

The meaning of this hour: Teaching higher-order thinking as a pathway to better learning outcomes and behaviour modification

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Abstract

A rapidly changing society has created the need for a new kind of graduate. The workplace is looking for conversance in higher-order thinking and emotional intelligence. While the pre-disposition of the student has been seen to be a significant factor in a student’s ability to engage in higher-order thinking, much can be taught and enhanced by teachers well versed in higher-order thinking pedagogy. There are a variety of teaching and learning approaches, including transfer, critical thinking and problem-based learning. However, common to them all is the need to develop student’s metacognition. There is also a need for the teacher to set assignments that focus on essential questions that extend students beyond their acquired knowledge. To be sure, well thought-through questioning is more likely to result in well-thought through answers. Metacognition can also be a pathway to improved behaviour and can form the basis of a dialogue for self-awareness and behavioural improvement. Therefore, higher-order thinking development is a pathway for both intellectual and behavioural maturity. This work enhances the theoretical base for whole school and individual teacher engagement in teaching higher-order thinking to achieve better learning contexts and outcomes.

Preamble

Rapidly changing demands in the workplace have led to the need for graduates who are conversant with higher-order thinking. In addition to the traditional characteristics of punctuality, presentation, cooperation, and competency, have been added

the necessity for a growth mindset. One should add to this, social and cultural awareness, complex problem-solving skills, the transference of knowledge and skills to new situations and contexts, emotional intelligence, and innovation (Dugar, 2019). The pathways to shaping mentoring and developing this kind of graduate is seen in the development and nurture of higher-order thinking. This kind of nurturing occurs when a student has the capacity to take new information, together with information stored in memory, and “interrelates and/or rearranges and extends this information to achieve a purpose or find possible answers in perplexing situations” (Hilton & Hilton, 2017, p. 225). Importantly, higher-order thinking is also evident in a student’s social and emotional capacities. Therefore, the student skilled in higher-order thinking is a critical thinker, with a sound sense of self, and possesses productive inter-personal relationship skills.

Robyn Collins refers to Brookhart’s identification of three categories of higher-order thinking. That is, *transfer, critical thinking, and problem solving* (Collins, 2014, para. 2.). Transfer builds upon retention, by applying information learned to new situations. Wiggins and McTighe (2005) contend that understanding is about transfer. That is, “the ability to transfer what we have learned to new and sometimes confusing settings in such a way that ‘goes beyond’ information” (p. 40). Further, transferability is essential, since it is impossible for teachers to be able to impart all that is to be known about a particular topic. Compared to what is accessible on the internet, teaching in the classroom covers a relatively small number of ideas, examples, facts, and skills. “So, we need to help them transfer their inherently limited learning to many other settings, issues and problems” (p. 40). Establishing ideas facilitates the achieving of these goals. For example, big ideas in reading, or English Literature, can be

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transferred and applied to any book and author without much difficulty, since skills for reading and/or analysis, have already been established (p. 45).

Knowledge is now available in the accessible (internet) public domain. Therefore, students' ability is not primarily seen when they demonstrate knowledge. Ability is discerned when students are able to transfer knowledge to different contexts or draw knowledge in from what has been previously learned. Jackson et al. (2019) refer to this as the “transfer in” of prior knowledge, “which prepares students to learn and create new knowledge in different settings” (p. 2). “It focuses on developing learners who can make sense of, and interpret, new learning contexts in a way that enables them to connect with, and use their prior learning, successfully adapting skills and knowledge to novel circumstances” (p. 4). There is a spectrum of transfer, from simple to complex, with “far” transfer being the most difficult. Indeed, transfer is not always automatic, but requires effort and conscious thought. Experimental learning can assist students to “practice” and in so doing develop transfer skills.

Charanjit Kaur et al. (2020) studied teaching strategies to develop higher-order thinking skills in the Malaysian school system. They defined higher-order thinking in terms of the transference of learnt knowledge to new environments to develop thinking skills. They contend that for a student to attain the higher level of reading they “must be able to relay new information to what is known in order to find answers to cognitive questions” (p. 212). However, essential to the process of transfer is the disposition of the learner (Jackson et al., 2019, p. 2). Gupta & Mishna (2021) state, “Thinking is a complex act comprising attitudes, knowledge, and skills that allows the individual to shape his or her environment more effectively than by intuition alone” (p. 2). To be sure, students who excel at transfer of knowledge are more likely to have a propensity for risk, motivation for learning, and a self-confidence that accompanies their cognitive ability (Jackson et al., 2019). Consequently, the personality of the student is seen to be a significant and contributing factor.

Personality traits have been observed to also include an openness to experience, conscientiousness, extraverted thinking and agreeableness. Jackson et al. (2019) noted that these combine to form a learner that is “inquisitive, intelligent and confident, and one who perseveres, takes initiative, is systematic, and is achievement-oriented” (p. 5). Bhattachara and Mohalik (2021) have identified a “willingness of students to comprehend ideas, construct knowledge, and solve problems is a function of their capacity to learn” (p. 2). Further contributing factors include an individual's self-

efficacy and motivation for transfer. This has been found to influence the rate of behaviour change in the transfer context (Jackson et al., 2019, p. 5).

By contrast, critical thinking is seen to be evident in students who have the ability to engage in reflective or artful thinking, “which includes reasoning, questioning and investigating, observing and describing, comparing and connecting, finding complexity, and exploring viewpoints” (Collins, 2014, p. 1). David Loseby (2019) divides critical thinking into essentially two distinct components. Firstly, a set of information and belief generating and processing skills; and secondly, the habit, based on intellectual commitment, of using those skills to guide behaviour. Further, according to Steven Schafersman (1991) a student who has acquired and developed critical thinking skills:

can ask appropriate questions, gather relevant information, efficiently and creatively sort through this information, reason logically from this information, and come to reliable and trustworthy conclusions about the world that enable one to live and act successfully in it.
(p. 3)

Significantly, critical thinking skills are gained when students are explicitly taught how to think critically. For example, “questioning techniques... play an important role in inducing students' higher-level thinking skills, such as self-reflection, revision, and social debate, all of which are essential for Critical Thinking” (Alselah, 2020, p. 27). To this can be added robust class discussion and the teaching of effective reading techniques (Alselah, 2020, p. 28).

Strategies used to effectively teach higher-order thinking may also include problem-based learning, discovery learning and inquiry-based learning. In problem-based learning the learning process starts with a problem. Students are tasked with coming up with solutions to real-life situations, or a problem faced by a character in a text, by providing their own opinion after they have provided an interpretation of the situation. It is a process of discovery learning in which students are engaged in: active, hands-on lifestyle experiences. “The students need to explore the environment by asking questions and performing experiments with their peers to encourage thinking, speculating and collaborating to solve a problem using their own ideas” (Kaur et al., 2020, p. 217). Ali (2019) describes problem-based learning as a “student-centered educational method which aims to develop problem-solving skills through a self-directed learning as a lifetime habit and teamwork skills” (p. 73).

Assignments that extend

An understanding of student higher-order thinking capacity, and the explicit teaching and development of higher-order-thinking awareness and skills, has

resulted in the need for new kinds of assignments. Concurrent with this are methods of teaching to those assignments, that assess students' higher-order thinking, in addition to their ability to demonstrate knowledge. According to Wiggins and McTighe (2007) students are meant to leave school as not merely learned, but inquisitive; not merely knowledgeable, but capable of using their education for good ends. They are not meant to graduate with merely technical skills, but with the appropriate habits of mind that determine whether the skill is used wisely, unwisely, or not used at all when needed. (p. 17)

Consequently, there is the need to build students with a disposition to learn and the ability to solve complex problems with creativity, insight, and perception. The result is the production of effective, thoughtful and engaged members of society. Claire M. Wyatt-Smith et al. (2017) identified that assessment is a powerful factor in the learning growth journey. They deduced that there is the need for assessments to provide "critical links between what is valued as learning, ways of learning and thinking, ways of identifying need and improvement and, perhaps most significantly, ways of bridging school and other communities of practice" (p. 303), so that students can identify links between what they are learning to real-life situations.

There are several approaches that will facilitate higher-order thinking in an assessment, whether that be to assess transfer, critical thinking or problem solving. However, good questioning that challenges the student to think beyond their knowledge base, is essential. Assessments should always challenge students to apply their knowledge to new contexts in such a way that transfer must occur to fulfill the requirements of the assessments. Indeed, standards-based assessments can help foster higher-order thinking skills, when assessments include open ended, instead of close-ended questions (Gupta and Mishna, 2021, p. 5). These assessments can be criticized because slow learners and academically unsound students find difficulty responding to such tests. However, teachers can mitigate against any bias or exclusion by scaffolding assessments to give accessibility to most, if not all, students in the class. In addition, they can write alternative assessments, or approaches, for those requiring intervention and differentiation.

Importantly, while teachers well understand that good work arises out of well-crafted assignments, the pursuit of higher-order thinking is facilitated *by the essential question*. An essential question can be defined in terms of that which is "important" and "timeless" (Wiggins & McTighe, 2005, p. 108). To assist this process teachers can formally introduce the essential question for a new unit or

topic. The essential question is the reference point that leads discussion into higher-order thinking. It guides inquisitive discussion and aims to encourage perceptive, insightful, highly effective and critical thinking. Therefore, an essential question should lead students to grapple with ideas, principles and concepts. Further, it will enable them to apply what they have learned and the manner in which they have learned it, to different situations and contexts (Wiggins & McTighe, 2005, p. 40). In this way, students become not just knowers, but thinkers, problem solvers and innovators.

Teacher efficacy as a whole school approach

Bhattacharya and Mohalik (2021) have further found that higher-order thinking is more likely when student's attitudes, motivation and internal locus of control (their disposition and motivation to learn) is met by teachers explicitly teaching higher-order thinking. In addition, explicit teaching in the classroom is backed by a whole school approach, that is aimed at facilitating and supporting higher-order thinking. Consequently, the teacher needs to have sufficient knowledge about higher-order thinking skills, and have enough self-efficacy, to implement their skills in the classroom. Teachers should use suitable teaching-learning strategies to inculcate higher-order thinking skills among students and frequently evaluate students to see whether or not they are improving in this capacity (p. 354).

In addition, the school is supportive of teacher professional development and implements curriculum expectations that help students develop higher-order thinking skills. To this extent, the school should embrace its individual learning journey by developing its own metacognitive skills as a learning organisation. Subsequently, a school has the capacity to produce its own essential question. The essential question of a school should require time to process. Such a question should be posed to key stake holders, and decision makers, within the school community. The question should possess sufficient depth. That is, a question based on ideas and principles, that requires participants to respond with insightfulness. The question's construction should be hard earned, encompasses the development of the whole person, and embody deeply held convictions. Finally, a school's essential question should be definitive enough to guide its major decisions and inform its curriculum. This should be done in such a way as to produce the kind of learning that will equip students for a rapidly changing world.

Developing metacognition

Training in metacognition is a tool that teachers can use to bring out the best in their students. It is

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a ‘tool set’ designed to enhance their pre-existing disposition to learn or encourage development in personality traits that will assist in developing new ways of thinking. Metacognition is the thinking about thinking, particularly, in this context, the thinking about self and learning that may lead to new perspectives. Indeed, “good learners are aware of how they think and can make smart choices about effective strategies” (Marzano, 1998). Adam Green (2022) has listed metacognitive skills used in the classroom. These include planning, reflective practice, goal setting, seeking help, self-questioning and monitoring, self-talk and mental scripting. Planning involves thinking about the best approach before starting a task or assignment. Self-questioning and monitoring provide the student with the opportunity to track their progress and efficacy during the task or assignment process. When the task or assignment is completed, reflective practice enables students to review their own performance and establish current strengths and weaknesses in order to improve in the future.

Green’s *before, during and after* scheme follows the concept of metacognitive skills defined by O’Neil and Abedi (1996), who have identified three components specifically planning, monitoring and evaluation (pp. 234-235). “Planning is a learning plan, setting goals, prioritizing materials instead of learning itself. Monitoring is the monitoring of learning and strategies used in self-analysis and assessment of the effectiveness of the implementation of the strategy” (Rahman et al., 2010, p. 348). The research conducted by Seamah Rahman et.al, through the Faculty of Education at the Universiti Kebangsaan Malaysia, discovered that the main inhibitor to students developing metacognitive skill was the teacher’s lack of training and understanding coupled with the lack of explicit instruction of reflective practice in the classroom. Subsequently, the researchers emphasised the importance of teachers being “aware of the importance of metacognitive reflection activities to promote metacognitive development in the classroom” (p. 350).

Higher-order thinking and behaviour management

Effective behaviour management begins by establishing a whole school approach to discipline, communicated consistently by teachers and consented to by parents/carers and students. Together, they find meaning and purpose in the schools established behavioural culture. It is essential that expectations are clear, consistently applied, make sense and are seen to be, along with prescribed consequences, reasonable. However, the pathway to a changed behaviour often requires a dialogue focused on meaning-making for students

(together with parents/carers when required). This can be accomplished by way of the facilitation of essential questions that aim to generate (one or a combination of) improved self-awareness, an effective management of emotions, the development of social skills, functional self-management and an empathetic worldview. The beginning point is an effective teacher/class relationship. As Shaun Killian (2021) has contended, “teachers who have strong relationships with their students find it much easier to manage their students’ behaviour. You forge strong relationships by **being both firm and caring – while also expecting your students to do their very best at school**” (para. 31). Indeed, effective and lasting outcomes in student behaviour frequently emanate from a thoughtful and planned dialogue that seeks to uncover the context of a behaviour and initiate a structured path forward. Effective outcomes are led by the teacher who reads the situation well and has insight into what understanding, and skills are required to facilitate change. Importantly, the connection point between the teacher and the student may be assisted by the learning context that has already been established. That is, a dialogue may emerge in the context of transfer, critical thinking or problem-based pedagogies.

It is important to remember, as Mia O’Brian (2017) has concluded, that challenging and defiant behaviour often “reflects a deep-seated, unmet need, trauma or disorder” (p. 263). Therefore, the dialogue between the teacher and the student who requires behavioural intervention should aim to facilitate self-discovery and understanding. This is best generated by information sharing and a skill set for overcoming existential obstacles and initiating positive change. A constructive dialogue, including those with a diversity of expertise where required, should aim to discover, where possible, underlying causes. Furthermore, effective conversations should establish enough self-efficacy to implement goals for self-improvement and to facilitate improved personal judgements. In this scenario the student, having been guided to garner sufficient insight and possess a workable skillset, is empowered to decide for, and own, personal success (Wills, 2020, p.13). Essential to this process is the development of the student’s metacognition, that creates enough of a new lens through which the student can gain clarity and perception. The result is personal and emotional maturity supported by higher-order thinking. Significantly, there is a clear consensus that metacognitive skills are modifiable and can be enhanced through direct instruction (Wills, 2020, p. 3). Further, the onus on bringing about change should not typically rest on one teacher. Behaviour modification is often brought about as a team effort, utilizing the skills of teachers,

parents/ carers, councillors and other therapists. A diversity of connections may need to be established for a student to identify a clear way forward by way of essential questions and goals. Importantly, essential questions lead to essential answers and a clear pathway forward for both teachers and student to monitor. A behavioural improvement pathway may include negotiated and agreed goals, steps and actions which are dated for reflection and review. This approach forms the basis of a continued dialogue until the issues are resolved. Therefore, essential questions facilitate an honest facing of the situation, as they assist participants to grasp reality and forge answers that clear the way for a manageable way forward. In the school setting, as students grapple with answers to essential questions about their behaviour, they engage themselves in a critical self-reflection that can open the way for constructive self-awareness.

Typical essential questions that guide the process may include:

- What are the circumstances that have led to my current perspectives, attitudes, feelings, and behaviours?
- What might a change in one or all of these domains contribute to fuller and more satisfying learning experiences?
- How does my behaviour appear to others and is it reasonable that they would be looking for changes to my behaviour?
- If I continue in my current behaviour what are some of the outcomes that I should expect from myself and others?

The essential question also avoids defaulting to a cycle of punishments that do not result in a changed behaviour, or a super positivity that results in superficial and short-term fixes.

Embracing authenticity

Being positive is an important part of a healthy life and an essential ingredient to thriving relationships. Seligman et.al (2009) concur that positive psychology in the classroom enriches well-being, which in turn creates as “an antidote to depression, as a vehicle for increasing life satisfaction, and as an aid to better learning and more creative thinking” (p. 295). However, “by default” positivity, where everything must be experienced or observed positively, can be problematic. Psychologist Jean Twenge (2014), from the University of San Diego, has challenged the long-held belief that self-confidence is the key to academic success and good behaviour. By example, Twenge refers to Asian Americans, who of any ethnic group have the best academic performance. Yet, they exist within a culture that doesn’t place as

much emphasis on feeling good about yourself, but rather on self-improvement and working hard. “It really belies the idea that self-confidence is the key to success” (para. 27). Self-esteem is important, but it is far better, claims Twenge, to focus on the belief that a child is worthy of love. This is in stark contrast to the false success narratives that espouse the untruth that if you “believe in yourself, anything is possible”, or “you can be anything you want to be” (para. 29). Again, not true. Twenge asserts that these narratives lead to an inflated sense of self, which, in turn, disconnect the student from their personal social realities. Deci and Ryan (1995) distinguished between contingent and true self-esteem.

“Contingent self-esteem refers to feelings about oneself that result from, and dependent on, matching some standards of excellence or living up to some interpersonal or intrapsychic expectations” (p. 32). This leads to something of a self-aggrandizement associated with the ego and tends to be associated with a kind of narcissism. The result is not a super engagement with the path to success, but a frustration, depression, anger, and or disillusionment with the learning experience, because students find that espousing positive narratives alone have not produced the results they promised. In contrast, Deci and Ryan refer to true self-esteem, which is more stable and based in a solid and “secure sense of self... [Their] worth would be an integrated aspect of one’s self and would be reflected in agency, proactivity, and vitality” (p. 33).

In contrast to super-positivity is authenticity, and the espousing of character, values, and what is of worth. This should lead to an authentic connection with the situation at hand, a healthy self-perception brought about by metacognition, and the formulation of significant essential questions and achievable goals. Psychologist Susan David (2022), on the faculty at Harvard Medical School, has averred to the tyranny of positivity. She has observed in society that there is an expectation that all emotions should be positive, leading to the suppression, or **renunciation**, of an array of quite legitimate feelings, including grief, sadness, disappointment, frustration, anxiety and anger. David asserts that when we push aside normal emotions to embrace false positivity, we lose the capacity to deal with the world as it is. For students to advance in learning and behaviour, there is a need to have connection with reality, a healthy understanding of self, and a grasp of the steps that are required to achieve well thought through goals. This contrasts with avert positivity, which undermines the metacognitive process. Grappling with the reality of the situation can lead to an effective discovery of the essential question, which embraces the reality of the present and forms the basis for future thought,

“when we push aside normal emotions to embrace false positivity, we lose the capacity to deal with the world as it is”

action and change. Indeed, when students develop their higher-order thinking capacity to be authentic, they grow capacity to build readiness connection, which enables them to connect their feelings with their causes (David, 2022). As Michelle Blanchet (2022) has observed, it is “essential to provide a lens for students, not only on how they view problems, but also on their ability to create positive change” (para. 4). On the basis of a clear understanding of self and on the task at hand, students are empowered to take concrete steps in the right direction and generate a pathway to their best selves. Ultimately, such metacognitive growth not only significantly contributes to improved behaviour, but also a deeper and more successful engagement with learning.

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Conclusion

A student's sound grasp of higher-order thinking skills, and higher-order thinking growth and development, facilitates the pathway to academic advancement and work readiness. In addition, metacognitive awareness underlines success in behaviour management. The possessing of higher-order thinking is generated from the disposition of the student to learn and the explicit instruction of the teacher, who may use several approaches to guide students in the higher-order thinking journey. These strategies taught by their teachers and adopted by students, empowers student futures, their life-long learning and personal perception and awareness of success. **TEACH**

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