

Reflections on Reforming Biology Education at Post-Secondary Level in Malta: A *Bildung* Perspective

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Abstract: While local policy documents have high aspirations for further education, this is in reality often embedded in a utilitarian culture of standardization, instruction and coaching for high stake examinations. This is also the case for the teaching and learning of biology at post-secondary level, where the successful student needs to absorb and memorise information at the same pace that it is being dished out. This utilitarian notion of education makes it difficult for many to succeed. This paper seeks to explore a German inspired notion of education, which though alien to many in the Anglo-Saxon world, has a long and influential tradition. *Bildung*, an educational concept embedded in German philosophical history and culture. This concept is especially relevant for further education, and its intended outcomes are personal and societal transformation rather than simply memorising facts and training for a career. In the current scenario, where the race for grades dominates, the skills for continuous self-formation and growth, both as an individual and as a member of society, are rarely acquired. Discourses surrounding improvement of local further education systems thus need to take into consideration a diversity of ideas, especially ones that have been largely ignored. Notions of *Bildung* can be used to envisage an alternative perspective for the teaching and learning of biology at post-secondary level.

Introduction

Whilst there has been continuous reform in the past years for primary and secondary education, very little has changed with regards to post-secondary education. When a vision for science education was published in 2011 proposing a reform, post-secondary science education was overlooked. This has increased the gap between these levels in a context where, as local

research and policy documents suggest, the situation at post-secondary academic institutions is far from desirable. Whilst teachers and administrators admit this, the status quo remains, as an instrumental, standardised notion of education has seemingly been ingrained in us. This paper proposes an alternative notion of education which can help us envision a different scenario for post-secondary education and the teaching and learning of biological in particular.

The current local post-secondary scenario and reform thoughts

According to the National Commission for Higher Education (NCHE), local further and higher education systems must strive to:

- i. advance knowledge and understanding;
- ii. inspire and enable students to develop their capabilities to their highest potential;
- iii. aid the application of knowledge and understanding to the benefit of the economy and society;
- iv. enable individuals to adapt and learn, consistent with the needs of a flexible knowledge- based economy and life-cycle requirements;
- v. enable lifelong learning for personal fulfillment, for effective participation in the workforce and for constructive contributions to society; and
- vi. contribute to a democratic, civilised society and promote the values, tolerance and debate that underpin it. (NCHE, 2009, p.24).

In Malta, apart from the vocational institutions, further education includes the sixth forms and the Junior College, which are post-secondary institutions catering for those who are seeking an academic path to further their education. Such institutions cater for students who have just finished compulsory schooling and require SEC qualifications or equivalent for entry. They often offer a two-year course, preparing students aged 16-18 for their advanced and intermediate level exams, often with the intention of continuing their education at tertiary level. It is estimated though that only 50% of students actually continue to further their study in higher education institutions at age 19 (NCFHE, 2018).

In 2017, the Ministry for Education and Employment has tasked a working group to assess the local post-secondary situation and make recommendations for a reform including, amongst other things, policies to prepare students in such institutions to successfully face 21st century global challenges. The report recognises that there is a gap between the conditions and pedagogies known to be needed for true learning and what is actually delivered in these institutions. According to this report, education at this level

relies heavily on mass knowledge delivery, standardized testing and formal exams, with student success being measured only in terms of grades achieved. Students are often simply recipients of vast amounts of facts and judged only on their ability to regurgitate these facts, as the majority of questions in the exams they sit for after the two years address only the lower levels of Bloom's taxonomy (Ministry for Education and Employment, 2017). The increase in standardization and rigidity in assessment regimes dictates the pacing of teaching and learning, and those students who cannot absorb the information at the same speed as it is being dished out, often drop out and fail. The students who enter these institutions with the minimum requirements are the ones who struggle the most. The race for exams has dominated the culture of these institutions, with students trying to sit for as many exams as possible in the shortest time possible. This has led to the use of exam-oriented pedagogies, mass lecturing, instruction and coaching. The higher the number of certificates attained the better, with competitiveness amongst similar institutions for student enrollment and perceived student success. This does not imply student learning and rarely allows for student creativity, transformation and personal development. Student focus groups conducted by the working group prior to the publication of the report, highlighted the 'shock' that many students experience as they transition from secondary to post-secondary institutions, and the difficulty in adapting to the lecture style methods of teaching and 'old-style' assessment methods (Ministry for Education and Employment, 2017). It has to be understood that primary and secondary education has changed considerably in the past years, but education at sixth form level has remained largely the same, increasing the gap between the curricula at these levels. According to these focus groups, Junior College students seem to have the greatest difficulty in making this transition as they are suddenly placed in a situation where a lot of independent learning is requested of them without ever being given the skills to do this. Many students who dropped out also mentioned the wrong choice of subjects as a reason for their failure. This is especially significant as post-secondary education is more subject-oriented than in previous stages. Such early subject specialization often does not allow for the teaching of important life skills and forces students to make decisions about their future that they are not yet ready to make. The report concluded that students at this level are not offered quality learning, empowerment or the correct attitude and skills to become autonomous individuals and responsible citizens prepared for the future. Amongst features recommended for education at this level are: addressing student 'readiness' for learning; individualized approach to learning, student empowerment; and a preparation for the future (Ministry for Education and Employment, 2017).

The National Commission for Higher Education (NCFHE) also collected data regarding student engagement and learning in sixth form institutions and came up with its own report and recommendations. It was interesting to note

that students, teachers and administrators had different perceptions about the epistemic aims of education. For students, education is mostly about preparation for the job or career they want. Teachers and administrators have wider views of the ultimate aims of education, including not only the preparation for a future career, but also citizenship, personal development and the transformation into autonomous learners and critical thinkers, even though they admit that the rigidity of the system, does not allow such an education (NCFHE, 2017). Participants in the study, perceived student engagement as motivation and participation in class. Students who have dropped out reported a low sense of belonging and engagement and an overall negative post-secondary educational experience. It seems that students attending private sixth forms have a more positive overall learning experience and reported more positively regarding the teaching methods used. This bears importance since most students in the study view the teaching method as more influential than the teacher's knowledge of the subject. Teachers in private sixth forms give higher importance to student engagement when compared to teachers and lecturers in public institutions and feel that they have more administrative support in this area (NCFHE, 2017). According to teachers, the most important condition to foster student engagement is an 'enjoyable inclusive pedagogy', whereas rigidity in the curriculum is seen as the most significant condition hindering student engagement. Also, the most common reason given by teachers for student drop outs is disenchantment with the education system, and the academic ability and learning style of the student. This indicates that teachers are aware of the lack of inclusive practices at this level. One main reason that students gave for dropping out is the homogenous nature of the system that does not consider student diversity in terms of their learning needs (NCFHE, 2017). This tallies with the report of the working group assessing the post-secondary scenario, which states that inclusion at this level is definitely not addressed properly (Ministry for Education and Employment, 2017). Teachers view students as passive recipients of facts rather than autonomous learners, being more inclined to memorize facts in a grade-oriented culture. Disengaged students are seen as impatient, unmotivated and suffering from low self-esteem, whereas willingness to take responsibility for one's own learning and more learner-centered approaches are seen as positive factors influencing student engagement (NCFHE, 2017). Amongst the recommendations of the report are: student empowerment; helping students to become autonomous life-long learners; a revision of the curriculum; alternative forms of assessment; and personalizing learning experiences (NCFHE, 2017).

These two reports highlight the imminent need for a reform of education at this level, and present an occasion for confronting our beliefs and rethinking. When contemplating education reforms, the surrounding culture, both local and global, stereotypes and prejudices, if not examined and questioned can lead us astray. Ultimately, we should be careful to reach a destination that

liberates us and not imprisons us. Even though through globalization there are currently less barriers between countries and languages, there are still many differences in perspectives, in the way we conceptualise notions, since there is often an inherited culture and history of thought behind them. One such notion is education and its purposes. Locally, we have been very much attached to British notions and models as historically, compulsory education was mostly established during the time when Malta was colonised by the United Kingdom. This, together with greater access to literature written in English, meant that other notions and models have been largely overlooked. It is important to show that there are alternative conceptions that could make a big difference. One such alternative conception is *Bildung*.

Bildung

Bildung is a German term and is seen as one of the fundamental principles of *Pädagogik* (pedagogy – the science of teaching), in the German-speaking world. From the verb *bilden* meaning to form, it can be translated as self-formation or growth. This is not the same as formal education (*Schulbildung*), vocational training (*Ausbildung*), shaping (*Formierung*), teaching (*Unterricht*) or upbringing (*Erziehung*). *Bildung* is not just embedded in the German language, but also culture, and so, since there is no real accurate English translation to the term, *Bildung* is used in international literature. In the German-speaking world, it is one of the most common educational concepts employed in debates surrounding educational activities and policies (Horlacher, 2016). According to Wilhelm von Humboldt, who is considered as one of the founding fathers of the concept in a pedagogical sense, *Bildung* is the ultimate purpose of a human being. What does it mean then to be *gebildet* (educated)?

In his *Theory of the Bildung of Man*, originally written in 1794, Humboldt (2000) describes *Bildung* as a personal, self-reflective process. For Humboldt (1854), education is thus about inner change and development, not just the gain of knowledge and instrumentalism. Through *Bildung*, the individual will have an increased self-understanding (Gadamer, 2004). According to Biesta (2002a), “*Bildung* refers, rather, to the cultivation of the inner life, that is, of the human soul, the human mind.” p.345. *Bildung* itself and also its value, is thus unquantifiable, which contrasts the quantitative trend in the educational sphere culminating in the PISA study. It is often thus used as a fighting word against measurability in education and in criticism of the PISA (Tröhler, 2011). *Bildung* had in fact lost its popularity, as empiricism became the dominant discourse in the 1960’s (Biesta, 2002b), but it has since been more than regained.

Irrespective of personal capabilities or the social situation being born into, *Bildung* is a personal, lifelong process that according to Bleicher (2006) would

lead to the expression of a person's full potential. There is no emphasis on the learning of particular skills and competencies, or the acquisition of specific knowledge, but it is more of an inner process, that leads to the development of the whole person (Sørensen, 2015). *Bildung* is perpetual self-development, and can never be really finalised but can be increased through the type of education received. Most of the German classical texts state that *Bildung* in fact requires education, even though self-activity is the starting point for growth (Siljander & Sutinen, 2012). Education, especially further and higher forms, should thus strive to promote and develop the individuality of the learner, who will in turn only learn by himself only what is consistent to his inner 'soul' (Oelkers, 2001). Any external inputs, say by an educator, will only initiate and not cause *Bildung*, with the responsibility of continuing the process belonging to the individual. According to Biesta (2007), "Education is not just about the transmission of knowledge, skills, and values, but is concerned with the individuality, subjectivity, or personhood of the student, with their 'coming into the world' as unique, singular beings" (p.27).

Bildung is also often regarded as a process that would lead the person to become cultured. Gadamer (2004) considers it as the concept that gave rise to the humanities, where art, philosophy, classical studies, literature and other such fields lead to political freedom. For Biesta (2016), culture is the process of engaging with existing meanings to find one's identity. Humboldt's (1854) *Bildung* is education in the interest of the freedom of the individual rather than for any particular practical purpose. If taken in this sense, the closest English term to the concept of *Bildung* is liberal education (Løvlie and Standish, 2002). The original meaning of liberal education, lies in the freedom and autonomy that such education should provide (Munzel, 2003). Autonomy is the power to enact personal freedom supported by the ability to think for oneself to make reasoned decisions (Bai, 2013). The call for autonomy as the prerequisite of human agency is especially urgent today in a world overwhelmed by global consumerism, fundamentalism and other ideologies that reduce human being to only *behave* (Arendt, 1998). We are at an age of unprecedented environmental degradation and excessive human suffering and yet we blindly form part of the system, whatever that might be. Without the fostering of autonomy through education, simply teaching environmental, social and moral responsibility may well turn out to be another exercise of social conformity (Bai, 2013).

In liberal education and *Bildung*, learning has an intrinsic value, as opposed to *Brotstudium* (bread and butter studies), which is learning only for examination and practical purposes. Liberal education proposes subject diversity or general education as opposed to specialization. In 2011, the Norwegian Association of Higher Education Institutions in their report on the initiation of *Bildung*, stressed that even though *Bildung* has traditionally been equated with the humanities, it is not subject-specific, and can also occur through

technical and scientific subjects (Reindal, 2013). It also asserted that *Bildung* strives for internalized knowledge and competence, something that cannot be defined in any curriculum.

Many discourses surrounding *Bildung* revolve around defining humanity, or what it means to be human (Fuhr, 2017). *Bildung* requires an open attitude towards knowledge (Varkøy, 2010). *Bildung* must depart from the person's imagination, leading to original creations rather than rote, passive learning and memorization of facts presented. In fact, the Humboldtian University integrated research together with art and scientific knowledge as part of the course content. According to Vásquez-Levy (2002), the knowledge acquired through *Bildung* is gained as a result of questions of truth, value and meaning whilst leading to reflection and insights. Masschelein and Ricken (2003) state that "*Bildung* is also used more and more to refer to a formal competency of acquiring currently required knowledge" (p.141).

To be educated, the person must take responsibility to develop his humanity and potential as a unique individual (Reindal, 2013). For Humboldt (1854) human development in its richest diversity is of absolute and essential importance. *Bildung* thus has individuality at its core, but at the same time Klafki (1975) sees it as "*dem Gedanken des wechselseitigen Aufeinanderbezogenseins von Welt und Individuum* - the idea of the reciprocal interrelationship of world and individual" (p.45). This means that the person does not live within herself but is also able to participate in a changing society and culture. Society is therefore transformed through individuals who are willing to use their potential and reason to reach betterment. Thus, according to Horlacher (2004), *Bildung* is about "the holistic development of the individual, as well as about broader hopes for a better society" (p.409). *Bildung* is also seen as a tool of political education and in some cases, as a means of promoting public spirit and social identity (Biesta, 2011).

Today the concept is undergoing a revival, which is important to counteract the benchmark and standardization culture that is so dominant in educational institutions. Taylor (2017) proposes a posthumanist, postmodernist stance on *Bildung* that enables educational practices based on recognition of differences and diversity. She also argues that an individual's development occurs only through complex relationships and interactive events with 'others' (human, non-human organisms and materials) such that *Bildung* in the current era needs to involve diverse forms of knowledge-making and more ideals of social justice and citizenship. According to Biesta (2002a) contemporary views of *Bildung*, should recognize the interdependence of humans such that it helps to shape the person not just as an individual person but also as a global citizen and thus including social, political and ethical dimensions. Relationships create responsibilities, which need to be reflected upon in the education provided. Rather than a personal, inward journey, the

contemporary fluid and globalized world requires a *Bildung* that offers individuals, life-long opportunities to reach their destinations whilst journeying with others (not necessarily humans), expanding their potential and fulfilling responsibilities with each encounter (Taylor, 2017). Biesta (2002a) sees contemporary *Bildung* as “an image of a learning society.... in which the real encounters with who and what is other are a constant and continuous possibility” (p.350). Freedom still remains an important outcome of *Bildung*, and this distinguishes it from *Erziehung*, which is education, or teaching that is done to you. Even if this is not indoctrination, the power and authority of the educator over what goes on internally is always an act of freedom reduction (Biesta, 2016).

Even though many have tried, such a diversity of ideas means that it is very difficult, maybe impossible to come up with a unified theory of *Bildung*. Lenzen, a German educational philosopher, is quoted by Giesinger (2012) as calling *Bildung* a “*container-wort*” (container word), as it can be filled up with many different meanings. One can often see its manifestations though, through its educational, political and social dimensions (Biesta, 2002a). Horlacher (2012) summarises the term as connected to ideas of inwardness and self-cultivation, often seen as an aesthetic ideal and used both apolitically, promoting distance from the goings-on in society and politically, encouraging social change.

According to Winch and Gingell (2008), *Bildung* encompasses three main important points. Firstly, education serves as preparation for adult life and an occupation that will ultimately allow the learner to participate in society. This involves important skills or attitudes such as autonomy, teamwork and critical thinking. Secondly, it places great emphasis on the continuation of education as a form of self-discovery and development throughout one’s life. Lastly, education should not mould learners to become more similar to some ideal form, but should promote the development of the unique personality of the learner. *Bildung* is always *selbstBildung* (self-*Bildung*), departing from the willingness of the individual to learn, grow and transform, meaning that there is a conceptual shift in responsibility from the teacher to the learner. This does not mean that the teacher is free of responsibility but rather takes the role of mentor. Discourse about *Bildung* revolves around, personal freedom as a self-regulating individual, transformational education, self-understanding and world understanding, promotion of universal ideals of beauty and morality and the seeking of internal harmony and wholeness. Whatever the ultimate goal of *Bildung* is though, it is always a uniquely personal life-long journey influenced by personal experiences including formal education. This process is laborious, value-laden and often rebellious in nature, which contrasts the neutrality of most factual knowledge imparted on students. Beck, et al. (2015), in fact, state that educating for *Bildung*, includes and requires educating for the courage to view one’s actions as part

of a greater whole. Education that strives towards *Bildung*, tries to give students not only the capacity to become autonomous, but also the aptitude to engage with moral and social issues throughout their lives.

Bildung remains a popular concept, most probably because it “has always been a flexible concept, subject to continuing revision in response to changing social and educational contexts.” (Taylor, 2017 p. 422). What is common in most ideas of *Bildung* is that education should in fact be more about the person rather than the nation’s economic needs and competitiveness. Education should not be as trivial as a checklist of learning outcomes or an accumulation of test scores. Even if education had to be viewed in a purely functional way, in a digital age, when vast amounts of information are at our fingertips, doesn’t it make much more sense that students are helped to cultivate the skills of rationality and critical thinking necessary to evaluate that information? Also, many current and certainly most future jobs are highly mobile, where in one lifetime, one will have to switch jobs multiple times and quickly learn new knowledge and new skills. This means that we have to advocate for a more sustainable education, where the capacity of independent learning, problem-solving and creative thinking, is viewed as more essential than the memorisation of current facts. In agreement with this view, the World Economic Forum has identified critical thinking, creativity and complex problem solving as the top three skills required in the 2020 workplace (WEF, 2016).

Throughout the years, *Bildung* was and is still often seen as process with an end in itself, separated from useful education in the form of knowledge and specialized skills. This does not necessarily have to be the case. Usefulness can and should arise from *Bildung*, whilst specialized education can and should be also a vehicle for *Bildung*. They can in fact be complementary to each other. Willbergh (2015) concludes that *Bildung* addresses the requirement of education for the 21st century and is thus in fact, a sustainable educational concept.

If the destination is to find out what forms should post-secondary education take, consulting the inspirational thinkers of the past, and engaging with foreign models, gives us direction that might help us reach our destination quicker. The destination is ultimately ours though, and we have to work hard to get to it, formulating our theories and our own ideals along the way.

The teaching of Biology at post-secondary level

During the Enlightenment and German Idealism period, the study of humanities and the study of science were not seen as separate from each other. Nineteenth century natural science research took the form of *Naturphilosophie*. This was eventually replaced by empiricism, and natural

science separated from *Bildung* which was increasingly regarded as being non-scientific. The chemist and novelist Charles Percy Snow (1998), in his 1959 Rede lecture, complained that two cultures have been created, one scientific and technical, the other humanistic and artistic. Whether scientific knowledge counts as knowledge within the notion of *Bildung*, has been an age long debate, with Fisher (2001, as quoted by Horlacher, 2016) arguing that such knowledge should be incorporated and the traditional notion of *Bildung*, expanded. Still in German universities, with institutionalized *Bildung*, scientific achievement surpassed that of other European countries and this could be because of the idea that research, much like education, was an end in itself (Nipperdey, 1996).

Scientific inquiry and its cognitive processes stem out of curiosity and are creative and social in nature. Knowledge is constructed as a result of interaction between individuals and community (Grandy, 2009). Often though, science students think that science is a set of facts and vocabulary that they need to memorise, and that scientists just follow routine procedures in a laboratory. They do not equate science with creativity and collaboration for example, both seen as artistic virtues. And who can blame them? Too often their science classes involve rote memorization, passive note-taking, and step-by-step laboratory activities, designed to produce a single right answer.

In Germany, early scientific knowledge had a liberatory role, freeing people from superstition and social inequalities. Public lectures on scientific theories were organised and scientific literacy was considered necessary to being *gebildet* (educated) (Horlacher, 2016). For Kant, the theoretical knowledge though was not important at all, but *Bildung* (the formation of character, morality and personal wisdom), was necessary (Munzel, 2003). Kant was in fact quite wary of the theoretical sciences (*Wissenschaft*) as in these subjects, knowledge often replaces moral education and without wisdom, science is dangerous, making the person arrogant, rude and inhuman (Paulsen, 1963). Specialised knowledge allows the beholder to see through one perspective, but a second perspective is needed, that of personal wisdom and morality (*Bildung*), enabling science to become humane. Sørensen, (2014) explains Habermas' (1963) argument that universities should include the *Bildung* of character along with the positivist science education to ensure that the public can take part in political discussions in an enlightened, authoritative manner. In science teaching, this would also mean scientific literacy and the sociological and ethical perspectives surrounding the different fields (Sjöström, 2013). In contrast, the local Biology syllabus is full of objective knowledge, which is as neutral as possible both morally and politically, especially with the removal of environmental issues from the advanced level syllabus. Learning occurs in a vacuum, detached from social issues, not

considering that these students are already members of society exposed to many issues of a biological nature.

The majority of students following the biology advanced level course supplement their learning with private tuition, because of real struggles, a lack of provision of quality education, or because of the local culture and mentality that private tuition will increase your success, especially if you are trying to enroll into competitive university courses such as the course leading to the Doctor of Medicine degree. Sometimes, students seek private tuition before they actually start the course. This promotes only fast, shallow learning, increases stress on both students and parents, whilst not necessarily increasing success, and increases the gap in access to education between socio-economic classes (Buhagiar & Chetcuti, 2013).

In the current post-secondary scenario, subject teaching such as biological education, should thus take the challenge of creating opportunities for all students to discover themselves as autonomous learners, equip them with the skills needed to face learning challenges throughout their lives and help them to become contributors to society. If the system cannot be overhauled, then the reflective teacher has to compromise (Entwistle, 2013), and try to find transformative and inclusive pedagogies that can work within the system and its constraints, changing the student's perception of education from within the subject classroom.

Translation from theory to practice

As discussed, in the current local scenario, the student is seen as a consumer, whilst the lecturers as service providers, with the main aim of education being to gain the certificate/grades towards entry into university with competitiveness amongst institutions offering similar services. One-way lecture style teaching and the focusing on measurable skills and knowledge are the norm, leading to rote, passive learning and memorisation of facts. Struggling students often with diverse educational needs fail or quit, whilst many others are seen as unmotivated to learn. The biology syllabus at advanced and intermediate levels lacks the engagement with social, and ethical issues that actually surround the students. An alternative perspective of learning biology at post-secondary level can thus be envisioned using *Bildung*, where the student is considered as a life-long learner, and lecturers and teachers as mentors, guiding students through this particular stage of learning. The main aim of such an education would be to equip students with skills such as rational/critical thinking and autonomous learning, and values, such as the appreciation of equality and diversity. Aspects that cannot be measured and standardised such as the formation of character, morality, originality and individuality are given importance, as are social, political, and ethical dimensions of biological knowledge, leading to transformation and

personal development. As learning occurs in a relationship with others, student diversity is not only supported, but also valued. Finally, teachers and lecturers gain awareness of cognitive processes as an important aspect of learning and development, and help to guide students through making the best use of these.

With this vision in mind, a practitioner should explore different pathways in helping students, in all of their diversity and individuality, to develop and transform into successful lifelong learners and positive contributors to society.

Bildung sees student diversity as something to be celebrated rather than reduced, and thus a pathway needs to be found to enhance it and support students with all their diverse needs in the current landscape. Such a pathway would challenge the way inclusion is viewed at post-secondary level. Innovative and inclusive pedagogies need to be explored. Central to the *Bildung* concept is also the idea of learning from within and for such learning to occur there must be the motivation to learn. Student motivation to learn is a big challenge for educators of 16-18-year olds, for various reasons. Race (2007) lists various suggestions how the motivation of post-compulsory students can be increased. Amongst these suggestions, there is the shift from focusing on teaching to focusing on learning, spending more time helping all students become better learners and helping students become more aware of their competences. This mirrors education as proposed by *Bildung*.

Taking all of this into consideration, an exploration of pedagogical tools that empower the student to become more autonomous and recognize the individuality of each learner is essential to shift from the current educational process to a more *Bildung* oriented approach. Such a shift also demands that the biology classroom becomes a community of learners, each becoming strong autonomous learners developing strategies to improve and modify their own work, whilst appreciating the value of other learners and of interdependence in their own learning. In such an environment, inclusion is a natural outcome.

Conclusion

It very much seems that it is high time for a reform in the local post-secondary setting, as the utilitarian standardised notion of education is not serving anyone. The homogeneity of the system and lack of inclusive practices is reducing the success of students in completing their education at this level and continuing their academic pathway at a higher level. Student engagement and motivation in learning is also negatively affected by the mass delivery of memorisable facts and exam-oriented pedagogies. The system is also not serving in the preparation for future careers as the skills

needed for such careers are not the ones being fostered. Even though science for example, is a creative, collaborative enterprise, the teaching and learning of science subjects such as biology, is also trapped in this passive, standardised and competitive system.

With the intention of contesting assumptions that many have about education at this level, *Bildung* is being suggested as an educational notion that can counteract the authentic issues stemming out of the current local scenario. *Bildung* oriented education seeks to develop strong autonomous lifelong learners through an awareness and development of cognitive skills such as rationality and critical thinking. It also gives importance to inclusion and collaboration whilst pursuing personal and social transformation. This would make education at post-secondary level much more meaningful and sustainable than it currently is.

Until the system is overhauled, the reflective practitioner willing to challenge the dominant perspective, tries to achieve some sort of *Bildung* within the classroom. Apart from giving importance to the intrinsic value of the education given, transformative and inclusive pedagogies and practices will need to be explored in order to succeed. This should lead to better quality teaching and enhanced learning for most students, with a shift from passive learning to a more active participation in their own educational process.

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