

## **English Language Teaching and Learning in Five Local Secondary Schools in Macao**

Elisa Monteiro\*, Isabel Tchiang  
School of Education, University of Saint Joseph,  
Estrada Marginal da Ilha Verde 14-17, Macao  
\*Corresponding Author: elisa@usj.edu.mo

### **ABSTRACT**

The purpose of this paper is present an overview of current English teaching and learning approaches in five local Chinese secondary schools in Macao. A small-scale empirical study was employed that included questionnaires for students and in-depth qualitative data to draw inferences about teaching and learning processes and to understand the perceptions, opinions, and perspectives of the teachers. The study provides descriptions of Macao's educational system, curriculum, teaching-learning processes, strategies that teachers employ in their classrooms, and student learning approaches. It is expected that the findings will add to current understanding of teaching and learning approaches adopted by teachers and students in the secondary sector, principally in the light of the current education reform in Macao. The results of this study will provide implications for teachers and school administrators.

*Keywords:* Pedagogy, surface and deep learning approach, direct instruction, constructivism, Macao

### **Introduction**

The delivery of high quality teaching and learning in Macao local schools, particularly in primary and secondary level, has assumed a high profile in the last several years. Numerous concerns have been raised about teaching and learning approaches and school practices. It is widely known that teachers rely heavily on traditional direct teaching methods and depend greatly on the use of textbooks and routine testing. Macao students are sometimes regarded as lacking creativity and tend to struggle with higher-order thinking skills. These comments are largely at the level of rumour, idiosyncratic experience, and anecdote. However, a few studies have shown that many Macao students come from a schooling system which emphasises traditional methods of teaching that make use of spoon-feeding and rote learning, and where learning reinforced by repeated testing and driven by textbook knowledge (Morrison, 2009; Morrison & Tang, 2002). Indeed, Thota's (2010) study on developing a holistic approach to learning and teaching object-oriented programming to Macao students revealed that some of the problems with student pair/group work were due to a lack of group skills and cognitive processing needed for learning. This rehearses the familiar, and contested, concept of the 'Chinese learner' (Watkins & Biggs, 1996).

The purpose of the study was to scrutinise these claims and to examine the current position of teaching in five local secondary schools in Macao, especially considering the Government's current educational reform. The paper reports a small-scale study that examined teacher approaches and approaches towards learning. Since 2010, many curriculum proposals have been introduced in primary and secondary education. Thus, the current study aims to examine approaches to teaching and learning as perceived by students, and teaching methods and approaches adopted by English teachers in the lower

secondary level.

## Literature Review

### Approaches to Teaching

Research on teaching methods and strategies has uncovered different approaches to teaching, with each method comprising distinctive qualities that can relate to teachers' notion of teaching (Lam & Kember, 2006). In the last several years, there have been many debates surrounding teaching and learning in terms of construction of knowledge versus instruction of knowledge (e.g. Kirschner, Sweller & Clark, 2006; Scruggs & Mastropieri, 2007). Instructivists believe in the value of direct instruction and explicit teaching, particularly for early stages of foundational skills and when the main goal is to present key information to students. There are two dynamic principles that follow this view, both of which include highly structured lessons whereby students proceed through a series of steps and teachers are the primary leaders. Constructivists, on the other hand, believe that people draw on their experience of the world around them and work to make sense of what they perceive in order to construct their own understanding of what is around them (Pritchard & Woollard, 2010). Learning is seen as an active process in which learners become active participants, drawing upon their past experiences and their interaction with others to construct new concepts, ideas, and knowledge (Crowther, 1997). Constructivist learning entails cognitive activity rather than behavioural activity, and is often set opposite to behaviourist methods and traditional classroom that focus on one way transmission of knowledge from teacher to student (Mayer, 2011).

In terms of teaching and learning, constructivism has gained much popularity, and there has been a move away from instructivism and towards constructivism (e.g. Cohen, Manion, Morrison, & Wyse, 2010). Within the realm of learning theory, constructivism is supported by a long body of literature and research, much of which can be traced to the works of Dewey, Vygotsky, and Piaget. Dewey believed that schools should teach students how to become problem-solvers by helping them learn how to think critically rather than simply learning rote lessons about textbook knowledge (Dewey, 1940). In this regard, schools have a responsibility to help students build on their interests by finding the materials for learning within a learner's own experience.

Dewey's approach is anchored in inquiry and action, and begins with a problem situation that is relevant to the learner – hence his focus on experiential learning. He advocated the need to replace the traditional education approach with experiential learning in which there would be an “organic connection between education and personal experience” (Dewey, 1938, p. 25). In Dewey's view, student needs should be superior over knowledge of facts and skills; the emphasis should be on engaging learners in learning for in-depth understanding and thinking, and to help them construct their own analyses of events and knowledge. For Dewey, experiences, ideas, activities, observations, and organisation were different for each learner, and he believed that learners continually develop their knowledge by attempting to solve realistic problems that involve “the formation of ideas, acting upon ideas, observation of the conditions, which result, and organisation of facts and ideas for future use” (Dewey, 1938, p. 18).

Constructivism has had profound implications for teaching (Innes, 2004). Teaching should not be considered a matter of simply transmitting information, but should concentrate on involving students in active learning and building on their current knowledge, understanding, and skills. This view is supported by Weimer (2002), who wrote, “constructivism prescribes a whole new level of student involvement with content. It makes content much more the means to knowledge than the end of it” (p. 12).

According to this interpretation, learning and teaching methods involving only textbooks and lectures are classified as non-constructivist teaching whereas active teaching and learning strategies such as group work, hands-on activities, and interactive tasks are categorised as constructivist teaching (Mayer, 2004).

Promoting learning among students is not simple and requires the adoption of effective principles and strategies for teaching. To achieve high levels of learning, students should be helped to develop such strategies and the teaching approach plays an important role on how students gain knowledge and understanding. Indeed, Biggs (2011) suggests that effective teaching requires teachers to exclude aspects of teaching that encourage surface approaches to learning and instead prepare and structure lessons that promote higher order thinking and critical skills so that students can more willingly apply deep approaches to learning.

### **Student Approaches to Learning**

Different approaches to learning, learning styles and context of study are believed to have different effects on students' academic achievement and outcomes. Today, there is a great deal more information about how people learn than there was many years ago. There is a wide body of literature on the importance of versatile learning (e.g., Pritchard, 2009), and there is a shift from viewing teaching as a sole activity to looking at how students learn as another component of teaching (Barr & Tagg, 1995). Many studies show that students use different learning approaches (e.g. Marton & Söljö, 1976; Biggs, 1999, 2011).

Research on learning approaches originated from a study by Marton and Söljö (1976). In their study, they found two distinct approaches to learning that were as deep and surface levels of procession, but later amended to *approaches to learning* (Marton & Söljö, 1976). Approaches to learning include process factors that regulate how students learn, their motives for learning, and the strategies used (Biggs, 2011). According to Biggs, factors that contribute to development of different approaches to learning include age and personality, as well as situational factors such as stress and skill training.

The deep approach to learning focuses on understanding that arises from feeling a need to meaningfully engage in a task and using critical thinking and mental structures to construct knowledge (Biggs, 2011; Laurillard, 2012). The concept of the surface approach – arising when lower order cognitive level activities are used – focuses on reproducing, memorizing without understanding, and repeating (Laurillard, 2012). Various quantitative instruments have been developed to indicate the balance between surface and deep approaches to learning (e.g. Learning Process Questionnaire developed by Biggs, 1987 and Approaches to Studying Inventory by Entwistle & Ramsden, 1983). These measures have produced at least one additional category of learning approach, which is referred to as an *achieving* approach (Biggs, 1987) or a *strategic* approach (Entwistle & Ramsden, 1983). The strategic/achieving approach to studying focuses on obtaining the highest possible grades, being aware of study requirements, self-regulated learning, and involves adopting efficient study methods (Entwistle & Ramsden, 1983).

According to Entwistle and Peterson (2004), the principle factor that influences students' approaches to learning and studying depends largely on the teaching environment. Teachers using approaches that are more student-oriented and focusing on student learning are more likely to have students who adopt a deep approach to learning (Entwistle & Peterson, 2004). The fundamental role of a teacher is to know what the student does and this is supported by the constructivist view of learning (Biggs, 2011). Indeed, Marton & Booth (1997) advocate that, during teaching, many teachers focus their awareness on what they are doing, and not so much on what their students are learning.

Many studies have also looked at learning as experienced by Chinese students (e.g. Li, 2003). Chinese students are traditionally considered rote learners who focus much of their learning through repetition and memorisation. However, studies conducted by Biggs and Watkins (2001) advocate that it may be a western misperception to view as negative aspects of rote learning, memorisation, and low-level learning in Chinese learners.

### The Context of the Research

This study was conducted in Macao, a Special Administrative Region of China. There were 74 registered schools in the 2015/2016 academic year (DSEJ, 2016). Figures from *Direcção dos Serviços de Educação e Juventude* (DSEJ) indicate that approximately 13.5% of the schools are private schools not in the free education school system, 13.5% are public schools in the free education school system, and 73% are private schools in the free education school system. Macao schools do not have a single school system; various local schools adopt different curriculum models from China, Taiwan, or Hong Kong. Macao has no territory-wide standard examinations. Students only sit school set examinations or teacher-devised tests, and quality and standards of these examinations differ throughout Macao. External examinations usually come in the form of overseas examinations such as IELTS, TOEFL, and Cambridge IGCSE.

In 2010, the Government of Macao SAR issued a document, which proposed a ten-year plan (2011-2020) for the development of Macao's non-tertiary education in order to meet the demands on education for developing knowledge and society in the twenty-first century and the needs of future development of Macao. The plan hopes to enhance students' critical and problem solving skills, high order thinking, all rounded learning experiences, and prepare them for long-life learning.

The current study draws on the research experiences within five local schools to highlight the perceptions, values, opinions, and perspectives of the teachers and students. Using secondary school classrooms as an authentic setting, the study sought to shed light on teaching approaches utilised by the teachers and which learning approaches the students generally apply.

### Methodology

The research design aimed to reveal the thinking, beliefs, and perceptions that underpin teachers' teaching approaches in five schools; to observe teaching practice directly; and to examine student learning approaches. Given the need to achieve validity, reliability, and triangulation, a mixed methods approach was used for data collection. Using triangulation in this study allowed for the extension of possibilities for addressing the research questions by using a multi-methodological and multi-instrument approach. This extension increased the scope, depth, and reliability of the data.

The instruments for data collection for this study included:

- 1) **Semi-structured classroom observations.** The purpose of the observations was to identify teaching approaches adopted by the teachers and how these promoted learning in the classrooms. Observations were conducted in two sessions to collect data on participation of the students, and teaching and learning processes in the classroom. The observations included a simple predetermined observation sheet, but were also partly unsystematic and unstructured in order to allow room to observe other situations as they occurred.
- 2) **Semi-structured interviews.** As part of the study, interviews were also conducted to examine perceptions that teachers had on classroom processes. Topics covered included: teaching philosophy, teaching approaches, course material, homework practice, feedback, and assessment. The data collected were perception-based and

reflected the views of a small representative sample of English teachers. A semi-structured interview guide was used with a list of questions to explore.

- 3) **Student questionnaires.** The questionnaire attempted to measure students' attitudes toward their learning, teaching approaches used by their teacher, and kinds of assessments. The attitude questionnaire consisted of 24 items was designed based on similar questionnaires used in previous studies (Biggs, 1987). The student questionnaire was translated into Chinese (each question was presented in English and Chinese), and administered to the students at the end of one of their English lessons. The questionnaire comprised Likert scales, and respondents were asked to award a mark on a scale of 1 to 5 (from (1) Not at all to (5) A very great deal), which most closely represented their opinion. The students were informed about the purpose of the research before the questionnaires were administered.

This small-scale study was designed to allow researchers to observe teaching practice directly, to reveal the beliefs and perceptions that highlight students' learning experiences, and to capture students' learning approaches in the classroom.

The data from the interviews were reduced and transformed through selection and through summary. This involved summarizing the observation notes and interviews and noting possible themes. The observation analysis considered the entire lesson as the unit of analysis in order to explore notions of pedagogical structure and formation.

The information collected from the questionnaires was processed using the Statistical Package for the Social Sciences (SPSS). Frequency tables for each of the questions were generated from the syntax. Moreover, the mean scores, the standard deviations, and the significance for the variables were generated accordingly for the 24 items from the questionnaire. In addition, a comparison of surface learning process and deep learning process were investigated by using an analysis of variance (ANOVA) and a *t*-test analysis to assess whether the group means were statistically different from each other, along with the group mean scores to compare against the corresponding questions from the questionnaire.

### Participants

This research project involved 10 teachers and 288 students from five secondary schools. While the sample does not represent all secondary schools in Macao, the five schools do replicate general characteristics of many secondary schools in Macao. Two participating teachers from each school were asked to nominate a class for the research project, and these classes were then visited twice by one of the researchers. Students in each of the classes were asked to complete a short student questionnaire. The numbers are presented in Table 1.

Table 1  
*Sample*

School	No. of Class Observations	No. of Teachers	No. of Students
School 1	4	2	48
School 2	4	2	60
School 3	4	2	38
School 4	4	2	73
School 5	4	2	69

School	No. of Class Observations	No. of Teachers	No. of Students
Total	20	10	288

All schools in the study were private schools within the 15-year free education programme that was implemented in 2007. The medium of instruction is Chinese, except for the English lessons.

### Findings

The results here are discussed in terms of three areas: the observation data, interview data, and the student questionnaire data.

#### Observation Data

The key points here are derived from the classroom observations, and key findings are presented for each school:

*School 1:* In this school, the lessons began with a uniform greeting to the teacher. The teachers generally used direct instruction. They started the lessons by explaining the key concepts and this was done through drilling and repetition. Whole-class teaching was then followed by an activity usually in a form of exercise. Once students completed the exercises individually, the teacher went through the answers as a class. One of the teachers used a group activity to try to motivate the students to actively participate. This task required students to form two large teams to answer questions (in the form of a competition) that were part of the exercise. The students were enthusiastic and eagerly raised their hands to answer teacher-generated questions. The atmosphere of the class was generally positive and students were enthusiastic about the competition. Although the class was excited and louder than usual, class management was still well maintained by the teacher – the teacher could control the class – but students were also allowed to laugh and chat throughout the competition. The other class portrayed a different picture, though. Students were generally more passive during whole-class instruction aspects of the lesson; they either listened to the teacher's instruction, or were involved in off-task behaviour such as sleeping. Many students were disengaged in the lesson. The class was mostly teacher-driven followed by drilling and asking students to complete a worksheet. The teacher spent most of the lesson checking answers to the questions on the worksheet.

*School 2:* In this school, the teacher generally combined the role of facilitator with the more traditional roles of direct instruction in the observed lesson. The lesson was a much less structured form of direct teaching and incorporated short collaborative activities. In one activity, one of the teachers encouraged students to become independent learners through class activities and tasks. Besides whole-class teaching, the teacher incorporated activities where the students could apply some of the content that was presented through direct instruction. While some activities targeted active or collaborative learning, some tasks were still conventional, such as asking students to stand up in front of the class to recite phrases or texts or read dialogues out loud in front of the class.

*School 3:* Classes started with everyone standing behind their desks with a uniform greeting to the teacher. The students sat only when instructed by the teacher, quickly arranged their books, and waited for instructions from the teacher. The classrooms were sparsely equipped; desks (in pairs) were arranged in rows facing the blackboard. The pedagogical dialogues in the classrooms were characterised by a large amount of turn taking. Teachers maintained control over the content by reserving the right to direct and ask questions. Students were therefore sequentially required to respond to answers, and therefore, classroom talk was orderly and systematic. There was plenty of repetition and

drilling, and the textbook was used as the main instructional tool. Students rarely initiated classroom talk – there was little choice given to them. Student autonomy was not promoted in the classroom, thus orchestration in these classrooms was limited because student interaction consisted mostly of responding to questions devised solely by the teacher. Generally, the teachers promoted the content through the transmission of facts, while the students' mastery of content was stressed. The learning tasks in these classes were more segmented and explicit, and expectations of student achievement were more uniform. Students had to recite information given by the teacher in a uniform way. The teachers used questioning and prompting to engage and generate attention from the students. Besides whole-class teaching, students were also asked to complete activities in pairs and then review as a class. The questions indicated lower order thinking and demanded less engagement from the students.

*School 4:* Classes also started with everyone standing behind their desks with a uniform greeting to the teacher. The teachers mainly used a traditional teacher directed approach (whole-class teaching) and the textbook was used as the main instructional tool; however, the teacher did prepare additional PowerPoint slides to present content, accompanied by short video clips to provide further examples. Generally, there was much one-way teaching, however this was broken up by the use of pair-work activities. These activities required students to complete short worksheets individually and then pair up with another student to discuss. Thus, whole-class teaching was accompanied by individual work and one or two interactive tasks. Most students showed active participation (although loud and disorderly in one of the classes), but some students were disengaged and were involved in off-task behaviour such as playing with their stationery, placing their heads on the table, or looking out of the window.

*School 5:* One of the teachers in this school focused on students to develop skills by offering them opportunities to practice certain language skills. The classrooms were relatively large with many windows that allowed passers-by to view what was happening in the classroom. The desks were positioned to allow students to work in groups. The teacher used direct instruction to teach the main concepts of the lesson, and then moved to a group activity for collaborative work. Students constructed their learning by working collaboratively in groups to solve problems and explore alternative points of view. The other teacher occupied a much higher proportion of class time with whole-class teaching, and the lesson tended to be more teacher-dominated even though the teacher had incorporated a question and answer session, with the teacher acting as the questioner and information giver.

Overall, the data from the observations show that most of the teachers used a direct teaching method/didactic/teacher-centred approach. Teachers adopted traditional forms of teaching and students were expected to enter dialogue and were encouraged to participate through establishing a high response rate to questions asked by the teacher. There were some variations, especially in two schools, where the classes were more interactive. The teachers in those schools encouraged more engagement and active participation by providing collaborative activities. However, these classes also focused on drilling, repetition, and practice.

### **Interview Data**

Data were also derived from interviews with teachers:

A notable feature of the interview data was that the comments from all the teachers were similar in many respects. Many of the respondents indicated that they used a more traditional approach to teach the students, but tried to incorporate group work activities as well. While some of the teachers indicated that they used a didactic approach to teaching,

some teachers denoted that they used a more interactive direct-instruction approach. Some teachers stressed the need to use more conventional methods to teach in order to maintain order and control of the class. Teachers generally perceived that students could be disruptive in class if given too much freedom and autonomy. As one teacher's interview revealed: "I like to focus on discipline, control behaviour problems and misconduct, and then I will help students."

The teachers also expressed development of a greater awareness of student-centred approaches to teaching; often, they described trying to balance direct teaching approaches with interactive teaching tools, or use what they termed a communicative approach to teaching. Some teachers perceived that, in order to promote student learning, questioning was very important. This view of learning involved making connections between what the teacher presented and students' understanding of the content.

Most of the teachers indicated that students' achievements were measured on objective tests and exams. Students sit examinations and are tested frequently in their subjects. One teacher pointed out that students were pressured to pass tests/exams and complete homework assignments daily in order to practice language skills taught in class, and felt that these could be counterproductive in student learning.

Several teachers perceived that feedback had to be meaningful to keep students motivated in the learning process. One teacher pointed out that, in order for students to progress, they had to know how they performed in their previous exercises and assignments, and that constructive feedback on their performance was important for improvement; however, the teacher stressed that feedback on tests was limited to summative feedback, as the highest portion of the students' achievement was based on tests and exams. One teacher emphasised the need to incorporate other forms of assessment, such as group projects. These are emergent views that indicate changing notions of teaching and learning.

When asked how they promoted learning in the class, many teachers claimed to use an extrinsic motivation. Students were rewarded extra marks, or were given stickers or stamps, for active participation. They felt that students were largely motivated by the need to gain marks in tests, quizzes, exams, and any form of class participation.

Overall, the interview data indicate that many of the teachers tended to focus on more didactic forms of teaching, particularly to help students prepare for tests and examinations. However, there were some variations that also combined student-centred approaches. The findings indicate that frequent testing still strongly influences teachers in their delivery of content and knowledge.

### **Numerical data**

Numerical data were gathered from the questionnaire administered to students. The questionnaire attempted to measure students' attitudes and perceptions toward their learning, and toward teaching approaches and forms of assessment used by their teacher. The questionnaires focused on eliciting student conceptions of learning, and the teaching practices that supported learning. The questionnaire represents students' general orientations toward learning.

Table 2  
*Difference between surface and deep learning in the different schools*

	N	Surface Learning		Deep Learning		t sig.
		M	SD	M	SD	
<b>Total</b>	288	2.73	.62	3.22	.69	-8.39**
School 1	38	3.02	.76	3.07	.85	-.37ns
School 2	73	2.63	.58	3.30	.65	-5.81**
School 3	48	2.67	.60	3.28	.55	-5.10**
School 4	60	2.81	.68	3.18	.66	-2.65*
School 5	69	2.65	.48	3.19	.74	-4.60**

ns – non significant; \* -  $p < .05$ ; \*\* -  $p < .01$

Table 2 illustrates students’ orientations toward either deep or surface learning. In order to clarify the representation of the most-used approach to learning, the data were divided according to the schools. A paired-sample *t*-test indicated that there were significant differences between the deep and surface approaches to learning, except in one school. The data show that School 1 is the only school that uses a deep learning approach at a proportion that is not significantly higher than that of the surface learning approach, i.e. there is no significant differences between the use of deep surface strategies (M=3.07; SD=.85), and surface learning strategies (M=3.02; SD=.76;  $p=.71$ ). Overall, Table 2 illustrates that students use both surface and deep learning approach in most of the schools in the study.

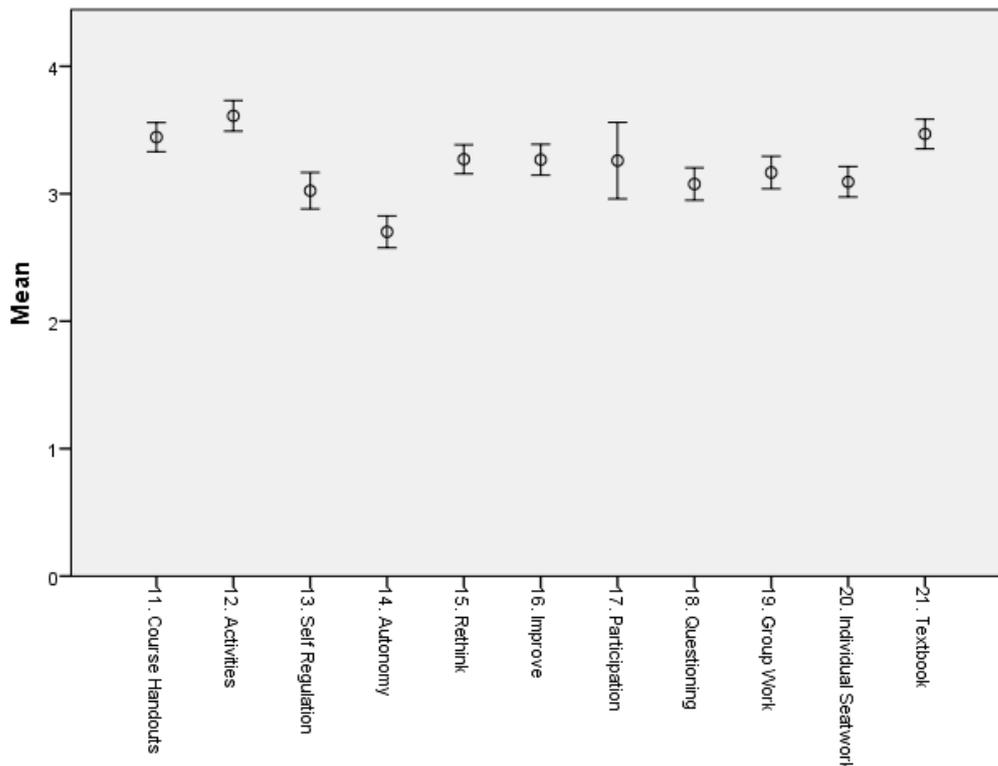


Figure 1. Students’ perception on teaching strategies

Figure 1 represents the median and the distribution of the means according to the students' perceptions on teaching strategies and methods used by the teachers. The data illustrate that the respondents felt that the course handouts ( $M=3.44$ ;  $SD=.99$ ) and activities ( $M=3.61$ ;  $SD=1.04$ ) in the classroom were useful in helping them learn. Here, course material and tasks were viewed positively and as more widespread in promoting learning in the classroom. Self-regulation ( $M=3.02$ ;  $SD=1.23$ ) and learner autonomy ( $M=2.70$ ;  $SD=1.08$ ) were reported as less used items in the classroom, i.e. self-regulated learning and learner autonomy were not frequently promoted by the teachers. Indeed, for items (13) and (14) the modal category was 'a little.'

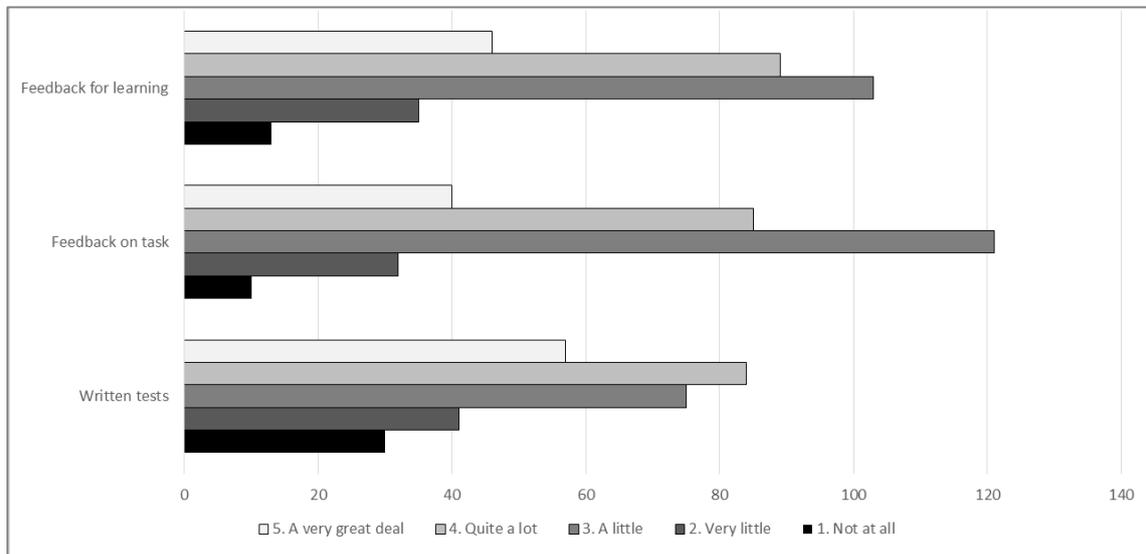


Figure 2. Frequency distribution of students' perception on assessment

Figure 2 shows the frequency distribution for the three items regarding students' perception of the type of frequently used assessment and feedback received by the teacher. Most of the students tended to agree that written tests were the most used form of assessment. The data illustrate that, on average, the students found teacher feedback and comments on performance tests, homework, assignments, etc. not very enriching, with the modal category being 'a little'. The findings also show that students perceive feedback from the teacher as not very useful in helping them improve their ways of learning, with the modal category to be 'a little'.

In summary, the questionnaire data demonstrate that students use both surface and deep learning approaches in most of the participant schools. Students generally feel positive about the materials, course handouts, and activities delivered by their teachers. However, many students felt that learner autonomy and self-regulated learning were not encouraged as part of the learning process. In terms of assessment, students indicated that feedback received from their teachers tended to be less informative, which indicate assessment *of* learning rather than assessment *for* learning.

### Discussion

The findings revealed that teachers held notions of student learning that could be located in more traditional forms of teaching (behaviourist approaches). Teachers in most of the schools perceived teaching as a means to transmit knowledge through direct instruction approaches. Learning and teaching is seen to be more teacher-centred and textbook oriented. Student engagement is largely in rote learning, repetition, drilling, and reproduction of information. However, not all teachers perceived teaching as one-way

communication, but rather emphasised the importance of student-centred learning, and indeed this was evident in their classrooms.

The results of the present study are not straightforward in portraying pedagogical approaches in the five schools, but rather ambiguous, revealing both teacher and student centred approaches. Despite the trend of students using both deep and surface approaches to learning in this study, the qualitative data show that teachers need to diversify their teaching approaches if they are to promote higher order thinking skills, self-regulated learning, and intrinsic motivation. The study also reveals that teaching and learning in these schools are predominantly dictated by routine testing, which supports previous research.

The findings suggest an overlap among students who use deep and surface learning approaches. Students may not necessarily perceive rote learning and repetition as a form of surface learning, but rather as one of deep learning. This supports previous studies that show Chinese students also engage in deep rather than superficial learning when activities entail repetition and memorisation (Watkins & Biggs, 2001), and this study supports this notion.

The findings also show that the student learning approaches are not always influenced by the teacher's theories of teaching and by ways which knowledge is presented. This is in contrast with studies that show teacher approaches or academic environment influence students' approaches to learning (e.g. Sheppard & Gilbert, 1991). Chinese students are traditionally considered rote learners, which would influence them to a surface approach to learning, and are perceived from the Western conceptions as being in a less favourable learning and teaching environment. However, various studies (e.g. Watkins & Biggs, 1996, 2001; Lee & Mok, 2008) have shown that Chinese learners do not necessarily see passive learning, memorisation, and rote learning as characteristics of surface learning, and that deep learning may have a different meaning in Chinese culture than in a Western context (Biggs, 1996).

### **Limitations and Further Research**

Several limitations in this research should be noted. The self-reporting measures employed in the questionnaire may produce biased data. This research project, although located in only five secondary schools in Macao and focused on a relatively small number of teachers and students, reinforces the importance of teachers and schools in exploring ways to improve teaching and learning. A better understanding of Macao schools in terms of teaching and learning will need a larger sample of teachers and students. Generalizability of the findings is limited. Further validation work is needed with a broader range of teachers. Further research that examines students' work would be beneficial to enriching understanding of student learning approaches and how they are linked to teaching approaches adopted by their teachers.

### **Recommendation**

From the empirical data and researchers' reflections, several recommendations can be made for teachers, school administrators, and policy makers. Firstly, the study has indicated several educational practices that do not promote student development in terms of critical thinking or independent problem solving, and the integration of more student centred approaches, such as constructivist and cognitive learning pedagogical approaches to learning, is recommended. Schools should incorporate other forms of assessment, such as authentic assessment, to help students develop other important language skills and rely less on textbook knowledge. Secondly, schools and policy makers can focus on better progression and alignment to higher education, by when many students are expected to

possess skills and competencies that will enable all students to be self-initiated and lifelong learners in order to respond to the new demands of the modern world. Thirdly, policy school administrators may provide intervention programmes to encourage students to be more independent and self-regulated learners. Lastly, the incorporation of more teacher training programmes is vital to exposing teachers to different forms of teaching, learning and assessment – especially those that promote more student-centred approaches.

### Conclusion

This paper investigated the teaching approaches adopted by most teachers and the conceptions of students' learning approaches in five Chinese-medium secondary schools in Macao. The study provides a baseline portrait of schools, especially in the context of education reforms that have recently been implemented in Macao. These reforms represent a distinct change from previous philosophies about traditional didactic teaching and learning in schools, and have facilitated the development of more student-centred approaches in some schools in Macao. The results revealed that most teachers in the study adopted more teacher-centred pedagogy such as direct instruction or whole-class teaching; however, these structures were not rigid, which allowed for some form of student-centred learning. Certain teachers adopted a more interactive direct instruction of teaching, balancing teacher talk with student activities. A few teachers also incorporated activities and tasks that required collaborative work and discussion, requiring more interactivity between teachers and students. However, the study does also reveal certain teaching strategies such as low order questioning, providing modal answers, and limiting learner autonomy and self-regulated learning which may limit the development of critical thinking, high order reasoning, and independent problem solving skills required in today's modern economy. For progress to occur in light of current education reforms will require more government participation in terms of teacher training, monitoring changes, and mapping out developments in Macao schools. Successfully managing conventional and new teaching approaches will help students to learn and develop new skills, knowledge, problem solving, and a deeper understanding, and better prepare them for today's society.

### References

- Barr, R. B., & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change*, (Nov./Dec.), 13-25.
- Biggs, J. B. (1987). *Student approaches to learning and studying*. Melbourne: Australian Council for Educational Research.
- Biggs, J. B. (1996). Western misperceptions of the Confucian-heritage learning culture. In D. A. Watkins & J. B. Biggs (Eds.), *The Chinese Learner: Cultural, psychological and contextual influences* (pp. 45-68). Hong Kong/Melbourne: Comparative Education Research Centre, The University of Hong Kong/ Australian Council for Educational Research.
- Biggs, J. B. (1999). What the student does: Teaching for enhanced learning. *Higher education research & development*, 18, 57-75.
- Biggs, J. B. (2011). *Teaching for quality learning at university: What the student does*. UK: McGraw-Hill Education.
- Biggs, J. B., & Watkins, D. A. (2001). Insights into teaching the Chinese Learner. In D. A. Watkins & J. B. Biggs (Eds.), *Teaching the Chinese Learner: Psychological and pedagogical perspectives* (pp. 277-300). Hong Kong/Melbourne: Comparative Education Research Centre, The University of Hong Kong/Australian Council for Educational Research.

- Cohen, L., Manion, L., Morrison, K., & Wyse, D. (2010). *A guide to teaching practice* (Revised 5th ed.). Abingdon, UK: Routledge.
- Crowther, D. (1997). *The constructivist zone*. Retrieved March 20, 2016, from <http://wolfweb.unr.edu/homepage/jcannon/ejse/ejsev2n2ed.html>.
- Dewey, J. (1938). *Experience and education*. New York: Kappa Delta Pi.
- Dewey, J. (1940). *Education today*. New York: Greenwood Press.
- Direcção dos Serviços de Educação e Juventude (DSEJ). Retrieved December 10, 2016, from [www.dsej.gov.mo](http://www.dsej.gov.mo)
- Entwistle, N. & Peterson, E. R. (2004). Conceptions of learning and knowledge in higher education: Relationships with study behaviour and influences of learning environments. *International Journal of Education Research*, 41, 407-428.
- Entwistle, N., & Ramsden, P. (1983). *Understanding student learning*. London: Croom Helm.
- Innes, R. B. (2004). *Reconstructing undergraduate education*. New Jersey: Lawrance Erlbaum Associates, Inc.
- Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential and inquiry-based teaching. *Educational Psychologist*, 4, 2, 75-86.
- Lam, B. H., & Kember, D. (2006). The relationship between conceptions of teaching and approaches to teaching. *Teachers and Teaching: Theory and Practice*, 12(6), 693-713.
- Lee, W. O., & Mok, M. M. C. (Eds.). (2008). The Construction and deconstruction of the Chinese Learner: Implications for learning theories. *Evaluation and Research in Education*, 21, 147-153.
- Li, J. (2003). The core of Confucian learning. *American Psychologist*, 58, 146-147.
- Marton, F. & Booth, S. (1997). *Learning and awareness*. Lawrence Erlbaum: Mahwah, NJ.
- Marton, F & Söljö, R . (1976). On qualitative differences in learning. I-Outcome and process. *British Journal of Educational Psychology*, 46, 4-11.
- Mayer, R. E. (2004). Should there be a three-strikes rule against pure discovery Learning? *American Psychologist*, 59, 14-19.
- Mayer, R. E. (2011). *Handbook of research on learning and instruction*. New York: Routledge.
- Morrison, K. R. B. (2009). *Causation in educational research*. Abingdon, UK: Routledge.
- Morrison, K., & Tang, F. H. J. (2002). Testing to destruction: a problem in a small state. *Assessment in Education: Principles, Policy & Practice*, 9, 289-317.
- Laurillard, D. (2012). *Teaching as a design science: Building pedagogical patterns for learning and technology*. Abingdon, UK: Routledge.
- Pritchard, A. (2009). *Ways of learning: Learning theories and learning styles in the classroom* (2nd ed.). Abingdon, UK: Routledge.
- Pritchard, A., & Woollard, J. (2010). *Psychology for the classroom: constructivism and social learning*. London: David Fulton Publications.
- Scruggs, T. E., & Mastropieri, M. A. (2007). Science learning in special education: The case for constructed versus instructed learning. *Exceptionality*, 15, 57-74.
- Sheppard, C., & Gilbert, J. (1991). Course design, teaching method and student epistemology. *Higher Education*, 22, 229-249.
- Thota, N. (2010). *Developing a holistic approach to learning and teaching introductory object-oriented programming*. Unpublished doctoral thesis dissertation, University of Saint Joseph, Macao.

- Watkins, D. A., & Biggs, J. B. (1996). Western misperceptions of the Confucian-heritage learning culture. In D. A. Watkins & J. B. Biggs (Eds.), *The Chinese learner: Cultural, psychological, and contextual influences* (pp. 45-67): Hong Kong; Melbourne, Australia: Comparative Education Research Centre; Melbourne: Australian Council for Educational Research.
- Watkins, D. A., & Biggs, J. B. (2001). *Teaching the Chinese learner: Psychological and pedagogical perspectives*. Hong Kong: Hong Kong University Press.
- Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. San Francisco, CA: John Wiley & Sons.