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**Title:** Approaches to learning among occupational therapy undergraduate students: A cross-cultural study

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## Abstract

**Background:** Students may adopt various approaches to academic ~~study and~~learning. This may be influenced by culture, approaches to teaching and assessment methods that are used, and the academic field of study. Occupational therapy students' approaches to study and the impact of cultural context have not been formally investigated.

**Aim:** to examine the approaches to study adopted by undergraduate occupational therapy students from four different cultural settings.

**Method:** 712 undergraduate occupational therapy students (*n*= 376 from Australia, *n*=109 from Hong Kong, *n*=160 from Norway, and *n*=67 from Singapore) completed the Approaches and Study Skills Inventory for Students (ASSIST). A one-way analysis of variance (ANOVA) was conducted to compare the ASSIST subscales for the occupational therapy students from the four countries.

**Results:** Post hoc comparisons using the Tukey HSD test indicated that the mean scores for the *Strategic* approach were significantly different between Australia and the other three countries. The mean scores for the *Surface* approach were significantly different between Australia and Hong Kong, and Hong Kong and Norway. There were no significant differences between the *Deep* approach to studying between Australia, Norway, Singapore and Hong Kong.

**Conclusion & Implications:** Culture and educational context do appear to impact the approaches to study adopted by undergraduate occupational therapy students. Academic and practice educators need to be cognisant of what approaches to studying the students they work with adopt.


## Introduction

Learning in the tertiary environment involves achieving conceptual changes (Reid, Dahlgren, Dahlgren, & Petocz, 2011). Through education, students become "autonomous and responsible thinkers" who are "critically reflective of one's own assumptions and to engage effectively in discourse to validate one's beliefs through the experiences of others who share universal values" (Meizirow, 1997, p. 8-9). Consistent with this conceptualisation of adult education, recent research in occupational therapy education recognises that the goal of occupational therapy education is to "develop higher-order thinking, collaboration with others, civic responsibility and clinical reasoning" (Hooper, King, Wood, Bilics, & Gupta, 2013, p. 14). To achieve further insights about this issue, research is needed to explore how occupational therapy students study during their entry-to-practice studies (American Occupational Therapy Association [AOTA], 2014; Mitchell, 2015).

Approaches to studying is defined as the process of learning in everyday academic situations and is thought to be responsive to perceived task demands such as teaching and assessment methods (Entwistle, 2007). A learner is thought to adopt three qualitatively different approaches to study, being a *deep* approach, a *strategic* approach, and a *surface* approach (Entwistle & Ramsden, 1983). A *deep* approach is associated with the intention to understand the learning material and to relate concepts to evidence and experiences; a *strategic* approach is identified as adopting organised efforts to study motivated by a desire to achieve higher grades; and a *surface* approach is linked to rote learning with the goal to reproduce the information in written examinations (Biggs & Tang, 2007; Donnison & Penn-Edwards, 2012).

Approaches to studying are generally considered to be closely related to a student's learning outcomes (Entwistle, 2007). Among healthcare students, *deep* and *strategic* approaches are generally associated with better learning outcomes when compared with the *surface* approach. This includes a higher Grade Point Average (GPA) (Brodersen, 2007;

May, Chung, Elliott, & Fisher, 2012; Reid, Evans, & Duvall, 2012; Ward, 2011a, 2011b), better clinical examination outcomes, better performance on fieldwork education placements (Healey, 2008; Tiwari et al., 2006), and increased patient satisfaction (May et al., 2012).

Entwistle and Ramsden developed a series of measurements evaluating students' approaches to studying in higher education (Entwistle & McCune, 2004), including the *Approaches and Study Skills Inventory for Students* (ASSIST) (Tait, Entwistle, & McCune, 1998). The ASSIST includes a 52-item questionnaire of students' approaches to studying, which has become a popular instrument used in research investigating study approaches amongst students including those enrolled in health professional courses. These studies were predominantly carried out within one learning culture and context, such as in Australia (Brown, Wakeling, Naiker, & White, 2014), Canada (Aaron & Skakun, 1999), Indonesia (Rochmawati, Rahayu, & Kumara, 2014), Malaysia (Liew, Sidhu, & Barua, 2015), Sri Lanka (Samarakoon, Fernando, Rodrigo, & Rajapakse, 2013), the United Kingdom (Brodersen, 1997; Reid, Duvall, & Evans, 2005; Richardson, Dawson, Sadlo, Jenkins & Mcinnes, 2007) and the United States (May et al., 2012; Ward, 2011a, 2011b). However, rarely were studies conducted with occupational therapy students where their study approaches across cultures and learning contexts were compared.

There is a lack of occupational therapy research investigating students' approaches to studying. A few studies have investigated occupational therapy students' learning styles (which are considered traits) rather than approaches to studying (Doyle & Jacobs, 2013; French, Gosgriff, & Brown, 2007; Landa-Gonzalez, Velis, & Greg, 2015; Manee, Nadar & Jahrami, 2013; Robertson, Smellie, Wilson & Cox, 2011; Titloye & Scott, 2002). Svidén (2000) used a phenomenographic approach and found that the approaches to studying described by Entwistle and Ramsden (1983) can also be applied to occupational therapy students. Using the *Approaches to Studying Inventory* (ASI) (Entwistle & Ramsden, 1983),

the predecessor version of the ASSIST, Chapman, Watson and Adams (2006) followed-up one cohort of British occupational therapy students through their three years of study (*n*=36) and found no statistically significant changes in students' use of a *deep*, *strategic* or *surface* approach at the group level during the three years of their coursework enrolment.

Using the short form of ASI, Watson, Chapman, Adams and Nila (2006) conducted the only cross-cultural and international study comparing the approaches to studying among British and Bangladeshi occupational therapy students by year level. Watson et al. (2006) found that Bangladeshi students (*n*=46) demonstrated a significantly higher tendency for the *deep* approach to learning than British students (*n*=138). Watson et al. (2006) called for increased cultural awareness in occupational therapy education in the multicultural environment. Comparing the students from two distinct cultural groups from two equally distinct learning environments, rather than by year levels, might have provided more meaningful insights as to the similarities and differences of students' approaches to studying. Their study could also be strengthened by using a larger sample size.

Research studies in the tertiary educational context outside occupational therapy and other healthcare professions have found that students' approaches to studying were influenced by the teaching and assessment environment, cultural orientation of the institution, and academic subject area (Coffield, Moseley, Hall, & Ecclestone, 2004; Entwistle, 2007). Do occupational therapy students from different cultural backgrounds and learning contexts approach their studies similarly or differently? The answers to these questions will provide insight into future course design in occupational therapy education to better facilitate learning by understanding and accommodating the diverse needs of students. This will be particularly useful in the context of increased globalisation in occupational therapy education, which has been proposed by the World Federation of Occupational Therapy (WFOT; 2011). Byrne et al. (2004) stated that research into study approaches needs to be conducted across more than two

universities to capture the diversity of students. The current study seeks to provide insights about the similarities and differences of occupational therapy students' study approaches across four universities in the international context.

The aim of the current study was to compare the study approaches used by undergraduate occupational therapy students across cultures. The following research question was posed: among undergraduate occupational therapy students studying in Australia, Hong Kong, Norway, and Singapore, are there differences in their approaches to studying, as measured by the ASSIST?

## Method

### Participants and Recruitment Procedures

Ethics approval for the study was obtained from the Institutional Human Research Ethics Review Board at each participating educational institution in Australia, Hong Kong and Singapore. In Norway, due to the nature of the data collected, no formal ethics approval was required, instead approval to conduct the study was granted by the Norwegian Data Inspectorate, Project #40314.

The Australian and Hong Kong occupational therapy education programs are four years full-time while the Singapore and Norwegian programs are three years full-time. The occupational therapy course offered at Nanyang Polytechnic is a three-year diploma course. Since the university education system in Hong Kong changed from three-year to a four-year degrees in 2012, the sample from the Hong Kong Polytechnic University sample consisted of both 3$^{rd}$ year students from the three-year and four-year curricula in those two programs. Curricula are similar in the first year across the four occupational therapy programs, adopting a traditional teaching approach where foundational subjects such as anatomy, physiology,

psychology and occupational therapy theories are introduced. All four academic programs meet the professional university course accreditation standards for occupational therapy in their respective jurisdiction plus meet the World Federation of Occupational Therapists (2002) Minimum Standards of Education.

The courses differ greatly from the second year where the Australian students are immersed in scenario-based learning (SBL) while the curriculum in Hong Kong and Singapore continues with the traditional didactic approach to teaching. It should be noted that while the curriculum in Singapore is mainly didactic, 15% of the professional modules are taught using a Problem Based Learning (PBL) approach. Norwegian students are taught using a variety of education approaches including the traditional didactic approach. Second year students in all four courses complete fieldwork placements. For example, Australian students in the Monash course complete a four week placement whereas Norwegian students complete two ten-week placements. The occupational therapy courses in Australia, Hong Kong, and Singapore are all taught in English while the course in Norway is taught in Norwegian.

The inclusion criteria for the study were i) students enrolled in the undergraduate occupational therapy course of the tertiary organisations involved in the study; and ii) students provided consent to participate in the study. The questionnaires were distributed to students during breaks on campus in classrooms by a non-teaching member of staff. Students were advised that completion of the questionnaires was voluntary and their responses would be anonymous. All questionnaires were completed in the classrooms during lecture breaks.

**Instrumentation**

The ASSIST has three sections, including conceptions to studying (section A), a 52-item questionnaire of students' approaches to studying (section B), and an 8-item questionnaire of student preferences for teaching. Entwistle and McCune (2004)

recommended using the 52-item questionnaire (section B) instead of the whole measurement. Therefore, the 52-item questionnaire of the ASSIST was used in the current study (see Table 1 for details of the ASSIST). Students studying in Australia, Hong Kong, and Singapore completed the English version of the ASSIST (Tait et al., 1998) while students studying in Norway completed the formally translated Norwegian version (Diseth, 2001).

The English version of the ASSIST has excellent internal consistency when used with students from a range of academic and professional areas and cultures (Ballantine, Duff, & Larres, 2008; Brodersen, 2007; Brown et al., 2014; Byrnes, Flood, & Willis, 2004; Reid et al., 2005). Confirmatory factor analysis demonstrated that the English version of the ASSIST subscales can be meaningfully aggregated into three dimensions, namely *Deep*, *Strategic*, and *Surface* approaches to study (Byrne, Flood, & Willis, 2004; Entwistle, Tait, & McCune, 2000; Reid et al., 2005). The Norwegian version of the ASSIST has satisfactory internal consistency (0.70-0.81) and factor analysis supports the three dimensional division of study approaches in the translated version (Diseth, 2001). Demographic information (e.g., age, gender, year of enrolment, country of enrolment, etc.) were collected using a short questionnaire, which was completed together with the ASSIST.

INSERT TABLE ONE ABOUT HERE

**Data Analysis**

Demographic data and raw scores for the ASSIST were entered into the Statistical Package for Social Sciences (IBM SPSS) version 21 (IBM Corp., 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp). A one-way between subjects analysis of variance (ANOVA) was conducted to compare the ASSIST subscales for occupational therapy students studying in Australia, Hong Kong, Norway, and Singapore. For those significant results identified by the one-way ANOVA, a post-hoc Tukey honestly significant

difference (HSD) was conducted to identify the significantly different relations. The level of statistical significance was set at $p<.05$.

## Results

### Participants

A total of 712 students (*n*= 376 from Australia, *n*=109 from Hong Kong, *n*=160 from Norway, and *n*=67 from Singapore) completed the questionnaire (see Table 2 for demographic information of the participants). Australian participants included students from all four years of study (first year *n*=170, second year *n*=77, third year *n*=73, and fourth year *n*=56). Norwegian participants included all three year levels (first year *n*=57, second year *n*=50, and third year *n*=53). Hong Kong participants were predominantly in their first, third and final year of studies (first year *n*=37, second year *n*=5, third year *n*=23, and final year *n*=44). Only first year students from Singapore participated in the current study (*n*= 67). The biggest age cohort of all four countries is 20-24 years of age. The majority of the participants were female (*n*=603; 84.7%).

INSERT TABLE TWO ABOUT HERE

### ASSIST Scores

All completed ASSIST questionnaires were valid (see Table 3 for mean total raw scores and subscale scores of participants' approaches to study by country). The mean total scores for Australia, Norway, Hong Kong and Singapore respectively were: *Deep* approach 55.90 (*SD*=8.68), 57.55 (*SD*=8.33), 57.56 (*SD*=6.47), and 57.70 (*SD*=8.00); *Strategic* approach 74.72 (*SD*=10.64), 71.13 (*SD*=10.00), 70.42 (*SD*=9.69), and 70.78 (*SD*=10.46); and *Surface* approach 48.39 (*SD*=7.61), 48.02 (*SD*=8.74), 52.49 (*SD*=9.00), 49.72 (*SD*=8.78).

INSERT TABLE THREE ABOUT HERE

**One-way ANOVA Results**

There was no statistically significant difference among the four countries on *Deep* and *Strategic* approaches to studying, and the following subscales: Seeking Meaning, Organised Study, Alertness to Assessment Demands, Achieving, Lack of Purpose, Unrelated Memorising, and Syllabus-Boundness. There was statistically significant difference among the four countries on *Surface* approach to studying and the following subscales: Relating Ideas, Use of Evidence, Interest in Ideas, Time Management, Monitoring Effectiveness, and Fear of Failure (all $p<.05$).

A one-way between subjects analysis of variance (ANOVA) was conducted to compare the studying approaches as indicated by the ASSIST and ASSIST subscales for students studying in Australia, Hong Kong, Norway and Singapore (see Table 4 for the ANOVA results across countries that were significant). There was a significant effect of studying in the four different countries on the study approach used by students as measured by the ASSIST for the *Strategic* study approach ($F(3, 699)=8.378$, $p=.001$), and the *Surface* study approach ($F(3, 693)=8.105$, $p=.001$). Differences in the *Deep* approach to studying among the four countries did not reach statistical significance ($F(3, 699)=2.448$, $p=.063$).

There was a significant effect of studying in the four different countries on the ASSIST subscale scores for subscales Seeking Meaning (Deep approach) ($F(2, 701) = 16.891$, $p=.001$), Organised Study (Strategic approach) ($F(3, 705) = 13.211$, $p=.001$), Time Management (Strategic approach) ($F(3, 704)=11.733$, $p=.001$), Alertness to Assessment Demands (Strategic approach) ($F(3,705)=4.295$, $p=.005$), Achieving (Strategic approach) ($F(3, 705)=3.675$, $p=.012$), Monitoring Effectiveness (Strategic approach) ($F(3, 705)=4.162$, $p=.006$), Lack Of Purpose (Surface approach) ($F(3, 702)=23.921$, $p=.001$), and Unrelated Memorising (Surface approach) ($F(3, 702)=2.935$, $p=.033$).

The following ASSIST subscale scores among the four countries were found to be statistically non-significant: Relating Ideas (Deep approach) ($F(3, 705)=.457$, $p=.712$), Use of Evidence (Deep approach) ($F(3, 705)=1.906$, $p=.127$), Interest in Ideas (Deep approach) ($F(3, 706)=1.292$, $p=.276$), Syllabus-Bound (Surface approach) ($F(3, 704)=1.183$, $p=.315$) and Fear of Failure (Surface approach) ($F(3, 703)=.933$, $p=.424$).

INSERT TABLE FOUR ABOUT HERE

**Post-hoc Test Results**

Post hoc comparisons using the Tukey HSD test indicated that the mean scores for the *Strategic* approach were significantly different between Australia and Norway, Australia and Hong Kong, and Australia and Singapore (see Table 5). The mean scores for the *Surface* approach were significantly different between Australia and Hong Kong, and Hong Kong and Norway. Post hoc comparisons using the Tukey HSD test indicated that the mean scores for the ASSSIST subscales Seeking Meaning (Deep approach) was significantly different between Australia and Norway, Australia and Hong Kong, and Australia and Singapore.

INSERT TABLE FIVE ABOUT HERE

## Discussion

The aim of the current study was to investigate the similarities and differences of study approaches used by occupational therapy undergraduate students in Australia, Hong Kong, Norway, and Singapore. Occupational therapy students studying in all four countries adopted different approaches to studying, consistent with results from previously published studies involving health professional students (Aaron & Skakun, 1999; Brodersen, 1997; Brown et al., 2014; May et al., 2012; Liew et al., 2015; Reid et al., 2005; Richardson et al., 2007; Rochmawati et al., 2014; Samarakoon et al., 2013; Ward, 2011a, 2011b; Watson et al., 2006).

### *Deep* approach to studying

There was no statistically significant difference on the mean scores of the *Deep* approach to studying and on three out of four of its subscales amongst the occupational therapy students studying in the four countries. This is consistent with the results reported by Watson et al. (2006) using the ASI with Bangladeshi and British undergraduate occupational therapy students. This result is also consistent with previous studies with non-occupational therapy undergraduate students comparing study approaches used between Chinese and western students using the ASSIST (Zhu, 2008), the ASI (Sakurai, Pyhälto, & Lindblom-Ylänne, 2014), and the Questionnaire of Learning Approach (QLA) (Cheng & Guan, 2012).

The *Interest in Ideas* subscale measures the motivational aspects of a *Deep* approach to studying (Tait et al., 1998). There were no statistically significant differences on this subscale between the four student groups, indicating that students from all four countries were similarly motivated in adopting a *Deep* approach to study. Similarly, using the ASI, Watson et al.'s (2006) found no statistically significant difference in comprehension learning (a motivational aspect of the *Deep* approach as measured by the ASI) between Bangladeshi and British occupational therapy students. Previous studies with tertiary level students outside the occupational therapy field also found that Chinese students were equally or more motivated than Australian students in adopting a *Deep* approach to studying and learning (Donald & Jackling, 2007; Dunn & Wallace, 2004).

Interestingly, Australian occupational therapy students scored significantly lower on the *Seeking Meaning* subscale than students from Norway, Hong Kong, and Singapore ($p$=.00). This result is worth investigating as Australian students were taught using a scenario-based curriculum (a variation of problem-based learning) from the second year onwards, which is considered to be conducive to learning by meaning and by linking

evidence (Berkson, 1993). One explanation is that facilitating a *Deep* learning approach by the problem-based learning strategies is a complex and non-linear process. Past research has highlighted the factors negatively impacting students' learning in a problem-based learning context, such as a lack of appreciation for the facilitator's role, anxiety in developing one's own learning objectives, and a lack of adequate exposure to contents and issues with the quality of facilitator scaffolding (Albanese & Mitchell, 1993; Jacobs, 2014).

Longitudinal studies have found that students' approaches to *Deep* learning did not change significantly over their coursework despite implementing a problem-based curriculum (Ballantine et al., 2008; Chung et al., 2015; Samarakoon et al., 2013; Reid et al., 2005; Reid et al., 2012). In a systematic review of the impact of problem-based learning (PBL) on the education and learning outcomes of allied health students, the authors found that "there is no evidence that PBL has a more positive effect on students' knowledge, performance, and satisfaction levels and limited evidence that it improves students' approaches to learning" (O'Donoghue, McMahon, Doody, Smith, & Cusack, 2011, p. 54). Similarly, Chapman et al. (2006) also found no statistically significant differences at the group level in undergraduate occupational therapy students' approaches to studying as measured by the ASI from first, second and third year of their studies.

This raises the question of whether innovative teaching and assessment methods are required in order to more effectively facilitate a *Deep* learning approach. Meyers and Nulty (2008) have developed five guiding principles to steer curriculum design to enable deep learning approaches with students where teaching materials, tasks and experience should be: i) authentic, real-world and relevant; ii) constructive, sequential and interlinked; and should: iii) provide a challenge, interest and motivation to learn; iv) align with each other and the desired learning outcomes; and v) require students to use and engage with progressively higher order cognitive processes.

### *Strategic* approach to studying

Students from Norway, Hong Kong and Singapore did not differ on their *Strategic* approach to study mean scale scores. This is consistent with results reported by Sakurai et al. (2014) and Zhu et al. (2008) comparing study approaches of Chinese and Scandinavian university students.

Australian students scored significantly higher on the mean total score of the *Strategic* approach than students from Norway, Hong Kong and Singapore. Australian students also scored significantly higher on the *Organised Study*, *Time Management*, and *Alertness to Assessment* subscales compared to students from the other three countries. Donald and Jackling (2007) compared Australian and Chinese international students in an undergraduate accounting course in Melbourne, Australia and found that Australian students were more motivated by achieving higher grades than Chinese international students. In the current study, students from Singapore scored significantly higher than students from Australia on the *Achieving* subscale (motivational aspect of the *Surface* approach to learning), but it did not reach statistical significance between students from Australia and Hong Kong. The results from the current study suggest that students studying in Hong Kong and Singapore are not homogeneous and local context may have a stronger impact on their learning approaches than cultural similarities.

In addition, the Australian sample was composed of students from all four years in their studies, including a large number of students from third ($n$=73) and fourth years ($n$=56), who may have adjusted their learning approach throughout the course in order to complete their studies successfully. Ballantine et al. (2008) used the ASSIST to follow-up with business and accounting students in Ireland from the beginning to the end of their final academic year ($n$=286) and found a significant increase in the use of *Strategic* approaches

($p$<.01), which was contributed by two of its subscales, those being *Organised Study* and *Time Management*. In the current study, Australian students also scored significantly higher than students from Norway, Hong Kong and Singapore on these two subscales. It is therefore likely that senior year students in Australia have refined their time management and organisational skills and/or were more motivated to achieve good grades to complete their degree and enter the workforce. This fact is further supported by the significantly higher scores achieved by the Australian students on the *Alertness to Assessment* subscale.

### *Surface* approach to studying

The mean scores on the *Fear of Failure* and *Syllabus-Boundness* subscales were not significantly different among the students from the four countries. The *Fear of Failure* subscale measures the motivational aspect of the *Surface* approach to learning (Tait et al, 1998). The lack of statistically significant difference on this subscale indicates that there is no difference in students' motivation to use *Surface* approaches to studying across the four countries. This result is consistent with those reported by Watson et al.'s (2006) with occupational therapy undergraduate students in Bangladesh and the United Kingdom using the ASI.

Students studying in Hong Kong scored significantly higher on the *Surface* approach when compared to students studying in Australia and Norway. Since Hong Kong students' mean *Deep* study approach scores did not differ with students from other countries, it seems to indicate that Hong Kong students used the *Surface* approach in combination with deep understanding, which may suggest that their study approaches are more versatile. Memorising and understanding are not mutually exclusive and in fact need to co-exist depending on the learning tasks and demands at hand (Pandey & Zimitat, 2007).

Hong Kong students' significantly higher scores on the *Rote Memorising* and *Lack of Purpose* subscales may be related to the traditional didactic approach in occupational therapy course curriculum itself. The results are consistent with findings of a recent report, which indicated that critical thinking was the least developed generic competency in Hong Kong occupational therapy students (Szeto, Fong, Mak, & Tsang, 2012). Items on the *Unrelated Memorising* subscale queried whether a student found the course material difficult to understand, including statements such as "much of what I'm studying makes little sense: it's like unrelated bits and pieces" (ASSIST item 19) and "I often have trouble making sense of the things I have to remember" (ASSIST item 45). Hong Kong students' significant higher scores on this subscale suggest that they were experiencing difficulties understanding the course content. Items on the *Lack of Purpose* subscale included "there's not much of the work here that I find interesting or relevant" (ASSIST item 16) and "I'm not really interested in this course, but I have to take it for other reasons", indicating a lack of connection with the course content.

This idea appears to be supported by the lack of statistically significant differences between students in Hong Kong and Singapore on the *Lack of Purpose* and *Unrelated Memorising* subscales. In fact, the education system contexts in Hong Kong and Singapore are quite similar with written examinations being the dominant mode of assessment in high schools (Kennedy, Fok, Yu, & Chan, 2007). Similarly, Dunn and Wallace's (2004) found that Singapore students studying a business course which was taught in English using an Australian curriculum resorted to rote learning despite wanting to use a *Deep* approach due to difficulties with understanding the course content and limited English language skills. Furthermore, differences in value systems are found to create difficulties in learning, particularly in understanding the course material (Perkins, 2007). A lack of perceived

relevance in the course material is associated with a study approach intending to simply pass the subject/unit (Lucas, 2001).

The traditional teaching approach may be another factor why Hong Kong students scored significantly higher on the *Surface* approach. Hong Kong occupational therapy students may have had fewer opportunities to develop their critical thinking skills due to a tendency towards teacher-directed learning and teaching opportunities (Szeto et al., 2012). Similarly, there may have been too much professional knowledge to be delivered to students therefore it could not be taught in a thorough manner in the undergraduate program. This is referred to as the 'crowded curriculum syndrome' (Dawe, Yucker, & Martin, 2005). Students often adopt a *Surface* approach to conform to the teaching and assessment environment despite a desire to use a *Deep* approach to studying (Entwistle et al., 2000). Among Spanish physiotherapy students, those taught using a PBL curriculum compared with those taught using the traditional approach reported a reduction in lack of purpose and memorising without relating (Castro-Sánchez et al., 2012).

## Limitations

There are several notable limitations inherent in this study. Only section B of the ASSIST instead of the whole scale was used in the current study. The results of the current study were limited by having a relatively small number of students recruited from Singapore and a large sample size from Australia. In addition, the Singapore sample included only first year students and the Hong Kong sample did not include students from the second year of their occupational therapy study. Further limitations of the current study included using a convenience sampling approach and self-report questionnaires which can be prone to biased reporting. It also does not take into account other factors that may be associated with the study approaches adopted by students across the four countries, such as students' perception

of workload, a strong predictor of the *Surface* approach (Diseth, Pallesen, Hovland, & Larsen, 2006).

## Implications for practice and recommendations for future research

The current study is the first of its kind that investigated occupational therapy students' study approaches across multiple cultures and learning contexts. Previous research findings disagree in regards to whether the culture differences or the teaching context contributed to the differences in the study approaches adopted by students from the four jurisdictions (de Vita, 2000; Diseth et al., 2006; Dunn & Wallace, 2006; Entwistle, 2009; Kember & Gow, 1991; Kennedy, 2002; Zhu, Valcke, & Schellens, 2008; Vermunt, 2005). Results from the current study suggest that both culture and learning context may play a notable role in a student's choice of study approaches. The current study also demonstrates that there are subtle differences between the study approaches between Hong Kong and Singapore students, despite the majority of the students in both countries being ethnic Chinese, reflecting the differences in the local context. However these differences were more subtle when compared with students studying in western countries such as Australia and Norway, which are more alike in their tertiary educational contexts.

The complexities of evidence-based occupational therapy practice requires that occupational therapy students, upon graduation, to have a sophisticated appreciation of occupational therapy theoretical models, research evidence, clinical reasoning, and the abilities to apply the occupational therapy process across practice settings (World Federation of Occupational Therapists, 2008). A *Deep* approach to learning is required to achieve this high levels of competence. Therefore it is essential for occupational therapy education to encourage and facilitate learning approaches that are "consistent with the meaning

orientation" (Svidén, 2000, p.136). The current study highlights the complexities in facilitating a *Deep* approach to studying.

Future research can employ a larger sample size of Hong Kong and Singapore occupational therapy students, especially including students from all year levels of their study. Also, this study could be completed comparing students from other cultural contexts as well as comparing undergraduate students with graduate-entry masters and entry-to-practice clinical doctorate students. In addition, future research can explore innovative mechanisms to better facilitate *Deep* learning approaches among occupational therapy students.

## Conclusion

The current study used the ASSIST to investigate the study approaches used by undergraduate occupational therapy students in Australia, Hong Kong, Norway, and Singapore. There were no significant differences between students in the four countries in adopting a *Deep* approach to learning, except that Australian students scored significantly lower on the *Seeking Meaning* subscale. Australian students scored significantly higher on the *Strategic* approach to studying while Hong Kong students scored significantly higher on the *Surface* approach due to higher scores on the *Unrelated Memorisation* and *Lack of Purpose* subscales. These findings suggest that both culture and learning context appear to play a role in the choices of study approaches among undergraduate occupational therapy students. It also highlights the complexities in facilitating a *Deep* approach to study among occupational therapy students.

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**Table 1**

*An overview of the Approaches and Study Skills Inventory for Students (ASSIST)*

| **Category** | **ASSIST (English long version)** |
|---|---|
| Authors | Tait, H., Entwistle, N. J., & McCune, V. |
| Year published | 1998 |
| Type of Test | Self-report questionnaire |
| Country where developed | United Kingdom |
| Purpose | To "identify students who are experiencing difficulty with their studies" or to "investigate the way in which…teaching is influencing their students' learning" (Tait et al., 1998, p. 269) |
| Age range | Not specified. Originally developed for use with tertiary level students |
| Availability | Can be accessed from http://www.etl.tla.ed.ac.uk//publications.html#measurement |
| Subscales and items | Inventory consists of three sections that use a five-point Likert scale for respondents to answer each item<br><br>Section A: Conception of learning (one item) (rate the item in regards to how close they relate to one's conception of learning using the following rating scale: 5-very close, 4-quite close, 3-not so close, 2-rather different, 1-very different).<br><br>Section B: Approaches to studying (52 items that belongs to three distinct dimensions including deep, strategic and surface approaches to studying) (rate the item base on degree of agreement to the statement using the following rating scale: 5-agree, 4-agree somewhat, 3-unsure, 2-disagree somewhat, 1-disagree)<br><br>• Deep approach (including 16 items belonging to 4 aspects)<br>  ○ Seeking meaning (4 items)<br>  ○ Relating ideas (4 items)<br>  ○ Use of evidence (4 items)<br>  ○ Interest in ideas (motivational aspect) (4 items)<br>• Strategic approach (including 20 items belonging to 5 aspects)<br>  ○ Organised studying (4 items)<br>  ○ Time management (4 items)<br>  ○ Achieving (motivational aspect) (4 items)<br>  ○ Alertness to assessment demands (4 items)<br>  ○ Monitoring effectiveness (4 items)<br>• Surface approach (including 16 items belonging to 4 aspects)<br>  ○ Lack of purpose (4 items) |

| | |
|---|---|
| | ○ Unrelated memorising (4 items)<br>○ Fear of failure (motivational aspect) (4 items)<br>○ Syllabus-boundedness (4 items)<br><br>Section C: Preferences for different types of course and teaching (one item) (rate in regards to the degree the respondent likes the statement using the following rating scale: 5-definitely like, 4-like to some extent, 3-unsure, 2-dislike to some extent, 1-definitely dislike). |
| Time to complete inventory | 15 minutes |
| Reliability | Internal consistency of the deep, strategic and surface approaches (Cronbah's alpha)<br><br>• .76-.87 (*n*=122, Australian nursing students) (Brown et al., 2014)<br>• .83-.87 (*n*=174, U.S. nursing students) (Brodersen, 2007)<br>• .80-.87 (*n*=298 U.S., n=437 Ireland, accounting students) (Byrne et al, 2004)<br>• >.75 (*n*=213, U.K. medical students) (Reid et al., 2005)<br>• .61-.83 (n=268, U.K. allied health students) (Richardson et al., 2007)<br>• .80-.87 (n=1,284, UK students, n=466 Scottish students, n=219 South African students) (Entwistle, Tait & McCune, 2000)<br>• .81-.88 (n=286, U.K. business students) (Ballantine et al., 2008) |
| Validity | Construct validity<br><br>• Chi-square=1.98 US students (*n*=298), 3.68 Irish students (n=437) (Byrne et al., 2004)<br>• Factor analysis results support dimensional structure of scale (Byrne, Flood, & Willis, 2004; Entwistle, Tait, & McCune, 2000; Reid et al., 2005) |

*Note*. ASSIST: Approaches and Study Skills Inventory for Students

**Table 2**

*Participants' demographics*

| Category | Subcategory | Country | | | | |
|---|---|---|---|---|---|---|
| | | **Australia** | **Hong Kong** | **Norway** | **Singapore** | **Total** |
| **Age** | 15-19 years | 125 | 31 | 6 | 39 | 202 |
| | 20-24 years | 214 | 69 | 107 | 26 | 416 |
| | 25-29 years | 16 | 8 | 29 | 1 | 54 |
| | 30-35 years | 8 | 0 | 10 | 1 | 19 |
| | 36-39 years | 8 | 1 | 4 | 0 | 13 |
| | >40 years | 5 | 0 | 3 | 0 | 8 |
| **Gender** | Female | 333 | 83 | 126 | 61 | 603 |
| | Male | 44 | 26 | 34 | 5 | 109 |
| **Cohort** | First year | 170 | 37 | 57 | 67 | 331 |
| | Second year | 77 | 5 | 50 | 0 | 132 |
| | Third year | 73 | 23 | 53 | 0 | 193 |
| | Fourth or final year | 56 | 44 | 0 | 0 | 56 |
| **Started occupational therapy course directly from high school** | Yes | 193 | 87 | 18 | 57 | 355 |
| | No | 183 | 22 | 142 | 10 | 357 |
| **Prior education before enrolling in occupational therapy course** | Yes | 162 | 27 | 70 | 3 | 262 |
| | No | 214 | 82 | 90 | 64 | 450 |

**Table 3**

*Participants' approaches to studying by country*

| ASSIST category | ASSIST subscales * | Country of study (mean (SD)) | | | | Total sample |
|---|---|---|---|---|---|---|
| | | Australia (n=376) | Hong Kong (n=109) | Norway (n=160) | Singapore (n=67) | |
| **Deep approach to studying** | | 55.90 (8.68) | 57.56 (6.47) | 57.55 (8.33) | 57.70 (8.00) | 56.68 (8.26) |
| | Seeking meaning | 13.35 (2.52) | 14.56 (2.15) | 14.71 (2.40) | 14.69 (2.34) | 13.96 (2.51) |
| | Relating ideas | 14.05 (2.99) | 14.38 (2.00) | 14.03 (2.81) | 14.18 (2.89) | 14.10 (2.81) |
| | Use of evidence | 14.15 (2.97) | 14.53 (2.08) | 14.26 (2.61) | 14.94 (2.30) | 14.31 (2.70) |
| | Interest in ideas | 14.35 (2.56) | 14.06 (2.23) | 14.54 (2.91) | 13.90 (2.88) | 14.30 (2.63) |
| **Strategic approach to studying** | | 74.72(10.64) | 70.42 (9.69) | 71.13 (10.00) | 70.78 (10.46) | 72.91 (10.51) |
| | Organised study | 14.35 (3.06) | 13.39 (2.53) | 13.03 (2.90) | 12.46 (2.97) | 13.73 (3.02) |
| | Time management | 14.42 (3.38) | 12.89 (3.57) | 12.83 (3.04) | 13.25 (3.64) | 13.72 (3.44) |
| | Alertness to assessment demands | 15.23 (2.51) | 14.44 (2.50) | 15.04 (2.71) | 14.34 (2.45) | 14.98 (2.57) |
| | Achieving | 14.85 (2.71) | 14.35 (2.44) | 14.34 (2.68) | 15.42 (2.43) | 14.71 (2.65) |
| | Monitoring effectiveness | 15.86 (2.41) | 15.14 (2.00) | 15.97 (2.33) | 15.30 (2.08) | 15.72 (2.32) |
| **Surface approach to studying** | | 48.39 (7.61) | 52.49 (9.00) | 48.02 (8.74) | 49.72 (8.78) | 49.08 (8.32) |
| | Lack of purpose | 8.42 (3.27) | 11.41 (3.47) | 8.85 (3.07) | 8.49 (3.65) | 8.98 (3.46) |
| | Unrelated memorising | 11.84 (2.52) | 12.59 (2.68) | 11.67 (2.85) | 11.96 (2.50) | 11.93 (2.63) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Syllabus-bound | 13.81 (2.68) | 13.95 (2.84) | 13.53 (2.91) | 14.25 (2.79) | 13.81 (2.77) |
| | Fear of failure | 14.32 (3.20) | 14.54 (2.97) | 14.34 (3.67) | 15.01 (3.09) | 14.43 (3.26) |

*Notes*. ASSIST: Approaches and Study Skills Inventory for Students; M: Mean; SD: Standard Deviation

* Higher scores indicate higher levels of the ASSIST subscale factor being measured.

**Table 4**

*ANOVA results for significant differences of ASSIST scores between four countries (n=712)*

| ASSIST category | ASSIST subscale | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|---|
| Deep approach | Seeking meaning | Between groups | 297.89 | 3 | 99.30 | 16.89 | .00* |
| | | Within groups | 4121.00 | 701 | 5.88 | | |
| | | Total | 4418.89 | 704 | | | |
| Strategic approach | | Between groups | 2690.13 | 3 | 896.71 | 8.38 | .00* |
| | | Within groups | 74919.69 | 700 | 107.03 | | |
| | | Total | 77609.81 | 703 | | | |
| | Organised study | Between groups | 342.66 | 3 | 114.22 | 13.21 | .00* |
| | | Within groups | 6095.49 | 705 | 8.65 | | |
| | | Total | 6438.15 | 708 | | | |
| | Time management | Between groups | 398.44 | 3 | 132.81 | 11.73 | .00* |
| | | Within groups | 7969.30 | 704 | 11.32 | | |
| | | Total | 8367.74 | 707 | | | |
| | Alertness to assessment demands | Between groups | 83.69 | 3 | 27.90 | 4.30 | .00* |
| | | Within groups | 4579.14 | 705 | 6.50 | | |
| | | Total | 4662.83 | 708 | | | |
| | Achieving | Between groups | 76.80 | 3 | 25.60 | 3.68 | .01* |
| | | Within groups | 4910.51 | 705 | 6.97 | | |
| | | Total | 4987.30 | 708 | | | |
| | Monitoring effectiveness | Between groups | 66.37 | 3 | 22.12 | 4.16 | .01* |
| | | Within groups | 3747.89 | 705 | 5.32 | | |
| | | Total | 3814.26 | 708 | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Surface approach | | Between groups | 1632.71 | 3 | 544.24 | 8.11 | .00* |
| | | Within groups | 46534.79 | 693 | 67.15 | | |
| | | Total | 48167.51 | 696 | | | |
| | Lack of purpose | Between groups | 781.46 | 3 | 260.49 | | |
| | | Within groups | 7644.34 | 702 | 10.89 | 23.92 | .00* |
| | | Total | 8425.80 | 705 | | | |
| | Unrelated memorising | Between groups | 60.38 | 3 | 20.13 | 2.94 | .03* |
| | | Within groups | 4814.40 | 702 | 6.89 | | |
| | | Total | 4874.78 | 705 | | | |

*Notes.* All results were rounded to the last two decimal points; *. The mean difference is significant at the .05 level; df: degree of freedom

**Table 5**

*Significant results of the Tukey HSD test for ASSIST approaches and subscales*

| ASSIST Approaches | ASSIST subscales | | | | | | 95% CI | |
|---|---|---|---|---|---|---|---|---|
| | | | | Mean Difference | Standard Error | Sig | Lower Bound | Upper Bound |
| Deep approach | Seeking meaning | Australia | Norway | -1.35 | .23 | .00 | -1.95 | -.75 |
| | | | Hong Kong | -1.21 | .26 | .00 | -1.89 | -.53 |
| | | | Singapore | -1.33 | .32 | .00 | -2.16 | -.50 |
| Strategic approach | | Australia | Norway | 3.58 | .99 | .00 | 1.03 | 6.14 |
| | | | Hong Kong | 4.30 | 1.13 | .00 | 1.40 | 7.21 |
| | | | Singapore | 3.94 | 1.37 | .02 | .41 | 7.48 |
| | Organised study | Australia | Norway | 1.32 | .28 | .00 | .60 | 2.04 |
| | | | Hong Kong | .96 | .32 | .02 | .14 | 1.78 |
| | | | Singapore | 1.89 | .39 | .00 | .89 | 2.90 |
| | Time management | Australia | Norway | 1.59 | .32 | .00 | .77 | 2.42 |
| | | | Hong Kong | 1.53 | .37 | .00 | .59 | 2.47 |
| | | | Singapore | 1.17 | .45 | .05 | .02 | 2.32 |
| | Alertness to assessment | Australia | Hong Kong | .79 | .28 | .02 | .08 | 1.51 |
| | | | Singapore | .89 | .34 | .04 | .02 | 1.76 |
| | Achieving | Singapore | Norway | -1.08 | .38 | .03 | -2.07 | -.09 |
| | | | Hong Kong | 1.07 | .41 | .05 | .01 | 2.12 |
| | Monitoring effectiveness | Hong Kong | Australia | .73 | .25 | .02 | .08 | 1.37 |
| | | | Norway | -.83 | .29 | .02 | -1.57 | -.09 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Surface approach | | Hong Kong | Australia | 4.09 | .89 | .00 | 1.80 | 6.39 |
| | | | Norway | 4.47 | 1.04 | .00 | 1.79 | 7.14 |
| | Lack of purpose | Hong Kong | Australia | 2.99 | .36 | .00 | 2.07 | 3.92 |
| | | | Norway | 2.56 | .41 | .00 | 1.50 | 3.63 |
| | | | Singapore | 2.92 | .51 | .00 | 1.60 | 4.24 |
| | Unrelated memorising | Hong Kong | Australia | .75 | .28 | .04 | .01 | 1.48 |
| | | | Norway | .92 | .33 | .03 | .07 | 1.76 |

*Notes*. ASSIST: Approaches and Study Skills Inventory for Students; CI: confidence interval