying patterns of responses regarding students' teaching and learning experiences across four learning approaches, two genders and two disciplinary areas. For this purpose and in order to reduce the large amount of data, the following scheme in the analysis and reporting of results was adopted.

First, it should be remembered that, for each code, a decision was made to either apply or not apply it. Second, a number of decision rules were set up in order to evaluate commonalities and differences across learning approaches, gender and disciplines.

For the learning approaches, a difference was considered noteworthy if two interviewees representing the same learning approach had mentioned an aspect while none of the other interviewees had raised the same aspect. A difference was also marked if two interviewees representing one learning approach did not mention an issue but the remaining six interviewees all mentioned that issue or if both interviewees of two learning approaches mentioned an issue but none of the other four did. These three occurrences were considered an indication of differences between the learning approaches. A commonality, on the other hand, was recorded if an aspect was raised by at least four students, with each of the four different learning approaches being represented at least once. This was considered an indication that a certain aspect could be observed across all learning approaches.

For gender and discipline, which both had four students for each possibility, a difference was considered systematic and noteworthy if no or only one person from one gender or discipline mentioned an aspect and three or four of the other gender or discipline did not mention this aspect. A commonality was noted when at least two people of each gender or each discipline mentioned a particular aspect.

Findings

The results of the study are summarized in Table 3. The particular aspects under review, namely the a) evaluation of teaching, b) assessment methods preferences, c) assessment preparation, d) adaptation of learning approach, e) motivation for tertiary studies and f) future plans is given in the left-hand column. The next three columns summarize commonalities (‘C’) and differences (‘D’) for the four learning approaches (‘DLA’=deep learning approach, ‘ALA’=achieving learning approach, ‘DALA’=Deep-achieving learning approach and ‘SLA’=surface learning approach), gender (‘F’=Female, ‘M’=Male) and disciplines (‘SHSS’=School of Humanities and Social Sciences, ‘SES’=School of Engineering and Science).

| Table 3 | Summary of results regarding students’ teaching and learning experiences across learning approaches, gender and disciplines |
### Learning approach

<table>
<thead>
<tr>
<th>Evaluation of teaching experience</th>
<th>C: Satisfaction</th>
<th>D: Reasons for dissatisfaction, i.e.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DLA: More satisfied if relaxed, small group with personal teacher-student interaction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALA: Dissatisfied when profs present simple concepts as overly complex or lack competence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DALA: Dissatisfied if professors do not keep materials up-to-date and did not engage with topic in-depth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SLA: Mismatch between teaching style and course format (seminar, lecture)</td>
<td></td>
</tr>
</tbody>
</table>

### Gender

<table>
<thead>
<tr>
<th>C: Elements of both satisfaction and dissatisfaction.</th>
</tr>
</thead>
</table>

### Discipline

<table>
<thead>
<tr>
<th>C: Satisfaction</th>
<th>D: Reasons for dissatisfaction, i.e.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHSS: Dissatisfaction with profs</td>
<td></td>
</tr>
<tr>
<td>SES: Dissatisfaction with institutional/administrative set-up</td>
<td></td>
</tr>
</tbody>
</table>

### Assessment methods preferences

<table>
<thead>
<tr>
<th>D: SLA, AL=Quizzes DLA, DALA=Not quizzes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>D: F like essays and lab reports M do not like essays or lab reports</th>
</tr>
</thead>
</table>

### Assessment preparation

<table>
<thead>
<tr>
<th>C: No change desired or intended</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>C: Read for knowledge expansion in essay prep; assessment prep more rigid than prior to undergrad studies</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>C: Use own notes for exam preparation</th>
</tr>
</thead>
</table>
**Table 3** Summary of results regarding students’ teaching and learning experiences across learning approaches, gender and disciplines (ctd.)

<table>
<thead>
<tr>
<th>Learning approach</th>
<th>Gender</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptation of learning approach depending on subject and over time</td>
<td>C: Same approach for course in major and home school elective; change to surface learning for other school electives.</td>
<td>C: SHSS+SES review material regularly, regardless of the subject, and rely on surface strategies.</td>
</tr>
<tr>
<td></td>
<td>C: No changes over time mentioned</td>
<td>D: F: Same learning approach; no mention of investing less time in courses outside major.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M: No mention of same learning approach; mentioned investing less time in courses outside major.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D: F: No changes mentioned</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M: More strategies of surface-type learning over time</td>
</tr>
<tr>
<td>Motivation for tertiary studies</td>
<td>C: Understanding first, degree second, high GPA third</td>
<td>C: Understanding first, degree second, high GPA third</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D: SES: Mentioned difficulty in coming up with ranking.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SHSS: No mention of difficulty in coming up with ranking.</td>
</tr>
<tr>
<td>Future plans</td>
<td>C: Change occurred mainly in terms of future career plans and the way students saw themselves in the professional world.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

C - Systematic commonalities  
D - Systematic differences  
DLA - Deep learning approach  
ALA - Achieving learning approach  
DALA - Deep-achieving learning approach  
SLA - Surface learning approach  
F - Female students  
M - Male students  
SHSS - Social science and humanities students  
SES - Natural science and engineering students
First, comparisons were aimed at comparing the evaluation of teaching experiences of participants at the end of their first year of studies. Results revealed differences between the learning approaches. The students following the surface approach stated that professors overrate the readings’ depth and perceived a mismatch between several professors’ teaching styles and their courses’ formats (i.e. seminars or lectures). Learners following the achieving approach also focussed on their instructors’ deficiencies: Professors either presented simple concepts in an overly complex manner, or they did not show sufficient competence and failed to keep the study process interesting. Deep-achievers were not happy when their professors did not keep their teaching materials up-to-date or engaged with the topics at a superficial level. Finally, deep learners reported satisfaction when they encountered a more relaxed class atmosphere, mostly in smaller groups with a lot of personal interaction with the instructor and less pressure.

In terms of gender there were commonalities in that both male and female students expressed satisfaction as well as dissatisfaction with their teaching experiences. The comparison of teaching experiences by disciplines revealed that six students from both schools found teaching at the university satisfactory but were also critical. Social science students would often criticize their professors’ individual performance (e.g. “[Professor’s name] always stresses that media science is something new and, thanks to her course, I sort of got the limits of where it goes to and it looked a bit too restricted to me”), while natural science students’ criticisms were more frequently aimed at the institutional/administrative setup of their curricula (e.g. “I learned a lot of stuff...but I couldn’t learn any of [it] well, because [the courses] were just way too many...but this is typical for [our university]”).

Then, analyses were aimed at comparing students’ preferences regarding assessment methods. Quizzes were mentioned by both surface and achieving learners as their most preferred form of assessment but not by the representatives of the two approaches related to deep learning. Female students showed significantly higher preference for longer written assessments (essays or lab reports) while both genders showed considerable dislike for final exams and regular homework. When looking at preference for assessment methods by discipline, science and engineering students expressed their preference for written types of assessment like lab reports compared with social science and humanities students who preferred presentations. Half of each discipline group also mentioned regular quizzes.

As regards assessment preparation, a number of commonalities across learning approaches emerged. In their first interviews which occurred at the end of their first year of studies, students from all learning approaches said that they had not changed their way of preparation. Furthermore, one person from each learning approach said that they would not change their way of preparing for assessments. One difference regarding the assessment preparation emerged for the surface approach in that these two interviewees did not mention that their reading for presentations was aimed at grades or knowledge but at covering
material sketched either by “going through the reader and through the pages” or by researching a topic “really superficially”.

A comparison by gender for this aspect revealed that three out of four males and only one female reported a desire to increase the time they spent preparing. Apart from that, no systematic gender differences were evident. Among the commonalities was the tendency to read for knowledge expansion when preparing for an essay and the general rigidity of assignment preparation methods at university when compared to earlier educational experiences. A commonality across disciplines was that students used their own notes in preparing for exams preparation.

Two years into their studies, interviewees were asked about whether or not they used different learning strategies depending on whether a course was part of their major, a course within their school but outside their major (“home school elective”) or a course in the respectively “other” school (“other school elective”). The only systematic result of this aspect for the learning approaches was that students from all four mentioned that they used the same approach for their home school electives as for the courses within their major, although they frequency of study might differ. Said one interviewee: “I always study more for my home-school electives [than for my other-school electives]. How do I approach them? Well, I try to study as regularly as I can.” Another commonality was found in that when studying for “other school electives”, students from all learning approaches mentioned using surface learning strategies and did not mention the use of deep learning strategies. “I painfully crammed all the slides,” in the words of another interviewee. “[…] in the other courses that wouldn’t really happen unless it is something that I really don’t understand and is important and can be asked in the exam.” This clearly showed that the student employed rote learning, a surface strategy that was uncharacteristic for her approach otherwise.

For gender, the differences prevailed in that three female students reported using the same learning strategies in all their courses compared to only one male student who did the same. A typical response was:

“Well, of course you are asked to do different things. So, if you are asked to do a lot of reading, there you have to read, whereas if you are asked to solve [problems], there you have to do [problems]. But, you know, the things that I was trying to get out of the questions, I think, were kind of the same. […] I did not go…‘now this is a humanities course; now I have to behave differently’…I took the things in a very similar way.”

Moreover, all male students reported investing less time in courses outside their major whereas none of the female students mentioned such a difference. Comparisons for the two discipline areas were mixed: Natural science students reported investing less time in their out-of-major courses. In addition, six students reported a desire to review material regularly, regardless of the subject.

At the end of their three-year undergraduate degree, students were asked whether or not they had noticed changes in their approach to studying over time. Six students from all four learning approaches responded that they had not changed their approach to studying. In the words of a social science student: “I don’t see a fundamental difference […]. You want to do something, so you take a
look at the problem, you try to see the whole the problem, rather than just a small part, understand what the problem is about.” This approach is then extrapolated to all courses. Gender differences did emerge in that none of the female students reported a change in their learning approach while two male students reported adopting a more surface-like approach to their studies. One of them explained this by the diminished importance he attached to grades and the consequently shorter time he was willing to devote to preparation: “...personally I would really like to be able to do that [doing all the required reading and letting it sink in] much more, but I realized that I can’t and right now I am pretty much ok with this”.

However, no disciplinary differences emerged in that students from both schools reported having not changed their approaches to learning.

One question aimed at identifying whether students’ tertiary education pursuit was motivated differently required interviewees to rank-order the following three motivations in order of importance (a) high grades, (b) obtaining a degree and (c) understanding what they learnt. One interviewee from each of the four learning approaches put the three aims in the order understanding, degree, grades with decreasing importance, thus not supporting the assumption that students from different learning approaches would systematically differ in their rankings. The same ranking was applied by two male and two female students. The remaining two female students still put understanding first but ranked a high GPA as more important than a university degree. One male student ranked grades and a degree equally important but still behind understanding as the most important goal. The comparison by school also showed commonalities in that two students from each school supported the ranking understanding – degree – high grades. Two social science and one natural science student swapped grades and degree, and one natural science student did not produce a clear ranking. Two natural science respondents reported difficulties in coming up with the ranking, while social science students did not have problems with the task.

As the final question of the last interview, one month prior to graduation, students were asked whether their plans for the future had changed over the three-year period and, if so, what had shaped them. The analysis by learning approach revealed that both surface learners but none of the other interviewees mentioned that their old ambitions had been curtailed when looking at their development of plans after graduation over the duration of their studies. In their words, the initial goals of continuing straight away with a Master’s degree or starting their own business and “conquering the world” were substituted by a need to go home and relax or find “a job somewhere”. Interesting, while family, the university and other things such as stress or stimulating internships and inspiring professors were mentioned as having influenced their current choice of path for the future, with one exception, none of the interviewees stated friends or peers as having had an impact. In terms of gender, both male and female students tended to be quite certain in their future plans, with the majority of them aiming at graduate studies. Five out of the eight interviewees acknowledged the university’s influence on their choice of path. Family and especially friends were the least important factors in choosing the next step in life. Unlike any of the male respondents, all four female students mentioned additional reasons for their
career choices, including a mentor’s influence or an eye-opening practical experience. When responses were compared by discipline areas, all natural science students planned to take up graduate studies whereas only one social science student had similar plans. The three other social science students wanted to apply their newly acquired knowledge in a job first or had not decided what to do after graduation.

Discussion

The finding that students consistently rank understanding as the most important motivation for tertiary studies reiterates the importance of good teaching as already emphasized by Gatfield, Barker and Graham (1999). Together with the findings of Ramsay, Barker and Jones (1999) this illustrates the desirability of tertiary educators to design learning experiences that are intellectually stimulating, with explicit task outlines and expectations which are delivered in a clear and straightforward manner.

No consistent differences emerge in the current study regarding levels of satisfaction which is in contrast with previous research, for example the study reported by Zhao, Kuh and Carini (2005). This might, however, be a consequence of the design of the study which did not (a) employ Likert-type rating scales which have repeatedly been shown to be prone to systematic differences across cultures (e.g. Johnson, Kulesa, Young & Shavitt 2005, Smith & Fisher, 2006, Walker 2007) and (b) compare two or three cultural groups of students which might amplify cross-cultural differences.

Findings concerning the adaptation of learning approach depending on subject and over time are in line with previously reported results (Biggs 1987, Gow and Kember 1990, Kember and Gow 1990, Zeegers 2001). Thus, gender differences are apparent in that male students report adopting more strategies of surface-type learning over time and spending less time studying for courses outside their major whereas female students report applying the same learning approach over time and for different courses. Common to both disciplines is that no changes over time are mentioned whereas differences are observed in that natural science students mention spending less time on courses outside their major whereas social science students do not mention such adjustments.

Albeit not with specific reference to career counsellors, results show the importance of the university with respect to students’ plans for the future. Findings demonstrate the consistently greater importance of the university than that of family or friends, a result confirming the research reported by Singaravelu, White and Bringaze (2005). Maybe it is also due to the lack of not being specifically tied to career counselling that, unlike in the study of Manese, Sedlacek and Leong (1988), no gender differences concerning this aspect were found in the current study.
Conclusion

Unlike other studies, this investigation of instructional experiences in higher education took cultural diversity as a given in that the eight participants in this multiple case study had come from different cultures to obtain their undergraduate degree at an international university. Against this background of cultural diversity, participants were purposefully selected to be additionally heterogeneous in terms of gender, learning approaches and discipline areas of study. As a consequence of this design it was argued that any overall commonalities which emerged could be considered robust and applicable across cultures, learning approaches, gender and disciplines. Moreover, commonalities and differences that would emerge for learning approaches, gender and disciplines could be regarded as not being systematically related to cultural background. In this way, the study sought to go beyond the usual line of inquiry which tends to contrast two or three cultural groups. Instead, it sought to contribute to the understanding of undergraduate students’ instructional experiences regardless of cultural background and to focus on comparisons by learning approach, gender and discipline.

Results showed overall commonalities in terms of motivation for tertiary studies and plans for the future. In terms of motivation, students across learning approaches, gender and disciplines ranked consistently understanding to be of highest importance, followed by the pursuit of a degree and high achievement third. In terms of plans for the future most participants and all of the natural science students planned to take up graduate studies. In addition, the university was most consistently mentioned as a factor influencing students’ plans whereas family and friends were cited the least.

Commonalities also prevailed for assessment preparation in that no changes were desired or intended at the end of the first year in terms of how to prepare for assessment regardless of students’ learning approaches. Both genders mentioned reading for knowledge expansion during essay preparation and that their assessment preparation had become more rigid when compared to high school days, mainly due to greater demands on time at university. The use of own notes for exam preparation was mentioned consistently across disciplines.

In conclusion, implications for practice stemming from this research relate to strengthening students’ tried and tested assessment preparation which they have experienced as successful for themselves. In addition, universities have to be aware of their impact on undergraduates’ plans for the future as they appear to be generally more important than family or friends. Finally, results of this study emphasize that student should be considered as seeking understanding over and above degrees or high achievement. Thus, tertiary educators might be well advised to take this quest for understanding as a basic assumption rather than dismissing students’ motives as what they perceive as less honourable motives for tertiary studies.
In terms of implications for future research, the study has demonstrated what can be learnt if cultural diversity between students is taken as a given in the globalized context in which tertiary education finds itself nowadays. Further studies taking this view with different foci might contribute to extending the body of knowledge regarding learning and teaching in higher education which lies beyond the cultural divide.
I'm a girl, you're a boy. You study Social Science, I study Natural Science: How different are we?

References


