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The Central Role of Active Learning in University Education: with Special Reference to Content Courses

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Abstract

This paper raises the question of why university graduates lack higher order intellectual skills, and ascribes this to the teaching approach adopted for content courses. It argues that the lack of critical thinking and problem solving as well as research skills is due to the widespread use of the direct approach to instruction for university content courses. It thus argues that the solution is in adopting teaching approaches that promote active learning, like the discussion approach and the problem-based approach. The recommended approaches aim at arousing students' curiosity about the material through assigning readings and presenting problems, which prompts the students to make observations and ask questions, therefore assuming the active role of 'learner', rather than the passive role of 'recipient'. The paper justifies recommending these two approaches by linking them to the children's learning style and scholars' discovery process, which are essentially based on 'making observations', 'asking questions', and 'pursuing answers'.

Keywords: curiosity; observation; questions and discussion; problems; active learning.

الدور المحوري للتعليم النشط في التعليم الجامعي "المقررات النظرية أنموذجاً"

راشد بن علي البلوشي

الملخص

تهدف هذه الورقة العلمية إلى البحث في أسباب افتقار خريجي مؤسسات التعليم العالي لمهارات التفكير العليا، وتعزي ذلك إلى طريقة التدريس المعتمدة للمقررات النظرية. تقول الورقة بأن سبب الافتقار إلى مهارات التفكير الناقد وحل المشكلات وكذلك المهارات البحثية هو الاستخدام الواسع النطاق لطريقة التعليم المباشر لتدريس المقررات النظرية في المرحلة الجامعية. ولذلك فإن الورقة توصي باعتماد طرق تدريسية تعزز التعلم النشط، كطريقة المناقشة وطريقة حل المشكلات. وتهدف الطرق التي توصي الورقة باعتمادها إلى إثارة حب الاستطلاع لدى الطلبة حيال المادة العلمية للمقرر. ويتحقق ذلك من خلال تكليف الطلبة بالقراءة وكذلك عرض المشكلات عليهم، مما يدفعهم إلى إبداء الملاحظات وطرح الأسئلة، وهو ما يؤدي بدوره إلى تقمصهم دور "المتعلم النشط" بدلاً من دور "المتلقي السلبي" المتعارف عليه تقليدياً. وتبرر الورقة تزكية هاتين الطريقتين للتعليم بأنهما تشبهان أسلوب اكتساب الأطفال للمعارف والمعلومات وكذلك طريقة الاكتشاف التي يتبعها الباحثون؛ حيث تعتمدان بشكل أساسي على "إبداء الملاحظات" و"طرح الأسئلة" و"تحري الإجابات".

الكلمات المفتاحية: حب الاستطلاع؛ الملاحظة؛ الأسئلة والمناقشة؛ المشكلات؛ التعلم النشط.

1. Introduction

Despite the fact that university education has become a necessary requirement for success both professionally and socially, it is still not clear to many, including university instructors, what the purpose of university education is. While most people think that the purpose is obtaining a degree (necessary for a career), others believe that the purpose is the transfer of knowledge and skills from individuals (i.e. instructors) and other educational resources to students. Educationists believe that the ultimate goal of university education is to produce individuals who are equipped with the necessary critical thinking, problem solving and research skills, as well as being interested in life-long learning (e.g. Donald, 1985; Hager et. al, 2002; Barrie, 2006; Washer, 2007; Tiruneh et al., 2014).

Despite these great goals and the unlimited resources invested in achieving them, many university graduates obtain certificates that say very little about their actual intellectual skills. The graduates finish their studies with a lot of knowledge in their areas of specialty, but with little in terms of their critical thinking and research skills, creating a gap between their actual abilities and employer expectations (Jackson, 2009, 2010; Stewart et al., 2016; Abbasi et al., 2018). This paper looks into this issue and raises the question of why, despite sound planning and keen interest on the part of academic institutions and national strategists, university graduates lack the ability to think critically, solve problems and conduct research?

The paper argues that the reason university graduates lack higher order intellectual skills (i.e. analysis, synthesis, evaluation, critical thinking, problem solving) is the nature of the teaching approaches adopted by the relevant institutions or individual instructors for delivering content courses. Content courses, which make the majority of university courses, are those concerned with delivering facts, theories, concepts, principles, and research findings, as well as introducing students to their areas of specialty. The problem arises because the instructors in almost all areas of university education, given their purely specialization-related backgrounds, either lack knowledge and expertise in teaching methodology (Brownell & Tanner, 2012; Tagg, 2012), or just feel tempted to lecture (Allgood et al., 2004; Goffe & Kauper, 2014), which leads to a teaching method that solely depends on

presentations, or delivery of content. Basically, given the nature of the 'teaching' job, the instructors, out of commitment and a high sense of duty, indulge in the activity of lecturing, without requiring any active role on the part of the students, whose job becomes listening and taking notes.

Therefore, I argue that the lack of intellectual and research skills is due to the application of the direct approach to instruction, i.e. lecturing and presentations, which is preferred by students (e.g. Hughes & Wood, 2003; Gormally et al., 2009), but which is not suitable for university content courses (Jackson & Prosser, 1989; Hake, 1998; Knight & Wood, 2005). This is because it does not require active student involvement in the learning process. Given these shortcomings of the direct approach, is there an alternative approach to university content courses?

I argue that this problem can be overcome by adopting teaching approaches that promote active learning, like the discussion approach (Applebee et al., 2003; Gibson, 2009; Lim et al., 2017) and the problem-based approach (Duch et al., 2001; Savery, 2009; Ferreira, 2012). This is because these two approaches require more student involvement in the learning task, which leads to equipping the students with the active learning skills, and ultimately to creating independent learners who are capable of learning away from the instructor and the academic institution. Research findings from the literature will be cited in support of the central claim that these two approaches foster higher order intellectual skills, and that they are suitable for a wide range of university content courses (Al-Balushi, 2021). While the most active individual in the classroom according to the direct approach is the instructor, it is the student according to the discussion and problem-based approaches, hence promoting active learning.

Section 2 provides an overview of the main features of the three aforementioned approaches to instruction. Section 3 provides the rationale for adopting the discussion and problem-based approaches, as opposed to the direct approach. Section 4 discusses the concept of active learning and the role of the society. Section 5 discusses the advantages of the discussion and problem-based approaches to instruction. Section 6 discusses the disadvantages of the direct approach for university content courses. Section 7 concludes the paper.

2. Overview of the Three Approaches

This section introduces the three previously mentioned approaches to instruction by stating their main tenets. It presents their characteristics, which illustrates the differences between the direct approach, on one hand, and the discussion and problem-based approaches, on the other hand, in terms of teacher and student roles.

The direct approach to instruction assigns the teacher the more active role in the classroom, since “it emphasizes teacher control of most classroom events and the presentation of structured lessons. Direct instruction programs call for active teaching: Clear lesson organizations; step-by-step progression between subtopics; and the use of many examples, demonstrations, and visual prompts” (Slavin, 2015). It involves:

(1) Instructional approaches that are structured, sequenced, and led by teachers, and/or (2) the presentation of academic content to students by teachers, such as in a lecture or demonstration. In other words, teachers are “directing” the instructional process or instruction is being “directed” at students (Lombardi, 2019, ch. 4).

By contrast, the discussion approach to instruction emphasizes:

Open-ended, collaborative exchange of ideas among a teacher and students or among students for the purpose of furthering students’ thinking, learning, problem solving, understanding, or literary appreciation. Participants present multiple points of view, respond to the ideas of others, and reflect on their own ideas in an effort to build their knowledge, understanding, or interpretation of the matter at hand (Wilkinson, 2009).

While the students assume the active role of acquirers of knowledge and understanding, the role of the teacher becomes that of facilitator (Cashin, 2011).

Likewise, the problem-based approach to instruction is a teaching method in which complex real-world problems are used as the vehicle to promote student learning of concepts and principles as opposed to direct presentation of facts and concepts. In addition to course content, [the problem-based approach] can promote the development of critical thinking skills, problem-solving abilities, and communication skills (Duch et al., 2001).

Unlike traditional approaches, the problem-based approach is “a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem” (Nilson, 2010). This approach, too, assigns the teacher the role of facilitator of learning, the individual responsible for providing the learning material (i.e. problems) and guidance.

The difference between the direct approach to instruction, on one hand, and the discussion and problem-based approaches, on the other hand, then, is that the latter are more student-centered, i.e. where ‘learning’ is given more emphasis than ‘teaching’. According to these two approaches, education starts with exposure to some phenomenon (discovered through reading a text or examining a problem), which is followed by ‘autonomous (tentative) learning’ through making observations, and then asking questions (to be answered by either the teacher or the learners themselves) to fill the gap in knowledge.

The recommended teaching approaches thus facilitate learning in a manner that roughly mimics the stages of the Scientific Method. In other words, learning in the classroom is made as genuine as possible, by emulating the original process of discovery gone through by scholars. Succinctly stated, “the teaching of science should be faithful to the true nature of science by capturing the process of discovery in the classroom” (cited in Schuster et al., 2018); that is, teaching science (understood here to refer to all areas of university education) should re-produce the discovery of knowledge experience, thus calling for active learning.

The idea that the teaching method of science should be a reflection of the stages of the Scientific Method, so-called the notion of “Scientific Teaching”, has been advocated in Handelsman et al. (2004) and Ebert-May & Hodder (2008), among many others. Therefore, this paper will focus on the similarity between the recommended approaches and children’s learning style. The next section states why the discussion and problem-based approaches, argued here to be more suitable for university content courses, are more compatible with human nature, in the sense that they create thinking learning individuals, by providing yet another argument that these two approaches attempt to re-produce our natural learning experiences.

3. The Rationale for the Discussion and Problem-based Approaches

The main reason I advocate the discussion and problem-based approaches for university content courses is that these two approaches involve an active student role demonstrated through reading texts, examining problems (i.e. data sets), making observations, asking questions and answering them, and because they are not based on a presentation by the instructor. As such, these two approaches bear striking resemblance to the most natural learning style, the one that we are born with, exhibited by little children when they ask questions related to observations they have made. The essence of these two approaches is that the student's role precedes the teacher's role. In what follows, I will discuss this resemblance and show that it provides a conceptual argument for teaching approaches that are based on observations and questions.

Most people agree that questions asked by little children are a sign of cognitive development and learning (Chouinard, 2007). This learning process does not come about as a result of attending schools or enrolling in academic programs, but usually as a result of a single observation, or a number of observations of a certain phenomenon. In this invaluable experience, children see or hear some information about a certain topic, and given their acclaimed curiosity, they want to know more, and so start asking questions (Mills et al., 2011). Many educators thus urge parents to be more tolerant towards their children's questions, and encourage them to address those questions in a way that leads to further questions, and also to give the children the impression that their questions are always welcome (Olsson, 2013). This should have a positive impact on the children's exploratory experiences, which should encourage them to engage further into this natural learning experience (which the modern science of 'education/instruction' is trying hard to re-produce).

Therefore, one reason why some teenagers (i.e. school students) and adults (i.e. university students) find lectures or presentations (i.e. the direct approach) meaningless is that those lectures and presentations provide them with answers to questions that they have not asked yet, that is, questions that are not theirs, which makes them uninterested in asking questions. Berger (2018) states that children's

questions, which start at a rate of "hundreds of questions a day", sharply decrease as the children start going to school. In other words, the educational system (through the widely used direct approach) is supplying knowledge to minds that have not been made interested in seeking it by asking the relevant questions. Arousing their curiosity (i.e. eagerness to ask questions) is best achieved through exposing those minds to the relevant phenomena, which should result in some observations, and then waiting for them to 'want to know more', that is, to ask the right questions, the ones that should fill the gap in their knowledge (Harris et al., 2017).

One reason why children want to know more (and keep asking questions) could be that they still have not been introduced to the concepts of 'tests' and 'grades' (Harlen & Crick, 2003). Since it is impractical to have university education without tests and grades, one possible way to make university students enthusiastic about learning is to make the learning experience their own (Scardamalia & Bereiter, 1991), not one imposed by the instructor or the educational system, though having to be one managed by the system.

Accordingly, the advocated approaches to instruction set the scene for 'the learning to take place', and do not start 'the teaching' until the students ask for more; if they do not start asking questions, the instructor provides prompts by asking questions. It is, therefore, an attempt to replicate the natural learning style of little children. The challenge is thus to make university students regain the curiosity that they lost because the 'teaching activity' was given more emphasis than the 'learning activity', which led specialists to invent 'teaching methods', rather than look for simpler and more natural 'learning styles' and capitalize on them.

An old Arabic saying goes: "Learning at young age is like engraving on stone", and means: "What is learnt at young age sticks on the mind." One reason 'it sticks on the mind' is the nature of the style that children engage in to make learning happen. This basic style is itself based on another basic trait or instinct that children are naturally equipped with (and many of us adults have lost), which is curiosity: 'truly wanting to know more'. Then, can we, adults, be smart enough to learn something crucial from this learning style, which is naturally aimed at creating learners (for success in life), not just students (for success in studies)?

Before schools and academic programs were ever invented, this innate learning style, which is furnished by the advocated teaching approaches, led people to ask some of the most fundamental questions about our existence on this planet and pursue answers to them, and led others to discoveries and inventions (of arts and sciences) as well as to God. After having discussed the potentiality of this basic learning style, which might be termed the “stone engraving style”, the next section discusses the advantages of active learning, and shows that it can create life-long learners.

4. Active vs. Passive Learning and the Society

This section illustrates the virtues of adopting teaching methods that are based on ‘asking questions and seeking answers’ compared to ones based on ‘lectures and presentations’. Besides mimicking the natural scientific discovery process, the advocated teaching approaches attempt to restore children’s curiosity to teenager and early adult minds. They restore to the university students the active role of ‘true learners’ (which they enjoyed as little children, Piaget, 1954), and assign them the role of ‘active knowledge seekers’, rather than ‘passive content recipients’ that wait for knowledge from the instructor. These approaches to instruction place more importance on ‘learning’ than on ‘teaching’, and do not assume that the ‘learning’ has taken place simply because the ‘teaching’ was performed very actively.

According to relevant individuals and organizations, education is the facilitation of learning. “Good teaching is now understood to involve a process of facilitating learning rather than being the simple transmission of knowledge from the teacher to the learner” (Smith & Blake, 2005, p. 2). What is undeniable, however, is that education has not fully succeeded in this mission. The evidence is that while students at different levels of education, in many countries, including some of the most developed ones, enjoy self-education of certain topics (e.g. information technology), they have largely lost interest in school- and university-mediated education. Many of them attend colleges and universities thinking only of jobs.

Therefore, there should be a shift in the focus of education, or educational institutions and individuals. The shift should be in the conception of education, from ‘the transfer of knowledge and skills to students’ to ‘helping the students to realize their needs as well

as potentials’. The institutionalization of education, despite its many advantages, proved to be less productive as far as university content courses are concerned. Unlike traditional approaches, the discussion and problem-based approaches make content courses ‘creativity-based ones’. Instead of instructors presenting the material and students tested on its content, students are reading texts or examining problems and asking questions; this way, they critically think of the material and evaluate it, rather than just accepting it.

The current conception of education focusses on informing the students about other people’s ideas, discoveries and inventions. The proposed conception of education focusses on allowing the students to discover how much they can accomplish on their own (through reading texts or examining problems), as well as what they need to learn, or to develop to be better learners. The current conception produces students who want to ‘know the answer’ (so that they can write it in the test paper), whereas the proposed conception enables the students to ‘produce and appreciate different answers’.

Now, with the advent of the new technological age (i.e. new industrial revolutions), students, at different levels of education, from first graders to university seniors are interested in the products and wonders of the communication technology revolution. This is obvious, since many of them spend more time with their smart phones (or similar devices) than they spend reading their school or college textbooks. One reason for this is that this knowledge (i.e. 4th industrial revolution) is not part of the course material (except for communication technology-related specializations). Another reason is that students are not going to be tested on how well they have mastered it. A third reason is that they were not presented with the answers, as most instructors do in classrooms of many content courses, but rather with the phenomena that intrigued their curiosity and natural eagerness to learn, which in turn prompted them to ask the right questions, and then to seek answers to them.

The natural question now is which is more effective in creating ‘true learners’, an ‘approach that provides answers’ or ‘approaches that provide for questions’? I think most would agree that when the students take the active role in the learning process, by posing the relevant questions, they are better prepared as inde-

pendent life-long creative learners. They will be able to view phenomena in novel ways and approach problems and questions in non-conventional manners, which is necessary if we are interested in non-conventional answers and solutions. Such approaches are necessary if we want creative learners, not just successful students.

Therefore, it is the 'active learning' strategy that distinguishes good institutions and their graduates. This strategy does not just aim at increasing the amount of knowledge the students have, but rather aims to develop all the aspects of their lives, intellectual, cognitive, social, emotional, psychological, etc.... The ultimate goal would be the production of an individual that is different from the one that entered the university 4 or 5 years ago, an individual prepared to make tangible contributions to human knowledge, not someone who just passed courses and obtained a degree and is looking for a job. Thus, the university experience should be fully utilized to produce active learners who aspire to excellence and innovation, who use the university experience as a start to be creative, that is, to be independent thinkers in their areas. In his definition of education, thinker Noam Chomsky says:

The highest goal in life is to inquire and create. The purpose of education from that point of view is just to help people to learn on their own. It's you the learner who is going to achieve in the course of education and it's really up to you to determine how you're going to master and use it (para. 3).⁽¹⁾

Thinker Arthur Schopenhauer says: "Talent hits a target no one else can hit; Genius hits a target no one else can see" (Champy & Nohria, 2000). How can we expect our students to be able to see what the others cannot see if all we show (i.e. teach) them is what the others see (i.e. have said or written)? There should be room for imagination. According to Albert Einstein, "Imagination is more important than knowledge" (Calaprice & Dyson, 2011, p. 12). There would not be enough room for imagination if the student's head is crammed full of information!

But why is lecturing so attractive to teachers and students alike? I am not going to name a villain, and will not blame it on the institutionalization of education,

for obvious reasons. I, instead, think that the issue is societal in nature. The society, including school administrations and national educational agencies, expects instructors to earn their salaries. For these individuals and bodies, the teachers have to be 'active' in carrying out the duties of their profession. This leads teachers to engage in 'active teaching' (i.e. summarizing content and presenting it) rather than 'effective teaching'. Also, it is the society, including the media and national labor agencies, that informs students that they have to go to academic institutions to acquire knowledge, which gives them the impression that they cannot acquire knowledge on their own. And this is because, for the society, acquiring knowledge is equal to obtaining a certificate, since it is the certificate, not knowledge, that can only be obtained at academic institutions. The students, therefore, should just attend academic institutions, listen to professors (whose job title implies "professing" or "lecturing"), and eventually obtain a degree. Likewise, not offered another option, and also out of human laziness, students like to relax in their seats and take notes, instead of reading textbooks or examining problems. The latter tasks require time and passion, and those are saved for other priorities! Thus, it is the society that tells the teachers to 'inform energetically' and the students to 'listen submissively'.

I am not sure why the society does this, but I believe that this (sometimes good-willed) practice of promoting 'passive learning' is in direct opposition to the original roles of students and teachers, at least in the Arab culture. The Arabic word for 'student' is *ṭālib*, which is the active participle of the verb *ṭalaba*, which originally means 'to seek' or 'to search for' (CALA, 2004, p. 561). Also, the Arabic word for 'teacher' is *mu'allim*, which is the active participle of the verb *'allama*, which literally means 'to provide a sign or a characterization (of the path)' or 'to guide' (CALA, 2004, p. 624). This indicates that the original roles of both parties, students and teachers, which are revealed by the literal meanings of the relevant terminology, are to 'seek knowledge' and to 'provide guidance', respectively, but not to 'listen passively' and 'talk authoritatively', respectively. Therefore, certain institutions in the society, including families and civil agencies, must change their perception of education to be that of 'seeking knowledge' by students and

(1) http://www.openculture.com/2012/11/noam_chomsky_spells_out_the_purpose_of_education.html

‘facilitating the acquisition of knowledge’ by teachers. The concerned government and society institutions should rethink the role and nature of the institutionalization of education, and should admit that it has changed the roles of teachers and students, a change that has brought about the opposite results.

These are the opposite results because not only do they contrast with the students’ and teachers’ original roles, but also because they contradict the very nature of the human being, the thinking, learning, choosing, and deciding creature, not one on whom a certain choice is imposed (Al-Balushi, 2020, 2022). The view that the human being is essentially an observing, thinking creature is compatible with the fact that God has placed signs for His existence for this creature to see, examine, and ponder over, to reach the right conclusion. This conclusion is the truth referred to in verse 53 of surat Fuṣṣilat (Explained-in-detail, 41:53), where God says, “Soon will We show them Our Signs in the (furthest) regions (of the earth), and in their own souls, until it becomes manifest to them that this is the Truth.” (The Holy Qur’an, translated by Abdullah Yusuf Ali, p. 339.). And because God has created a thinking, learning creature, He has made the call for active learning (i.e. learning based on observations of phenomena, asking questions, and seeking answers) in various verses in the Qur’an, the Word of the Creator, who knows best how we can achieve learning. Human beings are invited to exercise tafakkur (i.e. critical thinking) in 15 verses and tadabbur (i.e. contemplation/reflection) in 4 verses and ta’aqul (i.e. reasoning, or exercising the intellect) in 33 verses in the Qur’an. In fact, some scholars argue that the practices of tadabbur and tafakkur enjoy the status of *farīdah* (i.e. obligatory religious duty), just like the five prayers, fasting, zakat, and pilgrimage. Sa’d (2003), for example, states that tadabbur of the Holy Qur’an is obligatory for reaching new insights and understandings of its verses. If so, then contemplation of everything that we see in this universe becomes a necessity for understanding it very well, and understanding its role in our mission on this planet.

Therefore, the educational system should nurture human intellectual activity, rather than suppressing it through applying instructional approaches that do not promote active learning. The ultimate consequence of the current practices is that our graduates

will obtain meaningless certificates, ones that ‘certify’ that they may be good students, but not good learners. This will definitely lead to cheating those students and their prospective employers, as well as the whole society. The following two sections show how the recommended teaching approaches trigger efficient learning, and how, by contrast, instructor presentations and lectures merely consolidate rote learning.

5. Advantages of the Discussion and Problem-based Approaches

This section discusses the advantages of the discussion and problem-based approaches to instruction, for university content courses (in both humanities and sciences). The advantages of these approaches stem from the similarities they share with our original learning experiences, as little children and as scholars. For example, as with the children’s learning style (in which parents’ presentation of knowledge follows children’s questions), the instructor’s presentation of the material (i.e. answers) only follows the students’ questions in these two approaches. This is not the case with direct instruction, in which the presentation precedes the questions. Thus, the crux of the matter lies in the ability of the advocated approaches to promote active learning.

One advantage of the discussion approach is that the students know what they could and what they could not understand on their own. To illustrate, assigned readings expose the students to certain phenomena. The students usually do not understand all of the aspects of what they read about, which prompts them to form questions. The students’ questions are a sign that they are actively involved in the learning task, because they show that they could learn something on their own, but have not been able to learn something else. Now, the questions point out that they are aware of what they know, but more important, the questions reveal that they are also aware of what they still do not know, and need to learn to finish the jigsaw puzzle.

This method, I believe, is more efficient than one that depends solely on presenting the material and opening the floor for questions or discussion (i.e. the direct approach). For one thing, how much can the students learn during the period of the presentation (which is about half of the class time)? Also, how much would they realize they do not fully understand when the

first time they encounter the material is during the presentation of the instructor? Now, how many questions can arise in a class where this method is applied? Shouldn't the students first take time to learn the material (i.e. read the text at home), properly inhale it, and then realize what is missing in their knowledge about it, and then form the appropriate questions? According to the discussion approach, the students know what they still need to learn, which is why they feel obliged to ask questions, in a well-structured and well-guided process that already started with arousing their interest.

One advantage of the problem-based approach is that the students engage in a real learning experience, provided by the problem solving task, and that they neither read the answers to the questions nor do they get them from the instructor; that is, the students are trained to learn on their own. This includes making observations of a set of data (like Isaac Newton observing objects falling on the ground), discovering patterns (like Newton's discovery that objects fall down in one direction only, to Earth, not to the outer space), and devising an analysis that accounts for the newly discovered patterns (like Newton's gravity law), in line with the adopted theoretical framework. Consequently, it is natural, given this approach, that some students provide answers and insights that are new to the course, ones that have been proposed by established scholars. Also, since the correct answer is usually proposed by the students (as a result of the problem solving exercise), this approach does not necessarily require an assessment activity. The practice activity is sufficient, since the students are going to practice the product of their own acquired knowledge.

Both recommended approaches are, therefore, expected to play a major role in developing university students' higher order intellectual abilities. Indeed, the discussion approach to instruction has been shown to be a great tool for promoting problem solving and reasoning (Gillies, 2011), critical thinking and collaborative discourse (Oh et al., 2018), and cognitive achievement (Zha & Ottendorfer, 2011). Similarly, the problem-based approach to instruction proved to be able to enhance critical thinking (Hussin et al., 2019), algebraic thinking (Mustaffa, 2017), cognitive functions and abilities (Chua et al., 2016), and creativity (Utomo et al., 2019).

Besides, the advocated approaches are not restricted to a specific area of specialty. The discussion approach has been shown to be suitable for teaching English language skills (Reznitskaya et al., 2001), literature (Langer & Close, 2001), philosophy (Kennedy, 2004), and social studies (Hess, 2004; Wilen, 2004). It also proved to be good for teaching economics (Moghaddam, 1973/2012), science (Sprod, 1994, 1998), medicine (Hameed et al., 2013; Malcom, 2018), and mathematics (Brendefur & Frykholm, 2000). Likewise, the problem-based approach has proven to be applicable for teaching reading (Berenji et al., 2020), tourism (Kanca et al., 2020), geography (Kwan & So, 2008; Golightly & Muniz, 2013), and statistics (Boyle, 1999). It was also shown to be a good teaching method for mathematics (Erickson, 1999; Ali et al., 2010), medicine (Asad et al., 2015; Alrahlah, 2016), biology (Ramdiah et al., 2018), and physics (Celik et al., 2011; Tatar & Oktay, 2011). It also proved suitable for nursing education (Jackson, 2016), science education (Etherington, 2011), and vocational training (Nurtanto et al., 2018).

6. Disadvantages of the Direct Approach

This section discusses the disadvantages of the direct approach to instruction (explored and advocated in Rosenshine, 1986, 1995; Rosenshine & Stevens, 1986, among others) when applied for university content courses. Most commonly used manifestations of this approach include a 'presentation' of the class material, followed by a 'practice' task, and then an 'assessment' task that aims at ensuring the achievement of the class objectives (Huitt et al., 2009, p. 80), the so-called PPP 'presentation, practice, production' approach (Oliveira, 2004, p. 254), a popular variety of this approach. The drawback of this approach for content courses is that it provides the students with answers to someone else's questions (the instructor's, the book writer's, the future employer's, etc...), not theirs. Of course, such a teaching approach might in principle be very efficient and practical, especially in 'training on the job' programs as well as for language skills courses and courses in which students are introduced to new 'technical' skills (like computer, communication, etc...) in every class of the course, which requires more activity on the part of the instructor.⁽²⁾

(2) On the suitability of the PPP approach for teaching language skills, see Sato (2010), Budiarta (2015), and Anderson (2016).

Nonetheless, the presentation-practice-production approach is not practical for content courses, especially at the university level. This is because such an approach can only consolidate content learning; that is, this approach gives the students the impression that the ultimate goal of the course is mastery of the content (Villalobos, 2012). This is because every class of the course is a 'happy' occasion for the instructor to practice his/her "lecturing duty" by introducing the students to some new content (which he/she has summarized from the textbook and other sources). Since this new content is not well-situated given the students' immediate knowledge (established through reading or examining data sets), this approach usually leads the students to apply the rote learning mechanism, which results in aching memorization of a lot of information and procedures or facts. Another problem with such a teaching method and hence a learning style, many educationists agree, is that the learnt material usually stays in the learner's memory only until the test (Miller et al., 2002; Khamees, 2016). Therefore, a third problem is that this approach gives the impression that the purpose of education is passing tests (and obtaining a degree, when in fact the purpose is 'passing the test of life'!)

Unlike the discussion and problem-based approaches, the direct approach provides the students with the solution/answer (sometimes with the problem as well), and then assesses their mastery of the dictated solution/answer. Obviously, this approach treats students as passive beings that are there to just be 'filled' with some knowledge and then prompted somehow to show that they have mastered it. As far as university content courses are concerned, such an approach could be the desired one if the purpose was to produce good 'students' who know the content of the classes very well, and so what the tests will include, and consequently will be able to get high grades. It, however, is not desirable at all if the purpose is producing good 'learners', ones who are trained on how to learn, eager to learn in general, interested in what they learn, and willing to continue learning when they pursue their careers and raise their families. Good students make good transcripts, but good learners make good academics, good professionals, good parents, and ultimately good citizens of the world.

7. Concluding Remarks

The discussion in the preceding sections touched on many vital issues related to learning. They all center around the theme of university content courses, and pose the vitally important question: Do we want the content courses to be all about content (which is not much appreciated and forgotten after tests) or about intellectual skills (with the advantage of making students interested in the content and also in developing their own learning skills)?

Differently stated, should the delivery of content courses be through the 'presentations/lectures' approach or the 'observations-questions-answers' approaches? The former provides answers (i.e. knowledge) without questions, and the latter provides the answers after the questions have been raised. Basically, should education be more about 'teaching', in which case the instructor does more work, or about 'learning', in which case the students do more work? That is, is "education" more about "active teaching" or "active learning"? Our course syllabi include the intellectual skills of 'analysis', 'critical thinking', and 'problem solving', yet our standard teaching approach for most of the university content courses favors content, not skill, acquisition.

The preceding sections have supported the view that education must be about "active learning", especially with regard to content courses. Otherwise, content will take priority and skills as well as interest in learning will be demoted. Therefore, the solution is in less instructor roles and more student roles. The instructor should stick to his/her "facilitator (of learning)" role, and should let the students do the learning on their own, through reading the material and examining the problems, then asking and answering questions to finish the jigsaw puzzle. Students who do not do the assigned reading (of course without good excuses) and so do not ask questions are simply ones who are not truly interested in learning. They are just seeking to 'know' the least possible amount of content, which also includes answers to possible test questions. Unfortunately, such negative attitudes towards learning are motivated by some good-willed instructors who think that their role is providing the students with the content, simplifying it, and making sure the students are aware of what the tests will include. Can we instructors stop being so naïve? Can

we, instructors, students, administrators and strategists be smart enough to learn something from the great civilization of China? A Chinese proverb says: "Teachers open the door but you must walk through it yourself".⁽³⁾

The true distinction in our profession is between two choices. The first is achieving some good academic standing (i.e. passing, not failing) or some relative grade advantage (As and Bs, not Cs and Ds), hence using all the possible means to convey content to students. The second is producing independent learners with capability and interest in life-long learning and research, hence using question-based approaches for university content courses. To conclude, we are calling for a shift in what is considered 'intuitive' in educational practices; the shift should be from 'lecturing by lecturers' to 'learning by innately curious learners'.

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