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RESEARCH ARTICLE:

Situating Inquiry Pedagogical Practices in the Classroom to Foster a High-Impact Research-Minded Learning Experience

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Abstract

Undergraduate programmes should provide students with meaningful learning opportunities to acquire a range of knowledge, skills, and attributes. Within the current, fast, and ever-changing environments of learning, a student's acquisition of self-reflection, problem-solving and critical thinking skills – and ultimately the ability to undertake an independent academic inquiry – is more evident than ever before. In this article, the authors imagine a shift in the traditional notion of the classroom as a space of knowledge dissemination, to the classroom becoming a space of knowledge creation. It is within this space that differences intersect, influence each other, and hybridize in pursuit of inquiry-minded (and meaningful) learning experiences. The authors argue that adopting a reflexive pedagogic approach, underscored by the notion of inquiry-based learning, best aids the development of a student's required skill set. In the reflexive context, lecturers and students are collaborators in the learning and teaching process through mutual inquiry. Based on Paulo Freire's notion of critical pedagogy and supported by undergraduate research as a high-impact practice, reflexive pedagogical practices stimulate students' agency, interest, and performance – creating opportunities to establish baseline research skills on undergraduate level. This article is a conceptual exploration positioning inquiry-based learning, through reflexive practices, as part of the undergraduate curriculum at all three levels of undergraduate progression. Progression and the development of inquiry skills are proposed through structured inquiry in the first year, guided inquiry during the second year, and open inquiry at the third-year level.

Keywords: *reflexivity; pedagogy; inquiry-based learning; undergraduate research*

Introduction

Expectations towards higher education institutions and their graduates are at an unprecedented high (Humburg and Van der Velden, 2013) and will continue to increase in the foreseeable future. In recent years, and as part of what the South African government considers to be strategic directions in preparing its citizens for the challenges of the 21st century, the curricular discourse of critical thinking has assumed centre stage. As universities and their stakeholders actively interact with the dynamic and changing world in search of answers to historical, contemporary, and future challenges, Levine (2000) is of the view that it is vitally important to ask the fundamental question: "What is the purpose of higher education?" In pursuit of answering Levine's question, the authors prioritise the needs of the student, prospective employers, and society in general as the driving force behind finding meaning. It should be clear that students are continuously seeking skills and abilities that will translate into their careers, whilst employers are looking for graduates who are able to analyse issues, think critically, solve problems, communicate effectively, and take responsibility. Society needs graduates that are troubled by social suffering and therefore driven to champion humanitarian values (Justice *et al.,* 2009).

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Globalisation has inscribed a new, but somehow lapsed, need for restructuring, repositioning, and framing higher education systems to correspond with the skills and competencies required in the 21st century (Maassen and Cloete, 2006; Naidoo, 2011). For many countries, this has meant that students are expected to work towards the attainment of a specific (21st century) skills set, and a substantial increase in participation rates in higher education to match the demands of the globalised world (Bensimon, Hao and Bustillo, 2006). From this notion, much has been written in higher education literature on 21st century skills, its development in higher education students and the link between these 21st century skills and career success whilst improving the economy and society in a competitive and complex world (Tight, 2021). Gonzales (2020) recently reviewed the level of 21st century skills both students and staff possessed at a Philippine university. The skills reviewed in her study included collaboration and communication skills, critical thinking skills, creativity and innovation, self-direction as well as global and local connections. She found a very good level of 21st century skills in both students and staff but saw variation between these skills in students and staff from different programmes. This finding indicates the need for a more global or extended approach to the development of these skills in students and staff within the higher education environment. Kuh (2008) recommends that institutions should aspire for all students to participate in at least two High Impact Practices (HIPs) throughout their undergraduate experience, which could provide a solution to the challenges of equal attainment of skills by students in different programmes, posed by Gonzales.

In addition to attaining these 21st-century skills, Brown and Keep (2018) suggest a new educational consciousness that requires a greater educational focus on individual agility, creativity, and lifelong learning. This begs for a different learning context. A context that foregrounds the learning and teaching practices on the notion of inquiry that supports and encourages open-minded discussions, the questioning of assumptions, and the critical assessment of information, evidence, and argument (Justice *et al.,* 2009). Healey and Jenkins (2018) links five of Kuh's HIPs to research and inquiry, namely first-year seminars, collaborative assignments, undergraduate research, service learning and capstone courses, further highlighting the impact a learning context built on inquiry could hold for higher education students.

Cultivating Integrative and Reflective Competencies

The deficit thinking surrounding students' preparedness for the challenges of higher education often fails to conceive them as independent and critical thinkers, capable of participating in the inquiry-based learning experience. Instead, they are viewed as students in need of the maligned 'spoon-feeding' approach. This approach of teaching does not reflect what Giroux (1992) would have described as Freire's (1970) notion of 'conscientization', that is, learning that encourages students to cross ideological and political borders through expanding their understanding and broadening their ability in ways that make them think about immediate experiences and how to transform them. Notwithstanding the authors' positive view toward change (and the argument advanced in this article), there is a plethora of research on student under-preparedness (DoE, 2006; CHE, 2016; Shay, 2017; Kirby and Dempster, 2018; Tewari and Ilesanmi, 2020). Research findings in South Africa, suggest that among other things, students enter higher education institutions underprepared as they lack the knowledge, competencies, required reading, writing, and reasoning skills necessary for university study (Shay, 2017; Tewari and Ilesanmi, 2020; Machingambi, 2020). Such views rationalise the deficit approach which focuses on the inadequacies of students rather than the inadequacy and inappropriateness of higher education to meet the needs of these students.

Although several interventions have been developed and implemented by higher education institutions to curtail the high dropout rate and accelerate the graduation rate, including identification, monitoring, supporting the at-risk students, the introduction of access and foundation

programmes, peer mentoring intervention, and secondary support programmes like financial support, food security and student counselling (Ramrathan, 2016). We posit that these interventions are often propelled by a deficit perspective which locates the problem within the student. As such, these programmes are designed to make students fit into the higher education space and engage with university learning on its own terms. Deficit thinking is conceptualized as a system of thought consisting of ideas, attitudes, courses of actions, beliefs, and practices that frame and represent people or groups in a narrative of deficiency, lack, absence, and failure (Fogarty *et al.*, 2018; Norwood, 2021). Deficit thinking thus narrowly puts the blame on the affected individuals or communities thus overlooking other macro issues in which they are embedded.

Sharma (2018), therefore, calls for 'spaces of transformation', where lecturers also begin to critically unpack their own assumptions (as mentioned here). Moreover, lecturers need to recognise students as "capable of understanding the world through their experiences and observations" and "capable of taking actions that will transform our world" (Sharma, 2018: 150). When exploring the South African Survey of Student Engagement (SASSE, 2021) data of 6203 undergraduate students from six traditional universities commissioned by the Council on Higher Education (CHE) and administered by the University of the Free State (UFS) on their inclination toward reflective and integrative learning, the traditional notion of teaching still finds expression in the current teaching and learning practices (see Table 1). The results demonstrate curriculum design and practices that entrench the dumping down and banking model of education used by Paulo Freire to describe and critique the traditional education system.

Table 1: South African university undergraduate SASSE (2021) responses to reflective and integrative learning

(n = 6 203)	**Never (%)**	**Sometimes (%)**	**Often (%)**	**Very often (%)**
Combined ideas from different modules/subjects when completing assignments	10	40	32	18
Connecting your learning to societal problems or issues	12	38	32	18
Included diverse perspectives in module/subject discussions or writing assignments	20	37	28	16
Examined the strengths and weaknesses of your own views on a topic or issue	8	35	39	19
Tried to better understand someone else's views by imagining how an issue looks from his or her point of view	4	27	43	26
Learned something that changed the way you understand and issue or concept	2	23	45	30
Connected ideas from your module/subjects to your prior experiences and knowledge	2	22	42	34

The baseline in inquiry-based learning curriculum design and practice is that students be expected to demonstrate integrative and reflective competence. Integrative learning can be an umbrella term for a wide range of connection-making activities, which may include, but not limited to, disciplinary connections. Integrative learning pushes students to explore connections across the general education curriculum (Huber and Hutchings, 2004) and integrate previous learning with new material (Leornard, 2012). Integrative competence is developed through combining ideas from different modules when completing assignments, connect learning to societal problems, and include various perspectives in their engagement and writing.

Reflective learning, on the other hand, is considered a key strategy for teaching critical thinking (Baker, 1996; Aryani *et al*. 2017). Through Kolb's experiential learning model individual responds to a lived experience and cognitively reviews and explores the experience in such a way as to create and clarify meaning in terms of self. This process, in turn, leads to increased self-awareness, increased sensitivity to the environment, and a change in conceptual perspective (Kolb, 1984). To develop reflective competencies, the curriculum should encourage students to examine the strengths and weaknesses of their views on the topic, demonstrate empathy by trying to better understand someone else view, for their learning to be transformative, in that the learning experience changes the way they understand the issue and demonstrate the ability to connect new insights to prior experiences. Although the students' responses to reflective learning are more favourable (as depicted by the often and very often scores in Table 1), it is concerning to note that students' responses to integrative learning are dominant on the lower scale (see never and sometimes scores in Table 1).

Although integrative and reflective learning can be analysed independently, we see them as interdependent to aid inquiry learning outcomes. Rust and Korstange (2018) also viewed integrative and reflective as interdependent, utilising a first-year seminar to develop student's reflective and integrative skills. These authors confirmed the development of integrative and reflective skills as an important skill for student's to be able to link the integration of knowledge between different courses/modules (compare with data from Table 1). They also confirmed the positive impact of integrative and reflective thinking skills on the personal and professional growth of students. Given that the deficit perspective often focuses on the inadequacies of students rather than the inadequacy and inappropriateness of the higher education curriculum to meet the needs of the student, it follows that university lecturers who strongly subscribe to an under-preparedness disposition will develop a lackadaisical attitude in espousing instructional models (including assessment practices) that encourage reflective and integrative learning.

The effectiveness of reflective learning to demonstrate the use of higher order thinking skills in students was recently reported on by Whalen and Paez (2022). It is, therefore, important to also review the higher order thinking skills within the same cohort as reported on in Table 1. The results of the SASSE survey on higher-order learning (Table 2) provide a rich source of data on how students approach their studies and engage in meaningful learning activities. Based on the SASSE results the four conditions (Kuh *et al*., 2005) essential for student engagement show favourable responses. Students' response indicates readiness for application, analysis, evaluation, and forming new ideas and understanding by putting together various pieces of information (akin to Kolb's active experimentation). The results are consistent with Bloom's higher order thinking taxonomy, and Kuh's notion of student engagement, and subsequently support the assertion advocating for situating inquiry pedagogical practices in the classroom to foster a high-impact research-minded learning experience.

Table 1: South African university undergraduate SASSE responses to higher-order learning

(n = 6 203)	**Very little (%)**	**Some (%)**	**Quite a bit (%)**	**Very much (%)**
Applying facts, theories, or methods to practical problems or new situations	3	15	34	48
Identifying the different parts of an idea, experience, or argument in detail (analysing)	3	19	38	39
Evaluating a point of view, decision, or information source	4	19	39	38
Forming a new idea or understanding by putting together various pieces of information	5	20	35	40

Ingold (2018) argues that education is not the transmission of authorised knowledge from the knower to the novice. He posits a view of education that advances it as a way of opening pathways of growth and development. Based on the results portrayed in Table 1, Ingold's argument begs for a reimagination of classroom practices in the quest for situating inquiry-based learning as an undergraduate teaching strategy. Some promising results in this regard is included in Table 2. Most of the students that participated in the SASSE survey indicate the application of knowledge in new situations and integrating pieces of information quite a bit or very much. These results indicate initial steps towards a position of critical pedagogy, dismantling the knowledge-power hierarchy and which positions students as active partners (collaborators) in the learning experience. It creates opportunities for students to explore a topic more deeply and learn from their own concrete experiences (Kolb, 1984).

Critical Pedagogy and Inquiry-Based Learning

The notion of critical pedagogy counters the traditional, restrictive, top-down, "banking" model of education (Freire, 1970). Freire (1970) distinguishes between banking education and problem-posing education; in the traditional view of education, lecturers deposit knowledge, and students are the receivers of knowledge. They receive, memorise and repeat. Freire (1970) argues that rather than helping people to become critically literate, reflective agents in the world, traditional 'banking' education domesticates, dehumanises, and oppresses people instead. He offers an alternative vision for education that is built around problem posing and is aimed at helping people to achieve 'conscientization', or the ability to "perceive social, political and economic contradictions and to take action against the oppressive elements of reality" (Freire, 2000: 35). A goal of critical pedagogy is to deconstruct, and then reconstruct, the traditional student-lecturer relationship, and develop spaces and practices that nurture dialogue that ultimately results in both educational and social benefit (Freire, 1998; Kincheloe, 2008). From this position of Freire, it is clear that inquiry-based learning could facilitate the process where learners learn to think critically and develop a critical consciousness which helps them to take necessary actions to build a more just and equitable society. In this context, students are saved from being objects of education and rendered as subjects of their autonomy. In this way, inquiry-based learning is the best instructional model to prepare students for the inevitable changes inherent in their educational experiences by shifting them towards problem-based issues they will face in future training and their careers (Adedokun *et al.,* 2014).

Critical to the inquiry-based learning process is the balance between the adoption of inductive and deductive positions. The learning process invariably involves the movement between inductive and deductive dispositions. Students will be encouraged to use new observations to infer meaning from theories (inductive), and then apply the theoretical models to deduce propositions that can be verified through active experimentation (deductive). The ideal is the learning experience in which induction precedes deductions. Once the lecturer considers inquiry-based learning worth endeavouring, the inevitable question is which pedagogical practices to use. In line with the argument presented above, the authors argue for the undergraduate curriculum design and delivery to move from simply transferring content and knowledge to emphasising critical thinking, application, and creative problem-solving (Gholam, 2019). Inquiry nurtures the ability to think and can create learning opportunities that foster high order thinking skills. Through inquiry, the learning process identifies the relevant concepts that need to be understood, enabling students to integrate knowledge and establish patterns and connections. Justice *et al.* (2009) found inquiry-based learning to be an approach for improving the quality of undergraduate education by moving toward more student-directed, interactive methods of learning. Inquiry-minded students will be able to develop capabilities to make personal, social, and economic decisions.

This resonates with the social purposes of higher education as the core business of universities (Badat, 2010; DoE White Paper, 1997). These social purposes include:

- To undertake the "production, acquisition and application of new knowledge" and "contribute to the creation, sharing and evaluation of knowledge" (DoE, 1997: 1.12, 1.3).
- To contribute "to the social … cultural and intellectual life of a rapidly changing society", socialise "enlightened, responsible and constructively critical citizens" and "help lay the foundations of a critical civil society, with a culture of public debate and tolerance" (DoE, 1997: 1.12, 1.3, 1.4).
- To "support a democratic ethos and a culture of human rights by educational programmes and practices conducive to critical discourse and creative thinking, cultural tolerance, and a common commitment to a humane, non-racist and non-sexist social order" (DoE, 1997: 1.13).

Following the policy statements above, higher education institutions are expected to train graduates who will make a valuable contribution to nation-building in terms of applying the knowledge and skills acquired for the development of the society. To achieve this, there is a need for the transformation of the undergraduate curriculum through responsive learning and teaching practice that prioritises reflective, integrative, and higher-order learning. It challenges the institutions of higher learning to prioritise the social and intellectual skill sets increasingly being expected of graduates (Humburg and Van der Velden, 2013). For the sake of social benefit, Nussbaum (2010) deems this critical for a democratic country, particularly for South Africa's young democracy (Duarte 2016). Notwithstanding other pedagogical approaches, the authors deem inquiry-based learning as an educational practice from which to contribute both high-impact undergraduate research curriculum (Kuh and O'Donnell, 2013) and pedagogical practice – with its emphasis on the hard work of critical analysis, moral judgments, and social responsibility – in universities' quest to deliver well-rounded graduates (Barrie, 2012).

Against this backdrop, scholars are beginning to provide alternative narratives that recognise students' agility and their ability to rise to academic challenges. For example, Agumba (2020) argues that key to students' epistemic becoming, universities should move beyond the simplistic knowledge transfer pedagogies to a more process-oriented pedagogy that allows students to make productive intellectual connections between the knowledge of the disciplines and its application in contingent contexts. This will require universities to expand the gaze to put both the question of "underprepared students and underprepared universities under the spotlight" (Dhunpath and Vithal, 2012: 2) and to fundamentally change the terms of their recognition of students' capabilities and identities in the key message systems of curricula, pedagogies and assessment (Samuel, Dhunpath, and Amin, 2017; Cross, and Carpentier, 2009; Mungal, and Cloete, 2016). Effectively this study, therefore, seeks to answer the question of how to reinterpret teaching and learning spaces as sites for inquiry-based undergraduate encounters to cultivate relevant contemporary skills.

Process of Inquiry-Based Learning

In the proposed inquiry-based context, lecturers work consciously with diversity and differences, for instance, by allowing room for "a plethora of voices" (Giroux 1989: 107). In Freire's view, inquiry-based learning leads to the development of knowledge by the students themselves. Problem posing, according to Freire (1970), involves uncovering reality, striving for the emergence of consciousness, and critical intervention in reality. This consciousness allows students to take the necessary actions to improve their life conditions (Freire, 1970). Degener (2001) believes that by enabling students to reflect on their lived knowledge, they learn how to transform their lives. Both students and lectures become subjects in this process. Students and lecturers become fully conscious and aim to transform the world into a more just place through a critical examination process. Freire's (1970) conceptions

serve as an impetus for consciousness-awakening. The goal of attaining such critical consciousness is to understand how relationships among social groups can be changed and become more equitable.

Giroux (1989) describes this as educating students to fight for a quality of life in which all human beings' benefit. Therefore, a curriculum that is designed for this purpose must be transformative and help students develop the knowledge, skills, and values needed to become social critics who can make reflective decisions and implement their decisions in effective personal, social, political, and economic action. In this way, lecturers avoid unilateral transfer of knowledge and give students shared ownership in their learning. As such, students can develop their intellectual and emotional power to examine their learning in school, everyday experience, and conditions in society.

In addition, critical pedagogy is dialogical and composed of lecturers and students problematising oppressive forms of ways of knowing through generative themes that are relevant to the students' lives (Freire 1970). Dialogism is, thus, the base of critical education in that it is one means of actively involving students in their education. Its integration throughout the learning process makes it possible for a lecturer to create opportunities for students to share new thoughts and understandings. The use and practice of dialogue limit the lecturer's talk and encourages the learner's voice (Shor, 2012; Grant, 2015). Critical for classroom dialogue is curriculum as context and praxis. Context provides the nuisance opportunity for critical engagement, and praxis creates conditions to dismantle knowledge hierarchies and democratise learning spaces. Inquiry-based learning and reflexive teaching are very important in this regard.

According to Giroux (2005), it is only when students are helped to develop the ability to reflectively problematise and decentre what they are taught, that they can be able to develop a deeper understanding of what is taught and develop it further. Engaging students in empowerment strategies such as reflection, discussion, and dialogue will create a space for them to counter powerlessness and significantly improve their learning (Kelly and Brandes, 2008; Harlen, 2007) through this critical dialogism. In Freire's critical pedagogy students learn to take ownership of their learning, which encourages them to make meaning and act from reflection instead of memorising facts and values handed to them. Critical pedagogy will therefore help the lecturer to form a discourse through which meaning, reality, and experiences are negotiated.

Through inquiry-based learning, learning becomes more than simply an accumulation of discipline-specific, technical facts, and skills, and leads to a space of experiential learning. Universities have often been accused of delivering graduates underprepared for the workplace due to a limited focus on real-life, experiential learning. Inquiry-based learning could, therefore, in addition to factual knowledge, develop students' skills by encouraging the application of knowledge to real-life situations (Kolb 1984). In the proposed context, experience implies more than just the topics covered in a module. It will encompass the attitudes, values, dispositions, and world views that get learned, unlearned, relearned, reformed, deconstructed, and reconstructed in pursuit of learning. Growing evidence supports inquiry-based learning as an instructional method that can enhance student engagement, academic achievement, and higher-order learning outcomes (Spronken-Smith, 2012). Spronken-Smith (2012) is of the view that the nature of inquiry-based learning is contested and even the term itself is not widespread throughout the educational literature. According to Spronken-Smith *et al.* (2008) the core of inquiry-based learning is,

> learning stimulated by inquiry, (i.e., driven by questions or problems); learning that is based on a process of seeking knowledge and new understanding and a learning-centred approach to teaching in which the role of the lecturer is to act as a facilitator and a move to self-directed learning with students taking increasing responsibility for their learning and the development of skills in self-reflection.

Based on these definitions of inquiry-based learning, such an approach could support the development of relevant skills needed in all areas of learning, foster curiosity in students, increase engagement with learning material, and allow students to take ownership of their learning. In this way, this study argues for the re-imagination of the classroom as a site of knowledge encounter, a site of active engagement with knowledge and creative transformation. To best leverage, the development of these skills in a structured way, the development of these skills may be dependent upon the level of undergraduate enrolment or offering (i.e., 1st, 2nd, or 3rd year). Building on this argument, the authors propose an inquiry-based scaffolded learning model, pegged at the different levels of undergraduate progression.

Given the transition from schools' typical top-down approach, lecturers should be mindful of the potential student reluctance to an inquiry-based approach but take comfort in their perceived readiness for such a change (see Table 2). Justice *et al.*'s (2006) five-year reflections on teaching found that inquiry is a potent pedagogical tool in higher education. This assertion is supported by Spronken-Smith *et al.'s* (2007) work on reviewing the effectiveness of inquiry in linking teaching and research. Inquiry refers both to the process of seeking knowledge and new understanding as well as to a method of teaching grounded in this process (Brew, 2003). In this article, inquiry refers to instructional practices designed to promote the development of high-order intellectual and academic skills through student-driven and instructor-guided investigations of student-generated questions (Justice *et al.,* 2007).

Through critical pedagogy, students can dissect their reality, relationships, perspectives, biases, ideologies, and power to address these same factors with other students as well as with the lecturers (Kincheloe, 2008). Such learning encounters could facilitate the development of a socio-political consciousness that seeks to place students in opposition to the status quo by helping them develop their socio-political consciousness. Therefore, lecturers ought to create connections between school and home by learning about and drawing from the existing knowledge that students possess (Kolb, 1984). When lecturers position students (and their context) as knowers and experts of legitimate knowledge, while positioning themselves as learners, this will create a reciprocal relationship with their students (Ladson-Billings, 1995). In this way, lecturers reject the deficit model or the idea that students' home and cultural contexts detract from their ability to succeed academically by believing that all students can be positioned for academic success. In as much as academic success is important within critical pedagogy, students must be equally equipped to navigate the dominant culture to improve their socioeconomic status while striving to improve the lives of others.

Furthermore, the authors deem a social constructivist classroom as one of the fundamental approaches necessary for inquiry learning. Constructivism holds that whether there is an objective reality, individuals will hold different, relative views on that issue. Effectively, individuals actively construct and reconstruct their reality to make sense of their experiences (Prince and Felder, 2006). The interactions with others for problem-solving, and critical and creative thinking, play a primary role in the construction of meaning from experience.

Figure 1 illustrates these two strategies as encompassing the notion of inquiry-based learning in pursuit of delineating teaching approaches that advance learners' ability to learn more effectively within undergraduate teaching and learning spaces.

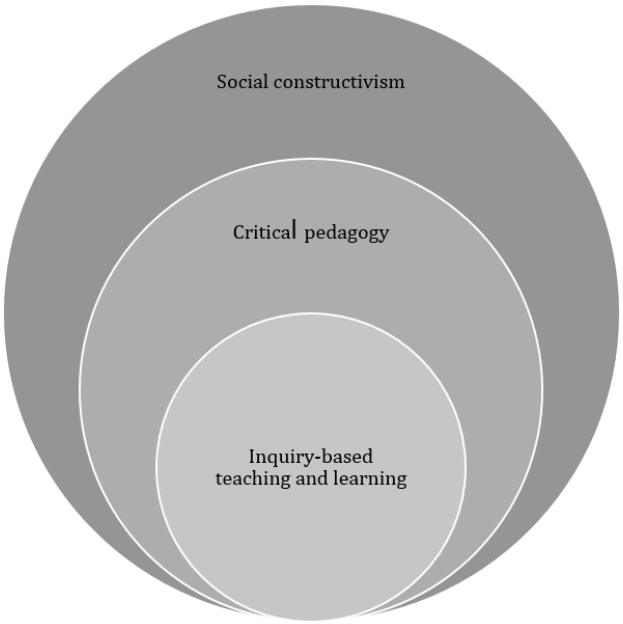

Figure 1: Inquiry-based teaching and learning encompassed by critical pedagogy and social constructivism as key strategies.

When focusing on inquiry-based teaching and learning (see Figure 1), the authors acknowledge the importance of a scaffolded approach to learning, linked to the well-known Bloom's taxonomy utilised in undergraduate programmes. For this reason, three distinct levels are proposed, which could represent the level of undergraduate progression. Figure 2 outlines the three levels of inquiry. The position held here is that the inquiry-based learning process is about discovery and systematically moving from one level of understanding to another, as students' progress through the undergraduate curriculum.

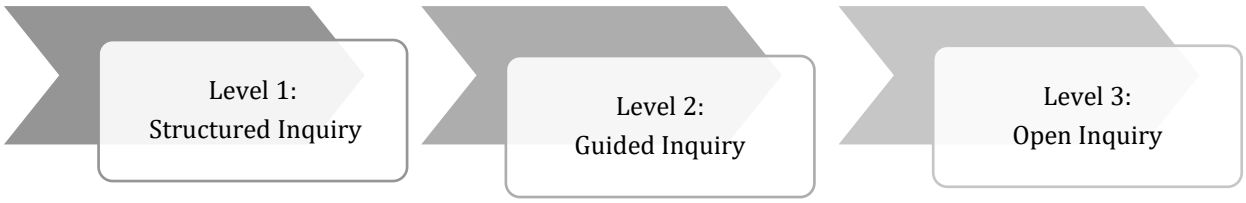

Figure 2: Levels of scaffolded inquiry-based teaching and learning

Structured inquiry, as proposed as the first level of inquiry-based teaching and learning, could typically exist at the university's entrance level and essentially prioritise the acquisition of discipline content knowledge through instructional strategies that are intentional about actively engaging students in the learning process. A well-structured inquiry guides students to use programme/module content and methods to illustrate fundamental principles, concepts, and procedures to navigate the learning experience. On this level, the instructor cultivates a baseline for an inquiry-based learning experience. In the inquiry learning experience, learners are shown how knowledge is generated and transmitted, and how they can acquire the knowledge and skills necessary to become lifelong learners (Ismail, Alias, and Albakri, 2006). Colburn (2006) proposes the use of materials and situations familiar to students for which they have the prerequisite skills and knowledge to succeed, but which still pose a sufficient level of challenge to help them develop higher order thinking skills. A structured inquiry could be linked to Bloom's taxonomy on an understanding

level, linked to generic outcomes such as understanding scientific concepts and developing the basic abilities of inquiry of these concepts. Students should, however, not be abruptly pushed outside their "zone of proximal development" and instruction should begin with content and experiences likely to be familiar to them so they can make connections to their existing knowledge structures (Biggs 1996).

On the second level, a guided inquiry is a natural interface to opening a deeper inquiry. In guided inquiry, the lecturer guides a classroom investigation into an ontological matter of general interest within the field of study. The ontological matter is essentially discipline-specific but requires that students draw from other related disciplines to broaden the scope of understanding, investigation, and meaning. Students in small groups then assist the lecturer with deciding how to proceed with the investigation into the matter (related to the notion of flipped classroom practice). The goal should be to wean the students away from dependence on lecturers as primary sources of information, helping them to become autonomous learners (Biggs, 1996). This approach requires students to consult with out-of-class sources and to seek alternative views on the matter. In this way, students are steadily introduced to the complexity that amends the structured inquiry process learned during the first level and moves to a higher level of Bloom's taxonomy, namely integration.

On the third and final proposed undergraduate level, an open inquiry will require higher order thinking and have students working with integrated concepts or materials. This is in line with the exit-level outcomes of applying concepts and principles to investigate, conclude, and make recommendations (Suchman, 1961). The goal of this level would be to establish an inquiry-functional praxis to ascertain what 1) students can do independently and 2) their potential under lecturer guidance or in collaboration with peers (Biggs, 1996).

Conclusion

The delivery of 21st-century skilled graduates is imminent. Inherent in this challenge is the delivery of graduates that embody skills that are critical for social benefit and economic participation. The learning and teaching method presented here centres around learning facilitation strategies deemed effective in scaffolding students' ability to establish baseline undergraduate research skills. It is argued that situating inquiry-based learning as the dominant learning experience practice can foster higher-order thinking skills, moral judgments, and social responsibility. Moreover, there may also be an increase in self-regulation, self-efficacy, and deep learning orientation (see Panadero et al., 2021). Although there is a strong deficit approach emanating from conversations on student readiness for the challenges of higher education, the recent SASSE results (see Tables 1 and 2) – in addition to the literature supporting the benefit of inquiry-based learning – provide a good baseline for institutions of higher learning to introduce inquiry pedagogy to both curriculum design and pedagogical practice. While the content of the debate is important, the context of and subsequent implication for how inquiry pedagogy is received also has critical dimensions. Inquiry shifts the relationship between lecturer and students and between content and process. Therefore, the question of university and lecturer readiness is important. It is a process that requires a reflexive effort, it cannot be reduced to 'I have been doing this'. Introducing inquiry into scholarly practice equals a shift from being disciplined-based content experts to becoming facilitators of student explorations. In this way, students are moved to become self-directed and autonomous learners, ready to enter the world of work with dynamically relevant skills.

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