TRAINING MODULE SERIES:
STUDENT-CENTERED LEARNING (SCL)
APPROACHES FOR INNOVATIVE TEACHING

Module 2: Philosophy of Student-Centered Learning (SCL)

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Mohd Ali Shamsuddin, Mohd Saiful Bahari Yusoff
& Hairul Nizam Ismail

UNIVERSITI SAINS MALAYSIA

CENTRE FOR DEVELOPMENT OF ACADEMIC EXCELLENCE @ USM

Centre for Development of Academic Excellence (CDAE), USM

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Training Module Series: Student-Centered Learning (SCL) Approaches for Innovative Teaching

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MODULE 2: PHILOSOPHY OF STUDENT-CENTERED LEARNING (SCL)

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CONTENTS

Preface

Students are expected to achieve 21st century skills, which inculcate life & career skills, learning & innovation and information & communication technology (ICT) skills. Consequently, it has become the unwavering responsibility of educators to ensure that these skills are sowed in students especially at higher education institutions (HEIs). As such new methods of teaching and learning (T&L) have been continuously identified to devise techniques which are relevant and suitable for the students of the net generation. Parallel to that perspective, Student-Centered Learning (SCL) has been promoted as a new approach in T&L to support the rapidly changing educational environment. The Centre for Development of Academic Excellence (CDAE) has published the Training Module Series: Student-Centered Learning (SCL) Approaches for Innovative Teaching which consists of Modules 1 to 6 that will provide the basis for a training programme for academic staffs to enhance their pedagogical knowledge and skills. The modules were authored by an array of experts in the area of T&L, who have provided an overview of SCL in terms of definition, methodology and application.

Module 1: Introduction serves as a foreword to the concept of SCL by: (1) introducing the vision and mission of the National Higher Education Strategic Plan 2 (NHESP 2) regarding T&L through the soft power approach at the regional and global levels; (2) describing the 21st century skills that are needed for today's society and (3) specifying the outcomes of T&L in the classroom. Module 2: Philosophy of Student-Centered Learning (SCL) provides an overview of SCL and introduces the underlying philosophies that support the student-centered approach to teaching. The content of this module also describes the key benefits of SCL for students and lecturers and student-centered pedagogy (i.e. characteristics of the learners and the nature of the learning environment in the student-centered setting).

Module 3: Learning Taxonomies revolves around the learning taxonomies used in T&L that are based on Anderson and Krathwohl's (2001) revised version of Bloom's Taxonomy and Buckwalter's Taxonomy for the Health and Medical Sciences (1981). This module illustrates the basic principles of the learning taxonomies used in education and the classification of educational objectives (i.e. three domains: cognitive, affective and psychomotor). Module 4: The Constructivist Lecturer provides detailed methods that will assist the reader to become a constructivist lecturer via the application of constructivist approaches in T&L.

Module 5: Approaches to Student-Centered Learning (SCL) aims to offer teachers in higher education a variety of student-centered educational approaches. These learning approaches are presented in a straightforward manner, with opportunities for self-assessment and reflection to allow for the selection of the most appropriate SCL approach.

Module 6: Assessment in Student Centered Learning is a compilation of six individual units that includes the detailed description of assessment for the SCL approach which consists of definition, methodology and principles. This module also describes issues, benefits and challenges of implementing assessment and best practices for assessing students in the in the SCL.

On the whole, the modules are projected to be beneficial to the reader in terms of T&L, upon the understanding and consequently the application of the SCL concept. Each module in this series will definitely aid in the improvement of the T&L environment in USM and thus is recommended for all the academic staff of Universiti Sains Malaysia (USM).

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Module Description

Module two provides an overview of SCL. It introduces the concept of SCL and its underlying principles. It is crucial to understand this concept because a paradigm shift from the *Instruction Paradigm* to the *Learning Paradigm* (i.e., from being teacher-centered to student-centered) is occurring in higher education. The goal of higher education is not only to transfer knowledge but also to create environments and experiences that allow students to discover and construct their own knowledge, understanding and skills. For this reason, this module also explains the underlying philosophies that support the student-centered approach to teaching. To provide a rationale for adopting such an approach in teaching and learning, the key benefits of SCL for students and lecturers are highlighted, as are some general misconceptions that should be discarded. In this module, student-centered pedagogy (i.e., characteristics of the learners and the nature of the learning environment in the student-centered setting) is also discussed briefly.

Module Outcomes

At the end of this module, users should be able to:

1. Understand the concept of SCL and be able to identify its major underlying principles;
2. Explain the ideas behind each philosophy that supports the student-centered approach to teaching;
3. State the key benefits of SCL for students and lecturers;
4. Apply student-centered pedagogy in teaching;
5. Explain the characteristics of adult learners, learning approaches, learning styles and measures that can be taken to promote a deep approach to learning; and
6. Design a learning environment that is based on the characteristics of SCL.

1 Introduction

As university lecturers, we always put our minds and efforts into what we do as we teach our students. We choose what knowledge and skills to teach, how we are going teach them and how we are going to assess student performance. We try to find ways to deliver the knowledge and skills in the best possible manner so that most, if not all, of our students will be able to grasp what we have taught. We plan on what we will do in the lecture halls or tutorial rooms through our well-prepared and updated PowerPoint slides, lecture notes, hand-outs, worksheets, etc. In doing so, we hope that the students will be able to understand and learn what they presumably need to know when they attend our course. This approach is called teacher-centered teaching, as it places emphasis mainly on the instruction. This is a common practice among lecturers in many higher education institutions (HEIs).

A key question at HEIs is: Can the students learn the knowledge and skills that we want them to learn by themselves? University students are learners who qualified to enter the university education system and we can surely assume that they are capable of reading and possibly understanding most of what they read. There may be a few students who cannot understand parts of the materials they read, but many of them can. Other students may already know what we want them to learn in our courses even before they attend our classes. As we are teaching not one or a few but many students, they have a spectrum of experience, existing knowledge and skills that they bring into our classrooms. We have to accept that they are diverse learners, with different strengths to offer and weaknesses that need to be fulfilled. Therefore, they need to be treated differently during the teaching process. Consequently, our teaching needs to be student-centered instead of teacher-centered.

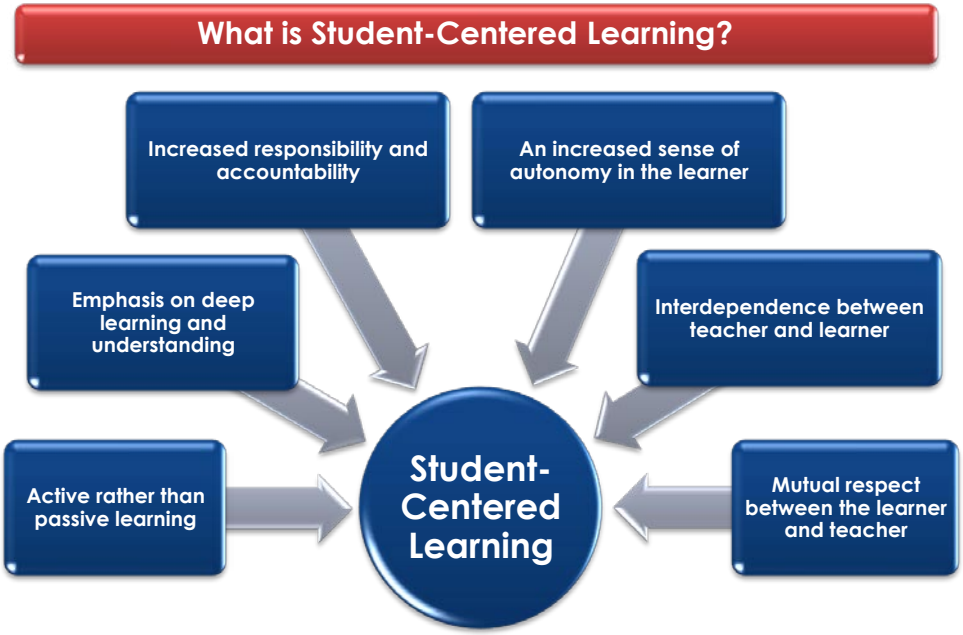
This module focuses on the ideas behind SCL. Our university is moving towards applying the SCL approach to teaching our courses. We need a paradigm shift in our practice of teaching at the higher education level so that we shift from focusing on instruction to focusing on learning. Our students are adults who can become self-directed learners if we can empower them to control and regulate their own learning. Herein we describe and argue for the implementation of SCL at the university level. Our goal is to shift your position from being a teacher-centered lecturer to a student-centered lecturer who is willing to allow students to be responsible for their own learning. We begin by describing SCL and misconceptions about the term and then we explain the philosophical bases of SCL. We then describe the principles involved in applying the SCL approach, compare this approach against the traditional teacher-centered learning (TCL) approach and argue for use of the former. We also describe methods for teaching SCL classes, the learning styles of adult learners and the characteristics of physical and social learning environments conducive to SCL.

2 Student-Centered Learning (SCL)

SCL is a concept that can be traced back to the early twentieth century. It was first mentioned in the writings of Frank Herbert Hayward in 1905 and was later credited to John Dewey's work in the 1950s (O'Sullivan, 2003; O'Neill & McMahon, 2005). The term 'student-centered learning' was also associated with the work of Carl Rogers and Jean Piaget and more recently with Malcolm Knowles' notion of self-directed learning in adult education (Burnard, 1999). Over the past century, strong educational movements to shift away from an emphasis on teaching to an emphasis on learning have occurred; this shift encourages the movement of power from the teacher to the student. This paradigm change was founded on the premise that students should be actively constructing their own learning, particularly at the university level. The theoretical standing of SCL is primarily grounded in the constructivist view of learning (Landau, 2001, p. 22):

> Constructivist learning models require active input from students and require intellectual effort and aids retention. The role of the teacher in student-centered learning is to facilitate the students' learning by providing a framework (i.e., activities for students to complete) that facilitates their learning. For example, the teacher posts activities or questions that students complete. Projects include: writing papers, essays and reports, publishing webpage, conducting research, answering open-ended questions, creating artwork and organizing events.

The term 'student-centered learning' is widely used in the educational literature. Many terms have been associated with SCL (e.g., flexible learning, active learning, experiential learning and self-directed learning) (Burnard 1999; Taylor 2000). The various concepts and terminologies have the potential to be confusing (O'Neil & McMahon, 2005). Nevertheless, it is crucial to note that despite the various terminologies, there is a broad consensus on the common conceptualisation of SCL in the literatures (Lea, Stephenson, & Troy, 2003) (Figure 1).



The Concept of Student-Centered Learning

Student-Centered Learning represents both a mindset and a culture within a given higher education institution and is a lerning approach which is broadly related to and supported by,constructivist theorist of learning.It is characterized by innovative methods of teaching which aim to promote learning in communication with lecturers and other learners and which take students seriously as active participants in their own learning,fostering transferable skills such as problem solving, critical thinking and reflective thinking.

Figure 1. The concept of SCL

In general, SCL represents both a mindset and culture within a given HEI. It is characterized by innovative methods of teaching that emphasise students as the key players in learning and promote their active participation at all stages of the learning process. More time is allocated for students to construct their own knowledge, to explore, to solve problems and to self-reflect. In other words, students play active roles in planning, monitoring and evaluating all forms of learning activities, which include interacting with lecturers, tutors and other students, researching issues, problem solving and engaging in self-assessments, while lecturers act as facilitators during all of these processes.

Further Readings on the Learning Paradigm in Higher Education and the Concept of SCL

- Wright, G. B. (2011). Student-Centered Learning in Higher Education. *International Journal of Teaching and Learning in Higher Education*. Access at http://www.isetl.org/ijtlhe/pdf/IJTLHE834.pdf
- Kennedy, R. (2009). The power of in-class debates. *Active Learning in Higher Education,* 10 (3), 225- 236.
- Slunt, K. M., & Giancarlo, L. C. (2004). Student-centered Learning: A comparison of two different methods of instruction. *Journal of Chemical Education,* 81 (7), 985-988

3 SCL Philosophies

Figure 2 illustrates the underlying philosophies of SCL, namely progressivism, social reconstructionism and existentialism.

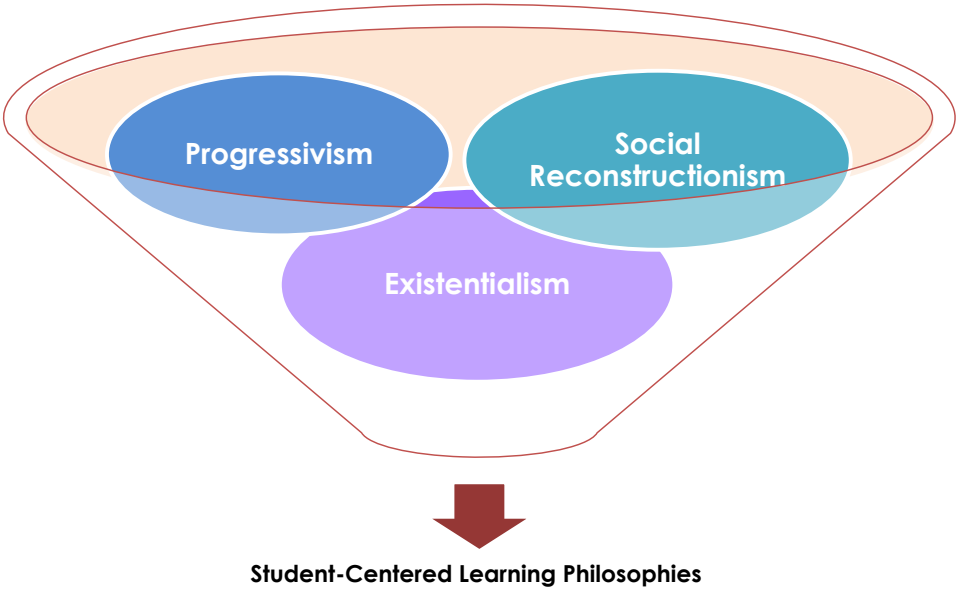


Figure 2. SCL philosophies

3.1 Progressivism

People who believe in progressive ideas about education see students as individuals who have the right to progress at their own pace and they demand that teachers to allow that to happen. John Dewey, a major proponent of this philosophy, highlighted this idea as a democratic principle in education, whereby each student

is considered to be an individual who brings his or her experience into the classroom and who also has his or her own needs and concerns. The student also has his or her own interest and curiosity about the surrounding environment. Under such circumstances, teachers need to respect diversity among learners and differences between individual students. Therefore, the teacher's role is to help each student learn to ask meaningful questions about things about which they are curious and to devise strategies to seek answers to the questions. Consequently, the teacher's role is less about transmitting information or providing information to answer students' questions and more about facilitating students' ability to arrive at the answers. Within progressivism, teachers also allow students to progress at different rates that take into account their individual characteristics. The SCL approach is in line with the ideas of progressivism because students are at the center of SCL, wherein schools should be organized around the concerns, curiosity and real-world experiences of students.

3.2 Social Reconstructionism

A social reconstructionist teacher creates lessons that both intellectually inform and emotionally stir students about the inequities that surround them. Social constructivists believe that education plays a crucial role in helping to solve society's problems. As our society develops and lives with problems, this approach emphasises that education should address such problems. We need to reconstruct our society through education, which traditionally has been a channel to transmit accumulated knowledge about various disciplines to our future generations.

Knowledge conventionally is divided into various categories of disciplines. In contrast, the problems that society faces are ill-defined and do not fall into separate categories like the disciplines of knowledge. We can only categorise them into certain themes, such as poverty, disease, floods and unemployment. Under the SCL approach, problem-based learning (PBL) is a teaching and learning strategy that emphasises learning in the context of solving real-world problems.

3.3 Existentialism

If teachers follow existentialist philosophy, they must readily accept their students as they are (i.e. as they exist) and not decide what and how the students should learn. Existentialists believe in the importance of human existence and free will to decide and be responsible for oneself. Something that is considered good by one may be considered bad by another and each individual has to respect that.

Teachers can provide opportunities for students to experience genuine learning activities themselves in order to learn. Through such activities, students will self-actualise (i.e. become aware of and realise their own meaning of the experience) and find answers to their own questions. Thus, it is the student's responsibility to choose and decide on the direction of learning.

In the existentialist classroom, subject matter takes second place to helping students understand and appreciate themselves as unique individuals. The teacher's role is to help students define their own essence by exposing them to various paths they may take in life and by creating an environment in which they can freely choose their own way.

4 Principles of SCL

SCL reflects the necessity of a focus on both learners and learning (McCombs & Whisler, 1997). The following are the major principles of SCL.

Principle 1: SCL requires active learning and ongoing reflection

The philosophy of SCL is such that students need to be active learners. Bonwell and Eison (1991) defined active learning as instructional activities that involve students in doing things and thinking about what they are doing. They must take ownership of their own learning processes and continuously find ways to improve their experiences. Lecturers and HEIs, on the other hand, need to continuously reflect on their teaching and infrastructural systems. This step is crucial to ensure that the intended learning outcomes of a given course or program component are achieved in a way that stimulates students' thinking (e.g. critical and creative thinking) and promotes transferable skills (e.g. time management skills, social skills and cooperative skills).

Principle 2: SCL does not have a one-size-fits-all solution

A key concept underlying SCL is the realization and acknowledgement that all HEIs are different, all lecturers are different and all students are different; thus, there is no one-size-fits-all solution. For effective SCL to take place in such a diverse context and across various subject disciplines, there must be adequate support structures, whether physical or non-physical, to accommodate and promote SCL activities.

Principle 3: SCL recognises student diversity

SCL recognises that students have different pedagogical needs. They may have different learning styles, motivations, needs and interests in learning. Some students learn better through

trial and error, whereas others learn more effectively through practical experiences. For some learners, much is learned by reading literature, while others need to debate and discuss theory in order to understand it. Moreover, some students may be more motivated and ready to learn than others. Students also may come from various socio-cultural backgrounds, which can translate to different learning needs, different levels of language competency and difference in readiness to learn. There may also be a small number of special needs students (e.g. students with hearing impairment, visual impairment and physical disabilities) who require assistance to learn effectively.

Principle 4: Students have different experiences and background knowledge

Learning will be more meaningful if students can connect their life or professional experiences and existing knowledge with the content of the course and advance their knowledge in the field. For instance, students should be encouraged to relate their existing understanding of the usage of Information and Communication Technology (ICT) when taking an ICT-related course. If students already have considerable knowledge about research skills, perhaps it would be better to help them apply these skills in practical research projects. Personal experiences can also be used to motivate students (e.g. by allowing them to share a personal story to illustrate a point and to reflect on their overall experiences).

Principle 5: Students need to have choice and control over their learning

When students are given choices in learning, they are empowered to take control of their own learning processes. Thus, it is crucial to provide students with opportunities to make decisions concerning the subject matter, learning methods and pace of study. By doing so, they are no longer completely dependent on the lecturer to tell them what, when and how to learn. Students should be seen as active partners who have a stake in the way learning transpires in the higher education context. One of the best practices to ensure that learning focuses more on students is by engaging them in shaping their own learning experiences (i.e. to have a say in their own learning processes).

Principle 6: SCL enables higher-order thinking

Instructional approaches that are examination-oriented and focus on rote learning do not promote higher-order thinking skills among students. Learning at the higher education level is not just about transmitting information from lecturers (who are the experts in their respective fields) to students but also about having students construct their own knowledge and engage in higher-order thinking activities. Higher-order thinking includes critical, logical, reflective and creative thinking, which can be promoted through learning activities that require students to analyse, synthesise, criticise, apply or solve problems.

Principle 7: Learning requires cooperation between student and lecturer

Even though the paradigm of learning has shifted to students, this does not mean that lecturers have lesser roles to play. In fact, cooperation and mutual respect between student and lecturer must occur in order to develop a shared understanding and to come to a consensus about learning methods, type of assessment and pace of study. Such cooperation in a particular course will have a positive effect, as both the lecturer and the students increasingly come to consider the other as a partner in the process of optimising the learning outcomes. Such a partnership is central to the philosophy of SCL. Figure 3 summarises the major principles of SCL.

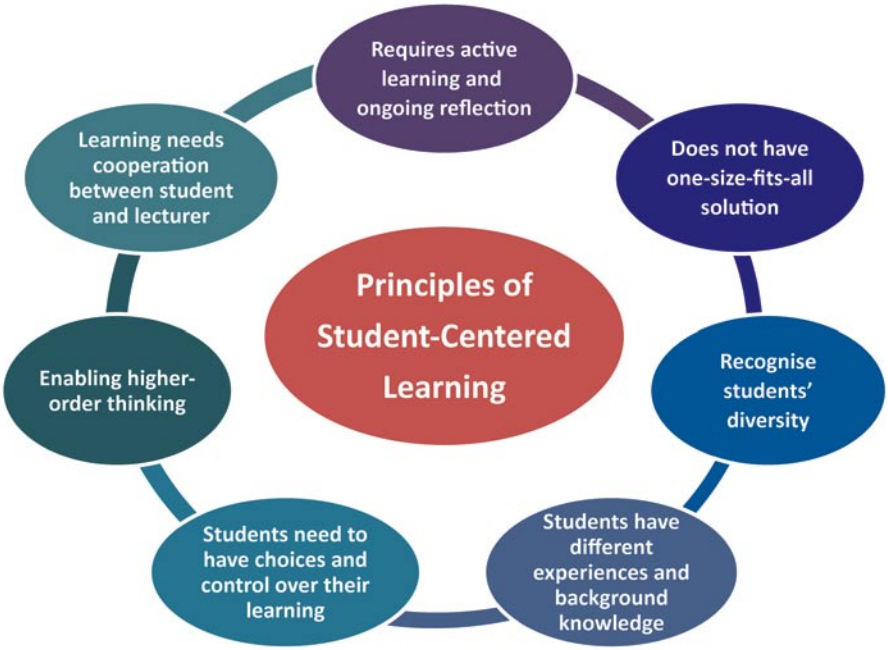


Figure 3. Principles of SCL

5 SCL vs. TCL

Figure 4 lists the characteristics of SCL and TCL. The orientation towards these characteristics, such as level of student choice, degree of active participation in learning and emphasis of power (with the lecturer or the student), determines the degree of SCL that takes place in a course.

Teacher-centered Learning (TCL)

- Low level of student choices
- Students are passive
- Power is primarily with the lecturer
- Assume students have little useful knowledge
- The course has specific objectives relating to what students have to know for formal-assessment
- Present facts to students
- Cover information that might be available from textbook
- Structure the course to help students pass formal assessment
- Give students good set of notes
- Provide information needed to pass formal assessment
- Lecturers should know the answers to questions that students put forth

VS.

Student-centered Learning (SCL)

- High level of student choices
- Students are active
- Power is primarily with the student
- Develop conversation with students
- Provide opportunity for students to reveal change
- Encourage students to restructure existing knowledge
- Set aside some teaching time for students to discuss among themselves
- Use examples to provoke debate
- Discuss their changing understanding of the subject
- Students generate own notes
- Question students' ideas

TCL ⟷ **SCL**

Figure 4. Student-centered and teacher-centered continuum

Activity 1

Reflect on your teaching approach and the learning activities that take place in your course. Where do you think the degree of SCL lies within the continuum in Figure 4? What makes you think so?

6 Common Misconceptions

The following are the general preconceptions and misconceptions about SCL that should be discarded.

6.1 SCL requires greater resources

There is a common misconception that the shift towards the student-centered approach requires a greater amount of resources. In reality, adoption of the student-centered approach in teaching does not necessarily require additional resources. Much can be done to achieve SCL without having to spend large amounts of money and time. For instance, lecturers can design learning activities with greater emphasis on group work, class discussion, pair work, quizzes, debates, reflective diaries, peer monitoring and role playing, which encourage students to be active learners.

6.2 SCL is inappropriate for teaching large and diverse groups

As the student population in HEIs is becoming increasingly larger and more diversified, some lecturers believe that it is inappropriate to promote SCL in such scenarios. Lecturers will need to think outside the box and be more creative in incorporating the elements of SCL with large and diverse groups of students. However, it can be done. For instance, lecturers can get each student to think and reflect on the learning process by requiring them to write down aspects of the course that they really like and reflect on their individual learning experiences. Even having one such session is a concrete step towards implementing SCL.

6.3 SCL undermines the teaching profession

Some people have preconceived ideas that the student-centered approach is undermining the teaching profession, particularly at the higher education level where lecturers are commonly regarded as experts in their respective fields. Some people assert that the academic profession may no longer be valued if SCL is widely adopted. Lecturers need to be aware that while the role of the lecturer is somewhat different in the SCL context, their roles are not diminishing. Instead, the lecturer plays crucial roles in facilitating student learning by guiding them through the course or program component as active learners. They are not spoon feeding or transmitting information passively to the students. In fact, the academic profession will become more valued if greater emphasis is placed on students' learning experiences because it will bring students in as part of the academic community, where research-led teaching can become a reality and where feedback is more constructive in nature. In a nutshell, the

student-centered approach in teaching will not in any way undermine the teaching profession. On the contrary, lecturers are playing vital roles in nurturing talents and contributing towards human capital development.

6.4 Students have more work

When students have to be accountable for their own learning activities, does this mean that students have more work to do? It is important for all stakeholders to understand that SCL does not necessarily create a greater workload for students. Instead it requires a reorganisation of students' study time, when they will focus more on genuine learning activities rather than memorisation of information via rote learning. When students become more competent learners and thinkers, they can plan and manage their learning activities and solve learning problems more efficiently, which eventually leads to more fruitful learning outcomes and students who are equipped with lifelong learning skills.

6.5 Lectures have more work

It is quite often the case that lecturers have a lot of preparatory work to do in order to make sure that their students are able to take notes during lectures, learn the content and pass the assessments. However, in the SCL environment, students play equal, if not more important, roles because the responsibility for learning has been transferred to them. Accordingly, lecturers will have lesser 'traditional' work to do, such as preparing detailed lecture notes and learning materials needed for students to pass the examination. In the long term, preparatory work will not increase and teaching at the higher education level will become more enjoyable and rewarding as students become capable of learning and constructing new knowledge on their own.

6.6 PBL = SCL

There is a general assumption that PBL is the same as SCL. This is a misconception, as SCL actually is an umbrella term under which PBL falls. PBL can be defined as a student-centered pedagogy in which students collaboratively solve problems and then reflect upon their own learning experiences. Other pedagogical approaches that are student-centered in nature include case studies and student projects. In other words, lecturers can utilise a range of pedagogical approaches to promote SCL and they need not confine themselves to PBL.

6.7 SCL is not suitable to all disciplines

Some lecturers may feel that SCL can only be applied in certain disciplines. This is a misconception because SCL is easily adaptable to all subject matters and courses, although the practical manner in which it is implemented may differ. Studies show that students can be the central focus of learning processes across disciplines (Hirumi, 2001). Some differences, however, do arise when teaching across different subject and disciplines, with a notable distinction being between the humanities and the sciences (Student-Centered Learning Toolkit, 2010). Nevertheless, SCL provides an underlying learning philosophy that can be used across disciplines.

6.8 Students learn less of the subject matter in SCL

Under the traditional method of teaching, students are constantly provided with facts, materials and information related to the course. When the learning paradigm is shifted to students, there may be a misconception that students are learning less of the subject matter because the lecturers are no longer transmitting as much information to the students. Moreover, students may be viewed as having limited capacities to learn independently. The reality, however, is that students are likely to learn more. They may know fewer repeatable facts, but they are likely to understand the content area better and be capable of solving problems in a more effective and analytical manner. This implies that students are equipped with transferrable skills, such as problem-solving skills, critical and analytical skills and research skills, that are useful for future employment and lifelong learning instead of being able to regurgitate exact accounts of information imparted to them.

7 Advantages of SCL

SCL offers benefits to both students and lecturers.

Activity 2

List three advantages of student-centered learning that you know or believe in:

(1)_____

(2)_____

(3)_____

7.1 Benefits for students

SCL has many advantages from the students' point of view, including the following:

7.1.1 SCL enhances students' knowledge retention and motivation to learn

Knowledge retention differs according to the way in which the material is learned, as revealed by the learning pyramid in Figure 5. In general, studies have demonstrated that active learning, such as discussion, practical hands-on activities and meaningful knowledge construction and transfer (such as the ability to develop new knowledge and to teach others), leads to a significantly higher retention rate than the traditional lecture style of learning (Student-Centered Learning Toolkit, 2010). As emphasised by Johnson, Johnson and Smith (1991), when students are passive recipients of information during lectures, the acquisition of facts takes precedence over the development of higher cognitive processes, such as analysing, synthesising and evaluating. As such, learning occurs at the surface level and knowledge retention is minimal. Students' knowledge retention can be enhanced if active learning is promoted via the student-centered approach of teaching. In such a manner, students will also be more motivated to learn as they are exposed to alternative problem-solving strategies, engage more in meaningful learning, are less fearful in generating own solutions or answers and are probably more confident and persistent in facing learning challenges.

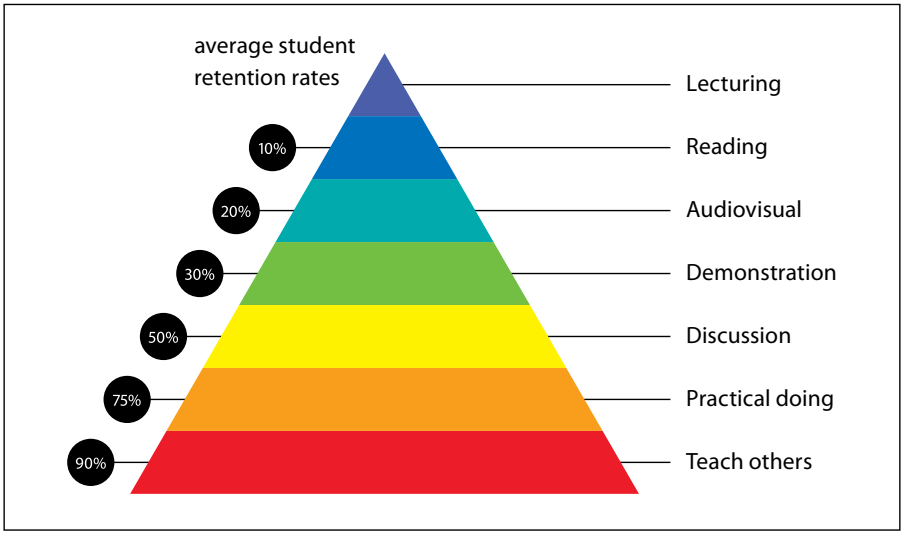


Figure 5. Learning pyramid

(Source: National Training Laboratories in the Student-Centered Learning Toolkit, 2010, p.8).

7.1.2 SCL equips students with transferrable and lifelong learning skills

One of the key benefits that students may gain when HEIs adopt the student-centered approach in teaching and learning is greater opportunities to nurture and strengthen their transferable skills. Transferrable skills can be defined as skills that are applicable to all sectors and at all levels, including project management, leadership, communication, working in teams, critical thinking, effective writing, information literacy, problem solving and reasoning skills (Chadha, 2006). Transferable skills are widely applicable and are independent of disciplines. These skills not only help individuals in their professional lives, but they also help them in their daily lives when adapting knowledge to changing conditions (Morgil & Ural, 2006). Justice, Rice and Warry (2008) reported that to develop transferable skills at the higher education level and to prepare students for lifelong learning, the pedagogy must be characterized by active learning and SCL. The notion of transferable skills in tertiary education has been well documented and continues to be an important feature in student development at the undergraduate and postgraduate levels. Students have to learn to take ownership of their own learning process. Those who have experienced SCL are more likely to be independent and lifelong learners because they are equipped with transferable skills that enable them to work effectively in their careers and lives in general. In other words, students will be equipped with skills that make them perform more efficiently at work and enable them to contribute extensively to society in future (Student-Centered Learning Toolkit, 2010).

7.1.3 SCL integrates students into the academic community

In the SCL environment, the instructional design is built and implemented in a manner that allows and encourages students to become integrated into the academic community. Students play more significant and active roles in the quest for knowledge when the lecturer acts as a facilitator rather than an instructor. Students are no longer spoon-fed information; instead they are encouraged to think analytically and critically. As such, higher-order thinking skills are nurtured and gained earlier on. This allows research-led teaching to be realised more easily, whereby lecturers are able to engage in meaningful discussion with the students. A feeling of having one's views valued can further increase the interaction and engagement of students in learning activities that require them to expand their own horizon of knowledge (Student-Centered Learning Toolkit, 2010). Students' active engagement in problem solving, decision making and investigative and research activities will encourage them to come up with their own ideas and realistic solutions or presentations. During the learning process, students also can become involved in collaborative

activities with other course mates, researchers and academicians in the area of study. Consequently, university students are learning to become researchers in their respective field of study and are provided with more opportunities to be integrated into the academic community, even at the undergraduate level.

7.1.4 SCL improves learning outcomes

Literature reviews show that SCL activities promote a number of positive learning outcomes (Johnson, Johnson and Smith, 1998; Springer, Stanne and Dovonan, 1999; Warren, 2003). According to Warren (2003), these positive outcomes include:

- Enhanced student participation and interaction;
- More willingness by students to express their ideas;
- Improved communication among students in culturally diverse classes;
- Better adjustment to university study (for international and UK students);
- A shift towards deep learning, as a space is created for learners to test out new concepts; and
- Increased motivation, quality of discussion and level of analysis.

Research shows that student-centered and collaborative learning activities have promising learning outcomes, particularly among science students. For example, Bedgood et al. (2010) found that 83% (n = 378) of the undergraduates in the science program at the University of Adelaide agreed or strongly agreed that working with other students during class time is important to their learning. Close to 80% (78%, n = 42) of first year Veterinary Science students from Charles Sturt University expressed similar views that student-centered class activities encourage them to study more efficiently. These findings exemplify the strong interest among students for collaborative learning and the positive learning outcomes that can be produced by such an approach (Table 1).

Table 1. Impact of SCL on learning outcomes

Reference	Review of Studies	Learning Outcome
Johnson, Johnson and Smith (1998)	Synthesised 168 studies between 1924–1997	• Improved academic achievement • Improved quality of interpersonal interactions • Improved self-esteem • Improved perceptions of greater social support
Springer, Stanne and Dovonan (1999)	Synthesised 37 studies	• Improved academic achievement • Improved student attitudes • Improved retention in academic programs

(Source: Prince, 2004:4)

In short, SCL provides students with a wide opportunity to engage actively with other members of the academic community, particularly fellow course mates, researchers in their field of study and lecturers who act as a facilitator in the program; this ultimately leads to a number of positive learning outcomes.

7.1.5 SCL provides due consideration for student needs

Inevitably, students have different needs due to their diverse backgrounds. Meeting students' learning needs during the current phase of massification and globalisation of higher education is a challenging task for both lecturers and institutions. However, diversity and differences are less likely to be problematic and more likely to be valued if pedagogies that involve students as active learners are adopted because such an approach respects students' views, experiences and differences (Bamber, Tett, Hosie, & Ducklin, 1997; Jones & Thomas, 2005). The current trend towards student-centeredness not only recognises students' differences in learning styles and needs, but it also places greater emphasis on understanding how students learn. In fact, the student-centered approach allows students to study in a more flexible manner (Student-Centered Learning Toolkit, 2010). In SCL, learning is not confined to a given time or place in the way that traditional learning has been. Students can engage with the learning materials according to their own learning style and preferences. For example, some students learn better through trial and error, some engage more with audiovisual materials, whereas others prefer reading, debate, discussions or practical experiences.

The student-centered approach to teaching encourages the use of various student-centered teaching methods to fulfil students' learning needs, challenge them cognitively and enable them to attain more positive learning outcomes (Student-Centered Learning Toolkit, 2010). The wide range of teaching methods that can be used to achieve the above-mentioned purposes include independent projects, group discussions, peer mentoring, debate, field trips, reflective diaries, computer-assisted learning, quizzes, role playing and class presentations (O'Neill & McMohan, 2005). In fact, when lecturers are aware of the students' backgrounds and needs, they can organise teaching programs to facilitate students' maximum participation in the learning process. For instance, Crosling, Heagney and Thomas (2009) reported that lecturers may consider students' work and family responsibilities by scheduling assignments, tests and guest lectures at times that suit students and work around their work and family commitments.

7.2 Benefits for lecturers

SCL also has many advantages from the lecturers' point of view.

7.2.1 Lecturers act as facilitators

The move to a more student-centered view of learning at HEIs has required a fundamental shift in the role of lecturers. Lecturers are no longer seen as predominantly dispensers of information or walking tape recorders but rather as facilitators or managers of students' learning. As stated by Omar Hasan Kasule (2007, p. 1):

> Medical education, for instance, like other disciplines has undergone a tremendous transformation from being teacher-driven to being student-driven and student-centered. The student is no longer a passive receiver of information but an active participant in the search for and internalization knowledge. This has forced a change in the role of the teacher to become a facilitator of the learning process.

This changing role of the lecturer is in line with the constructivist approach to learning, whereby knowledge is 'constructed' in the minds of the students and is constantly evolving. As such, lecturers are expected to have lesser 'traditional' work to do, such as preparing detailed lecture notes and learning materials needed for students to pass the examination. Accordingly, more time can be allocated by lecturers to supervise, mentor and facilitate active learning among students. As facilitators, lecturers can empower students to construct their own knowledge, reflect on their work and become independent learners and researchers.

7.2.2 SCL helps lecturers manage the growing and increasingly diverse student population

SCL is seen as one of the solutions to managing the massive expansion of higher education (Student-Centered Learning Toolkit, 2010). Since the liberalisation and massification of higher education in 1996, the delivery and provision of higher education in Malaysia has experienced significant changes. According to Morshidi (2006), the increasing demands for higher education in Malaysia have resulted in a varied range of courses and degree offerings through both traditional and non-traditional pathways. As a result, the major challenge facing the Malaysian higher education system is to provide quality tertiary education to a growing and increasingly diverse student population. The aims of providing quality education will not be reached if teaching and learning are not adapted to a diverse student portfolio.

SCL provides an alternative way for lecturers to manage the growing and increasingly diverse student population while at the same time sustaining the quality of education provided at universities. It is important for lecturers to realise that SCL does not only occur in small groups. Methods can be developed and utilised to fulfil students' diverse learning needs in large groups as well (Warren, 2003; Crossing, Heagney & Thomas, 2009). For example:

- Collaborative learning groups (3–5 students) working on tasks during lecture periods;
- Group presentations and interactive lectures featuring discussion of concepts and application to practical exercises;
- Teaching via sessions that combine exposition and work on tasks in medium-sized groups (about 20 students), instead of whole class lectures;
- Resource-based learning in project study groups (6–10 students), culminating in a set of class; and
- Debates to exchange knowledge gained.

The use of information technology coupled with the student-centered approach via online and distance education may also help in managing the growing and increasingly diverse student population at the higher education level.

7.2.3 SCL promotes self-improvement

Practicing the student-centered approach in teaching can promote lecturers' self-improvement (Student-Centered Learning Toolkit, 2010) in the following ways:

- Encouraging lecturers to review and develop their courses and teaching methods so as to improve both the content of their courses and their methods of delivery;
- Obtaining relevant and constructive feedback from more highly engaged students, which allows lecturers to continuously improve their teaching methods;
- Enhancing lecturers' flexibility in designing ways of running a course or a programme component and in applying new ways of teaching or research;
- Offering a much higher level of professional development with regards to the development of knowledge, skills and competencies relevant both for personal development and career advancement; and
- Promoting lecturers' motivation and commitment for self-improvement through Continuous and Professional Development on student-centered teaching methods.

7.2.4 SCL promotes more rewarding teaching experiences

Teaching at HEIs will become more enjoyable and rewarding as students engage in active learning, become able to construct new knowledge on their own and become capable of attaining more positive learning outcomes (Johnson, Johnson and Smith, 1998; Springer, Stanne & Dovonan, 1999; Warren, 2003). Even though passive lecturing methods permit a lot of information and facts to be covered in a short period of time by experts of the subject matter and lecturers can present complicated concepts in a concise, simple and interesting manner, a major disadvantage of this method is that students learn passively. This is a shortcoming that is acknowledged by most educators and the approach is regarded as less effective than active learning. The criticism is valid, but it does not invalidate lecturing.

All lecturers need to do is adopt innovative ways to improve lectures so that they involve students actively in the learning process (Omar Hasan Kasule, 2007). Apart from lectures, there are also a variety of teaching methods that are student-centered in nature and that have great potential to improve learning outcomes (e.g. group projects, discussions, peer mentoring, field trips, reflective diaries and computer-assisted learning) (O'Neill & McMohan, 2005). In short, whether teachers use lectures, project-based learning or collaborative activities, the student-centered approach in teaching will enhance students' knowledge retention and motivation to learn, improve learning outcomes and help students gain valuable skills as lifelong learners.

For these reasons, teaching at the higher education level can be very rewarding when SCL is implemented, as it not only improves the quality of education and increases job satisfaction, but also contributes to the development of the country's human capital. Figure 6 summarises the key benefits of SCL for students and lecturers.

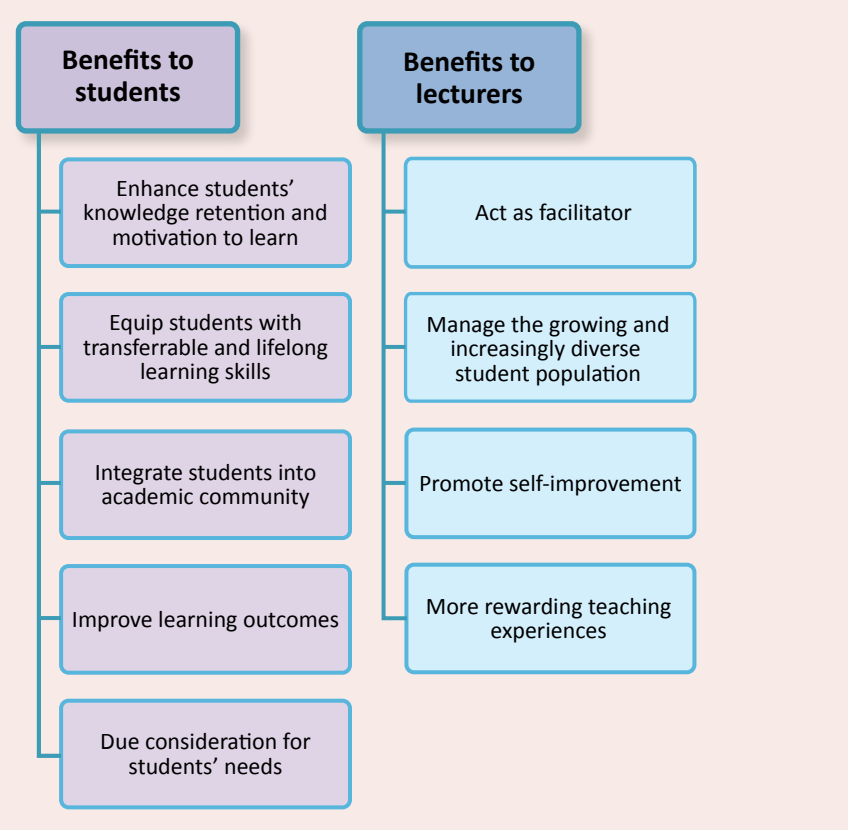


Figure 6. Key benefits of SCL for students and lecturers.

Further Readings on Rationales and Benefits of Adopting Student-Centered Learning

- Bologna Handbook. website: *http://www.bologna-handbook.com*
- British Higher Education Academy website: *http://www.heacademy.ac.uk*
- Kember, D. (2008). Promoting Student-Centered Forms of Learning across an Entire University. In: Higher Education, 58, 1–13.

8 Student-Centered Pedagogy

SCL pedagogy means putting students first and focusing on the students' needs, abilities, interests and learning styles, with the teacher as a facilitator of learning. This classroom teaching method acknowledges the student voice as being central to the learning experience for every learner. SCL requires students to be active, responsible participants in their own learning.

In terms of curriculum practice, the student has the choice in what they want to study and how they are going to apply their newfound knowledge. Student learning processes are greatly enhanced when they participate in deciding how they may demonstrate their competence in a body of knowledge or the performance of skills (Stringer, 2008). This pedagogical implication enables the student to establish his or her unique learning objectives. This aspect of learning holds the learner accountable for production of the knowledge that he or she is capable of producing. In this stage of learning, the teacher evaluates the learner by providing honest and timely feedback on individual progress. Building a rapport with students is an essential strategy that educators should utilise in order to gauge student growth in a student-centered classroom. Through effective communication skills, the teacher can address student needs, interests and overall engagement in the learning material. Henderson (1992) stated that there are three basic principles of democratic living, which are not yet established in our society in terms of education. The three basic tenets, which he calls the 3Ss of teaching for democratic living, are:

- Subject learning: students learn best from subject matter thoughtfully presented;
- Self-learning: one must engage oneself in the generative process; and
- Social learning: empathy is wealth in this regard and social interaction with diverse others is the target for generosity.

Through peer-to-peer interaction, collaborative thinking can lead to an abundance of knowledge. According to Lev Vygotsky's Zone of Proximal Development (ZPD), students typically learn vicariously through one another. Through the sociocultural perspective on learning, scaffolding is important when fostering independent thinking skills. Vygotsky proclaims, 'Learning which is oriented toward developmental levels that have already been reached is ineffective from the view point of the child's overall development. It does not aim for a new stage of the developmental process but rather lags behind this process.' In essence, instruction is designed to access a developmental level that is measurable for the student's current stage in development.

Another aim of student-centered pedagogy that is prevalent in higher education is helping students become more independent learners (Weimer, 2002). Specifically, students are expected to evolve from being unconfident, passive and dependent to more responsible so that they perceive themselves to be self-efficient and more autonomous in their learning process. In order to achieve the vision, courses should be designed so that the sequence of learning through which students go will act as catalyst for them to become more independent. As the change occurs gradually, the process to become an independent learner can be seen in four stages, as suggested by Grow (1991). He explained that students who are at the early stage need an authority figure who can give explicit instructions in the learning process. The students in this early stage are still not self-directed and independent, thus they respond well to teachers who coach them. Those students should be exposed to identifiable and specific skills that are beyond what they think they can do and these students then are encouraged to master those skills. Thus, educators should be prepared to do whatever they can to push students to succeed in their learning processes.

Once student have reached the next stage, they are assumed to be more ready to begin goal setting for themselves. Educators should portray a sense of confidence and enthusiasm during the teaching and learning process so that students can internalise these attitudes and behaviours in order to discover their own motivation. As students proceed to the third level, they are supposed to be at the intermediate level of self-direction. At this stage, they become more reflective about the learning process up to this point and they are capable of generalising those learning experiences as generic learning strategies and distinguishing between effective and ineffective learning strategies. Students at this level are also ready to cooperate with others involved in the learning task, thus educators should change their roles to become co-learners in the group learning process. Here, educators act as facilitators who encourage students to have more freedom in deciding the direction of their learning journeys. Eventually, at the final stage, students become self-directed learners who are able to set their own goals and standards in the learning process. During the final stage, the content of the knowledge is not as important as the process of learning itself. This means the students will be left on their own for most of the learning process and educators will only intervene when the students need their help. Educators should be aware that the aim of intervention is not to help students meet the challenge but instead to empower the learner to meet the challenge.

9 Characteristics of Learners

Instruction begins when you, the teacher, learn from the learner. Put yourself in his place so that you may understand what he learns and the way he understands it.

------(Kierkegaard quoted in Felder & Brent, 2005: 57)

Does higher education seem like a foreign culture to learners? There are certain expectations that HEIs impose on learners as they register for courses and take classes. Learners also have expectations about higher education. They are no longer children because they have passed that stage and become adults. As young adults, they have different levels of motivation, different attitudes about teaching and learning, different learning needs, different learning maturity and different responses to learning environments and instructional processes (Felder & Brent, 2005). In the context of higher education, learners are expected to be self-directed and to take an active role in planning, monitoring and evaluating their education and to take responsibility for decisions made. Educators are expected to guide and help students discover 'how to learn' rather than spoon feeding knowledge to them. Learners are encouraged to find their own meaning to what they have learned and gained so that they can put the knowledge acquired into practice. Educators should realize that they are working with young adults and this fact should be taken into consideration when designing a learning activity. Learning activities should facilitate appropriate learning processes for young adults according to their learning abilities. Thus, when educators better understand the differences among learner abilities, they will have better options to address the diverse learning needs of all of their learners during teaching and learning sessions. Moreover, understanding learner differences will enable educators to design instructions that will promote SCL.

Some of the characteristics of adult learners, learning approaches and four learning styles in relation to SCL are described below. This information will give educators a better understanding of student learning abilities and will help them recognize differences among students. In turn, educators will be able to design appropriate learning instructions to promote self-directed learning among their learners.

9.1 Characteristics of Adult Learners

Learning is anything that involves students in doing things and thinking about the things they are doing.

------(Bonwell & Eison)

Generally, learners can be grouped into adult learners (andragogy) and child learners (pedagogy) (Mortimore, 1999; Knowles et al., 2005). The word andragogy was derived from the Greek word *aner*, which means man not boy and *agogus*, which means leading. The term pedagogy originated from the Greek word *paid*, which means child. For this reason andragogy and pedagogy commonly are described as the art and science of teaching adults and children, respectively Mortimore, 1999; Knowles et al., 2005). Table 2 summarises the characteristics of adult and child learners.

Table 2. Comparison between characteristics of adult and child learners

Adult Learner	Child Learner
Decide for themselves what is important to be learned	Rely on others to decide what is important to be learned
Need to validate the information based on their beliefs and experience	Accept the importance of what is being presented at face value
Expect what they are learning to be immediately useful	Expect what they are learning to be useful in their long-term future
Have much experience upon which to draw; may have fixed viewpoints	Have little or no experience upon which to draw; are relatively clean slates
Significant ability to serve as a knowledgeable resource to trainers and fellow learners	Little ability to serve as a knowledgeable resource to teacher or fellow classmates

Adult learners are always known to be independent and self-directed learners (Knowles et al., 2005; Yusoff & Rahim, 2010). They decide what is important to learn and act as a resource for learning whenever they are needed by other learners. Their learning is driven and affected by the need to know something or to do something and they validate any information given to them before accepting it. When they learn they relate their beliefs and experiences to their new learning experiences, they tend to immediately make use of the learning experiences in their jobs. Adult learners tend to take an active role in planning, monitoring and evaluating their learning. In contrast, child learners are known to be dependent learners and more teacher-directed and they rely on others to decide what is important to be learned (Mortimore, 1999; Knowles et al, 2005; Yusoff & Rahim, 2010). Their learning is affected by the desire to meet course requirements and they tend to be rote learners, whereby they accept all information given to them at face value without validating it. They have very limited knowledge and experience to relate to their learning. Child learners expect their learning to be useful in their long-term future and they have little ability to serve as a learning resource to other learners.

The implications of the characteristics of adult and child learners are significant when considering i) how students in training might most effectively engage in their own learning development and ii) how teachers might most effectively facilitate the learning of their students. Thus, teaching techniques that encourage learners to be self-directed, to apply knowledge immediately in their jobs and to relate upon their experience and needs will facilitate their learning. It should be noted that understanding the nature of learners will help educators enhance the learning experiences of the learners (Newble et al., 2001; Kolb, 2005; Dent & Harden, 2009).

Educators may administer the six items of the adult learning inventory (Yusoff, 2011) to identify whether their students are adult learners or child learners (Table 3). Instructions should be given to students before they answer the items:

Activity 3

The Adult Learning Inventory describes the way you learn. Below are six sentences with choices. Try to recall some recent situations where you had to learn something new, perhaps in your job or at your school. Then, using the columns provided, tick appropriately according to how well each sentence fits you. Please use the scale below to rate the sentences:

1 (least like you) **3** (50% like you) **3** (most like you)

Table 3. The six items of the adult learning inventory

No	Item	1	2	3	4	5
1	I need to validate the information based on my beliefs and experiences.					
2	I expect what I'm learning to be immediately useful.					
3	I have much experience to relate to my learning.					
4	I don't like to participate and be involved in a discussion.					
5	I have little or no experience to relate to my learning.					
6	I have little or no ability to serve as a knowledgeable resource to teachers and fellow classmates.					

Item 1, 2, & 3 represent statements for adult learners (a = 0.87, AVE = 0.69, CR = 0.87).
Item 4, 5, & 6 represent statements for child learners (a = 0.86, AVE = 0.68, CR = 0.87).

(see next page)

Activity 3 (Continued)

Scoring system: **X – Y** = ...

(Score: 1 to 12 = adult learner; 0 = mixed; –1 to –12 = child learner)

	Item 1	Item 2	Item 3	Total Mark (X)
Rating score				

	Item 4	Item 5	Item 6	Total Mark (Y)
Rating score				

9.2 Learning Approaches

> *Learning is an active and lifelong process of acquiring information through various media where the information is transformed and translated into meaningful ideas that lead to formation of knowledge, skills, behaviour and attitude.*
>
> ------(Yusoff, 2011, p. 22)

The variation among students is almost never-ending because each one has unique characteristics that are strongly influenced by genetic makeup (Sheperd, 2007). Similarly, students may have very different approaches to learning and each student will tend to adopt certain ways of learning that best fit with his or her beliefs, abilities and capacities. However, students do exhibit common behaviours, which can be clustered together to form meaningful concepts. Marton and Saljo (2005) proposed three different approaches to learning: surface, strategic and deep. Table 4 illustrates the differences among the three approaches.

Table 4. Comparison among the three learning approaches

Deep	Strategic	Surface
1. Relating ideas 2. Using evidence 3. Interest in ideas and monitoring understanding 4. Intention to seek own meaning to enhance understanding	1. Time manager 2. Systematic study 3. Alertness to assessment systems 4. Monitoring study 5. Intention to attain highest marks possible	1. Learn due to fear of failure 2. Learn through memorising 3. Focus on minimal requirements 4. Intention to pass with minimal efforts

(Adapted from Yusoff & Rahim, 2010).

Further Reading on Learning Approaches:

- Marton, F. and Säljö, R. (2005). Approaches to learning. In Marton, F., Hounsell, D. and Entwistle, N., (eds.) *The Experience of Learning: Implications for teaching and studying in higher education. 3rd (Internet) edition*. Edinburgh: University of Edinburgh, Centre for Teaching, Learning and Assessment.

Deep learners usually learn through understanding in subjects where their intention is to seek their own meaning about the subject in order to enhance understanding and mastery (Biggs, 1987; Felder & Brent, 2005; Marton & Saljo, 2005; Yusoff & Rahim, 2010). They love to validate information given to them prior to accepting it by relating it to previous knowledge and searching for evidence. Their learning is driven by intrinsic motivation and they want to master the subjects so that they can use the information for good and to teach and share with others. They are always monitoring, updating and evaluating their understanding through self-directed and lifelong learning. Studies have reported that high academic achievement and performance can be predicted for students who adopt the deep approach to learning either alone or in combination with the strategic approach (Boyle et al., 2003; Diseth, 2003; Chamorro-Premuzic & Furnham, 2008).

Students who adopt the strategic approach to learning commonly learn through systematic or smart study, in which they are bound to the course syllabus and their intention is to attain the highest marks as possible (Biggs, 1987; Felder & Brent, 2005; Marton & Saljo, 2005; Yusoff & Rahim, 2010). They are usually competing with other learners to get the top rank in the course and are reluctant to share information with others. They stick to time and a plan and monitor their study progress to ensure that every course objective has been read and understood. Students who adopt the strategic approach in combination with the deep approach tend to attain high academic success (Boyle et al., 2003; Diseth, 2003; Chamorro-Premuzic & Furnham, 2008).

Students who adopt the surface approach commonly learn through memorising facts from the books they read and from lectures they attend (Biggs, 1987; Felder & Brent, 2005; Marton & Saljo, 2005; Yusoff & Rahim, 2010). Their learning is driven by extrinsic motivation; they learn due to fear of failure and they want to pass the examination and get job. Their intention is just to pass and to get things done with minimal effort. Most of the time they accept all information obtained from books and lecturers without question. The surface approach to learning has

consistently been found to negatively correlate with academic performance and achievement (Boyle et al., 2003; Diseth, 2003; Diseth & Martinsen, 2003).

9.3 Learning Styles

> *The art of changing brain: Enriching teaching by exploring biology of learning.*
>
> ------(Zull, 2002)

Kolb (1984, 2005) postulated a theory of experiential learning by describing it as a cycle that explicitly incorporates and builds on the experiences from which learning is derived (Figure 7). He theorized the existence of the following four learning modes: learning through concrete experience (i.e. definable experience); reflective observation (i.e. reflection); abstract conceptualisation (i.e. thinking about the generalisability of concepts, theories or frameworks); and active experimentation/testing (i.e. applying concepts to new situation). Kolb emphasised that these four learning modes form learning dimensions that represent a continuum of learning that includes perception (concrete experience and abstract conceptualisation) and process (reflective observation and active experimentation/testing). Almost every individual utilises each learning mode to some extent but has a preferred learning mode (i.e. learning style) that results in the tendency to learn either through experience, reflection, concepts or experimentation.

Activity 4

Based on the characteristics of the four learning styles, try to figure out your own learning style.

Kolb (1984, 2005) categorised learning styles into diverging, assimilating, converging and accommodating (Figure 7). Each learning style has its own unique characteristics, as summarised in Table 5.

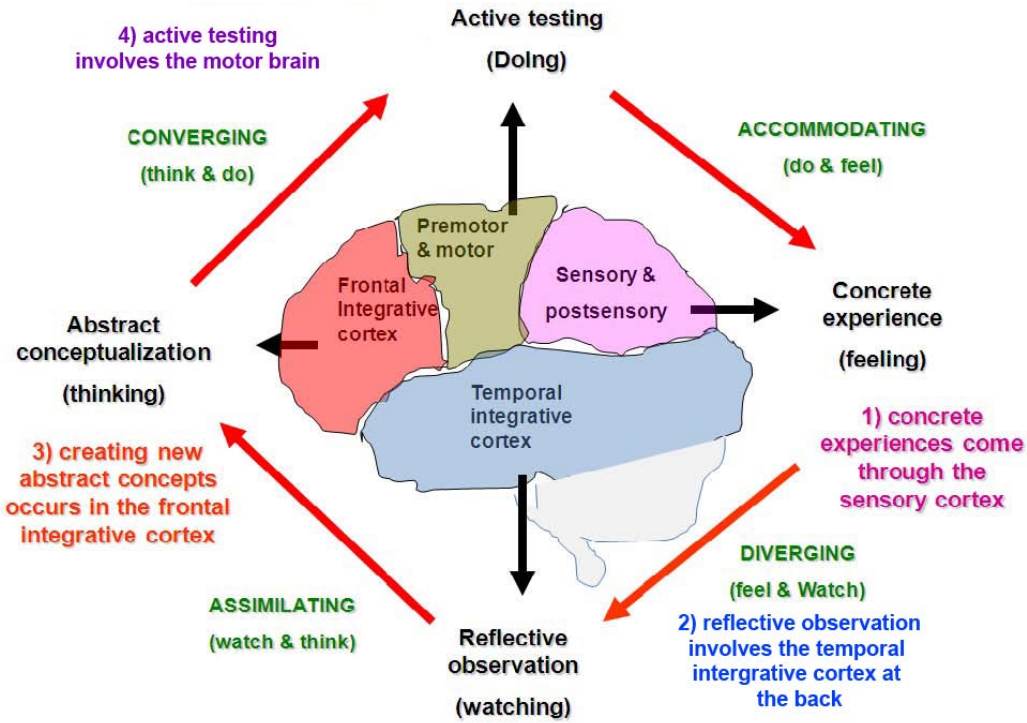


Figure 7. Kolb's learning styles (adapted from Yusoff & Rahim, 2010).

Table 5. Comparison of Kolb's learning styles

Process continuum / Perception continuum	Reflective Observation (watching)	Active Experimentation (doing)
Concrete Experience (feeling)	**Diverging** ✓ View concrete situations from many different points ✓ Observe rather than take action ✓ Like to generate a wide range of ideas ✓ Fond of brainstorming sessions ✓ Imaginative ability and sensitivity to feelings ✓ When learning, prefer working in groups to gather information, listening with an open mind, and receiving personal feedback	**Accommodating** ✓ Learn primarily from hands-on experience ✓ Carry out plans and try new and challenging experiences ✓ Tend to act on intuition rather than on logical analysis ✓ Rely heavily on people for information than own technical analysis ✓ When learning, prefer to work with others to get assignments done, to set goals, to do field work, and to test out different approaches to complete a project
Abstract Conceptualisation (thinking)	**Assimilating** ✓ Can understand a wide range of information and put it into concise and logical form ✓ Less focus on people and more interested in abstract ideas and concepts ✓ Value a theory for its logical soundness over practicality ✓ When learning, prefer lectures, readings, exploring analytical models, and having time to thinks things through	**Converging** ✓ Find practical uses for ideas and theories ✓ Solve problems and make decisions based on finding solutions to questions or problems ✓ Prefer technical tasks and problems to social and interpersonal issues ✓ When learning, prefer to experiment with new ideas, simulations, laboratory assignments, and practical applications

(Source: adapted from Yusoff & Rahim, 2010)

Figure 7 illustrates that (1) concrete experiences come through the sensory cortex, (2) reflective observation involves the temporal integrative cortex at the back, (3) creating new abstract concepts occurs in the frontal integrative cortex and (4) active testing involves the motor brain. In other words, the learning cycle arises from the structure of the brain (Zull, 2002). The implications of Kolb's learning styles are significant when considering how learners most effectively engage in the experiential learning process and how teachers facilitate learning activities or provide stimuli to enable learners to engage in the whole experiential cycle.

Further Reading on Learning Styles

- Kolb, A. Y. (2005). The Kolb Learning Style Inventory. Version 3.1 2005 Technical Specifications. Boston, MA: Hay Resource Direct.

- Yusoff, M. S. B., & Rahim, A. F. A. (2010). The Study Skills Workshop. *MedEdPORTAL*. Available online at http://services.aamc.org/30/mededportal/servlet/s/segment/mededportal/?subid=8010

9.4 What can educators do to encourage students to adopt the deep approach to learning?

Leading by example is the most powerful way to influence learners to adopt the deep approach to learning. To facilitate application of the information discussed in this chapter, the guidelines provided in Table 6 may be useful.

Table 6. Actions than can promote the deep and surface approaches to learning

Deep approach	Surface approach
Showing personal interest in the subject	Conveying disinterest or even a negative attitude to the material
Bringing out the structure of the subject	Presenting material so that it can be perceived as a series of unrelated facts and ideas
Concentrating on and ensuring plenty of time for key concepts	Allowing students to be passive
Confronting students' misconceptions and engaging students in active learning	Assessing for independent facts
Using assessments that require thought and ideas to be used together	Rushing to cover too much material
Relating new material to what students already know and understand	Emphasizing coverage at the expense of depth
Allowing students to make mistakes without penalty and rewarding effort	Creating undue anxiety or low expectations of success by discouraging statements or assigning an excessive workload
Being consistent and fair in assessing declared intended learning outcomes and hence establishing trust	Having a short assessment cycle

(Source: adapted from The Higher Education Academy, 2011)

Activity 5

As educators, what other actions can you perform to promote the deep approach to learning among your students?

The key message is that to be effective educators, instructional designs should address the needs of learners across the full spectrum of learning styles and approaches; this will help promote the adoption of deep approach to learning and guide learners to develop higher levels of intellectual development through self-directed learning (Felder & Brent, 2005). The more successful educators design instructions that match their learners' preferences and needs, the more likely the learners will learn effectively while they are in HEIs and throughout their careers (Felder & Brent, 2005).

If you tell me, I will listen. If you show me, I will see. If you let me experience (do), I will learn.

------(Lao Tzu)

10 Characteristics of the Learning Environment

Transforming the learning institution into a student centered environment as the means of delivering of services and programs to students is a strategic goal. This will improve the HEIs ability to facilitate student learning based on students' developmental needs within the educational mission. Simply put, a student-centered environment tailors all aspects of service delivery and support to the needs of students. Lecturers are guided by what is best for the students when helping students or making decisions. While committed to serving students' needs, the lecturer's goal is to reduce negative student experiences with bureaucracy and red tape and to replace them with services that students will recognise as efficient, empathetic, responsive and ultimately exceeding their expectations.

A constrained resource is not a barrier to becoming more student-centered, nor is being narrowly compartmentalized (as is often now the case). The supporting staff must not only be technically competent but also must be capable of providing high quality, personalised and responsible service. Technological advances must be leveraged to allow students a maximum

number of choices as to when, where and how services are accessed (e.g. in person, by phone, online). Working with university students, one must strive for outcomes that are fair, prompt, responsible, user-friendly and caring and that leave students with the sense that we truly value the privilege of serving their needs.

The goal of this student-centered environment is to create a SCL community that is committed to excellence in experiential learning and that assists in the maturation of students as whole individuals representing diverse backgrounds. The university has to create an environment where learning takes place anywhere, at any time, in many forms and by diverse means. A student-centered learning environment also enables students to be responsible for and involved in their education; it supports development of values and character in students by making them active players in the academic learning enterprise.

A student-centered environment is focused on students needs, not on their wants. These needs include a healthy learning environment that nurtures their personal growth, substantive out-of-classroom activities that increase their learning to help them obtain a high-quality education, personal experience that leads to feeling connected and service learning opportunities that help them develop into responsible citizens. Of course, we must remember that students' needs are not monolithic but vary among both individuals and groups of students. Educators must consistently view and fulfil their responsibilities in terms of being conscious of and seeking to anticipate and elicit, student needs, which may be diverse.

The transition to a student-centered environment does not mean divorcing ourselves from the essential and valuable aspects of the current way we do business. However, it does mean a fundamental change in perspective and actions to keep students' needs constantly at the centre of attention. We must recognise that there are many challenges associated with implementing this environmental shift and it is not simply a matter of adopting a 'customer is always right' stance. The SCL environment has been shown to be effective in higher education. In ensuring the effectiveness of SCL, attention to creating a specific environment is essential. Three important characteristics are the physical, authentic and social environments (Figure 8).

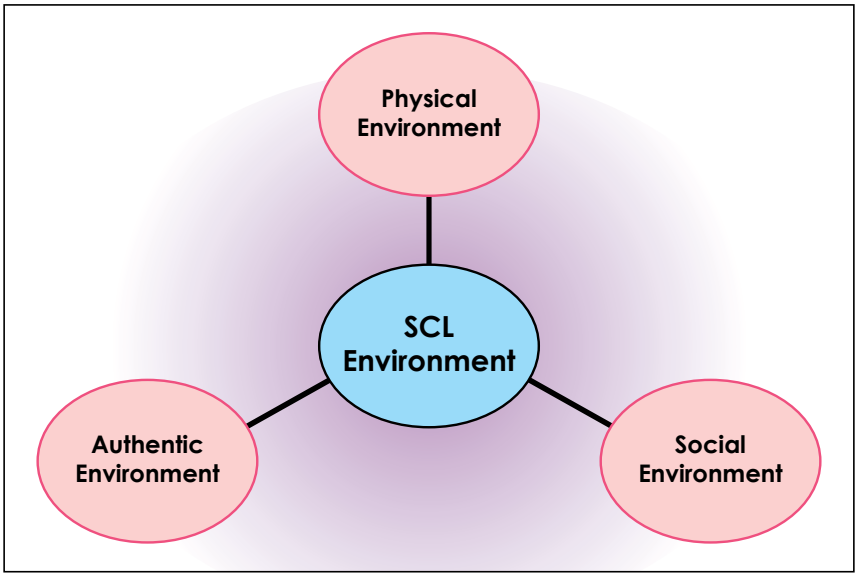


Figure 8. Characteristics of the SCL environment

10.1 Physical Environment

The characteristics of the physical environment are inter-related with the type of SCL pedagogy applied. With the advance of information and communication technology, the usage of the internet in SCL demands the computer and internet connection. To break with the traditional classroom setting, the availability of high-speed wifi or broadband needs to be incorporated into the physical environment.

In subject learning, students learn best from subject matter that is thoughtfully presented. For example, in dissecting an animal specimen, the physical environment supports needed are a conducive laboratory setting, equipment accessibility and clear instructions. Attention to catering to each student's physical needs, such as providing an appropriate number of specimens for each group, will encourage learning progress because the students have the chance to experience the experiment themselves. An appropriate assessment sheet should be provided to trigger self-assessment. Therefore, students themselves can evaluate their work and gauge their own understanding at the end of the learning session.

A successfully supported physical environment helps students enjoy a more positive learning experience, which likely will help them develop greater passion for learning and lead to more success in their learning endeavours.

10.2 Authentic Environment

To enhance the quality of SCL, the learning environment should be aligned with the way learning occurs in a real-life setting. University educators need to provide an authentic learning environment for students so that when they graduate they are able to cope with needs of a dynamic and changing workforce (Herrington & Herrington, 2006). However, it is quite challenging for educators to design purely authentic learning experiences. Smith (1987) reviewed research related to simulations in the classroom and concluded that the 'physical fidelity' of the simulation materials is less important than the extent to which the simulation promotes 'realistic problem-solving processes'. This is aligned with Herrington, Oliver and Reeves (2003), who argued that 'cognitive authenticity' is more important than 'physical authenticity' in designing authentic learning environments. One way to provide an authentic learning environment is to let students learn by solving problems in real-problem contexts. The problem provides the purpose and motivation for learning. However, the problem should provide a complex and ill-defined learning situation with a large number of resources to enable sustained examination by students from different perspectives (Brown et al., 1989).

Another way to enhance the authenticity of the learning environment is to give students a model of how a real practitioner behaves in a real situation (e.g., through an internship program or using case-based learning) (Riesbeck, 1996). Students also should be given a chance to collaborate while completing the learning tasks, as this activity really happens in the workplace. Collaborative learning activities should be designed so that more capable partners can support learning through scaffolding and coaching. The performances of the students should not be assessed only on the learning outcomes or products but should be integrated into the process of learning. Therefore, students will perceive assessment itself as a tool for learning as they receive ongoing feedback from the educator about how they should improve their learning strategies so that they are able to achieve the learning outcomes targeted at the early stage of the learning process. This scenario resembles the use of lifelong learning skills that occurs when a worker receives a new task from his or her employer.

10.3 Social Environment

The social environment refers to the following aspects of learning: what a child is curious about learning; teaching strategies to accommodate (1) individual needs intellectually and emotionally and (2) student's social needs such as collaboration, communication and peer approval. Because the focus is on individual students

rather than whole class structures, teachers often offer choices and adaptations within lessons. This is a role that teachers must be comfortable with if they are to implement a SCL environment. To be considered a SCL environment, it must be open, dynamic, trusting, respectful and promote children's subjective as well as objective learning styles. Students may collaborate in hands-on problems and draw their own conclusions. This experiential learning involves the whole child (i.e., their emotions, thoughts, social skills and intuition). The result is a person who is self-confident and a critical thinker.

Recognition of the commitment of educators by students and their parents is indicative of success in achieving a student-centered environment. Success also should be manifested by positive feedback in response to instruments such as course surveys, decreased negative feedback, concrete measures such as fewer processing errors and shorter processing and problem-resolution times and greater willingness to become involved in decision making on the part of students.

11 Conclusion

There is currently a strong movement at the higher education level towards the learning paradigm, which promote active learning among students. The urge for this paradigm change was founded on the premise that students should be actively constructing their own knowledge during tertiary education. For these reasons, the instructional practices at HEIs ought to be characterised by innovative methods of teaching that emphasise students as the key players in learning and that promote their active participation at all stages of the learning process. In terms of curriculum practice, students should have the choice about what they want to study and how they are going to apply their newfound knowledge. Ultimately, student-centered pedagogy aims to develop students into more independent learners. To be effective educators at the higher education level, educators need to implement instructional designs that address the needs of students across the full spectrum of learning styles, to promote the adoption of the deep approach to learning and to guide students in developing transferable and lifelong learning skills. When lecturers design instructions that match their students' preferences and needs, their students likely will learn effectively while they are at HEIs and throughout their careers. In ensuring the effectiveness of SCL, attention to creating a specific environment is essential, thus physical, authentic and social environment characteristics have to be taken into account.

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