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Literature review for

Leadership intelligences

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Abstract

In adapting to the complex, diverse and uncertain contextual terrain that International Baccalaureate (IB) leaders might be expected to experience throughout their professional career, the need to demonstrate considerable levels of cognitive complexity is essential.

In drawing upon the idea that intelligence can be viewed as a series of intellectual capacities that contribute to cognitive complexity, the IB takes the view that leadership intelligence can be conceptualized as a multi-dimensional concept. An intelligence scaffold that incorporates seven intelligences is a useful overarching framework.

This paper presents and describes the seven intelligences that form the basis for addressing areas in which cognitive complexity needs to be developed and applied. IB leaders will need to develop and draw upon these intelligences, and harness them in positive and creative ways, when confronting the opportunities and challenges associated with leading IB World Schools.

Introduction: Leadership and cognition

Detailed consideration of the *IB Programme Standards and Practice* (IBO 2014) and seminal International Baccalaureate (IB) publications relating to its programmes offer insights into the areas where leaders must cognitively engage. These areas can be synthesized into seven broad categories of activity:

- Developing and operationalizing strategy
- Optimising relationships and community building
- Cultural engagement and learning
- Innovation, effecting change and creative problem solving
- Critical reflection and reflexion
- Enabling effective teaching and learning
- Decision making under pressure

Within the internal environment of an IB World School, these activities suggest a range of different, interdependent processes at work. Taking into account the complex political, cultural, economic and organizational environment that IB leaders have to navigate, the image of a circus performer spinning an increasing number of plates is not too far off the mark. Such a picture suggests the need for successful leaders to demonstrate a considerable mastery of cognitive complexity. Cognitive complexity can be defined *as* "the degree to which an individual differentiates and incorporates multiple elements of his environment" (Bowler et al 2009).

Yan-hong and Zhang (2010) confirm that "theory suggests that leaders who possess higher cognitive complexity are likely to exhibit a higher level of leadership effectiveness" (p. 1792). When linking cognitive complexity to modern understandings of leadership, Boal and Hooijberg (2001) suggest that leaders who are more cognitively complex have greater capacity "to use more categories or dimensions to discriminate amongst stimuli and see more commonalities amongst these categories or dimensions, thus allowing for more effective searching and processing information" (p. 531).

Yan-hong and Zhang (2010) support this view when arguing that "those who demonstrate high levels of cognitive complexity are able to distinguish many essential elements and proceed to investigate the connections among these elements". They argue that "a person who is high in cognitive complexity is characterized as one who views ambiguity positively as a stimulus for generating multiple solutions". They go on to assert that "the positive correlation between managers' cognitive complexity and leadership effectiveness is more significant when the level of organizational environmental complexity is high" (p. 1796).

In the light of the many and often conflicting external environmental forces of IB World Schools, and the demanding IB authorization and implementation requirements, developing and demonstrating high levels of cognitive complexity would appear to be an essential requirement of effective IB leaders. In exploring the nature of cognitive complexity, the notion of intelligence appears apposite and suggests a conceptual framework wherein leaders' responses to the complexity of leadership in IB contexts can be examined.

The case for leadership intelligences

The notion of intelligence is contested. For many years, psychologists and educationalists have produced contrasting definitions of intelligence. In general, educationalists have used it to describe the capacities needed for individuals to learn. The Collins Dictionary (2016) defines intelligence as "the capacity for understanding; ability to perceive and comprehend meaning". However, the conceptualization of intelligence by Feuerstein et al (2002) is perhaps more insightful and helpful in the context of leadership. The authors suggest that intelligence represents "the unique propensity of human beings to change or modify the structure of their cognitive functioning to adapt to the changing demands of a life situation". It is a dynamic cognitive process that enables learning to take place in response to complexity, ambiguity and uncertainty.

Intelligence has been theorized by some educational psychologists as being multifaceted. In making the case for multiple intelligences, Gardner (1983: xiv) argues that "an intelligence is the ability to solve problems, or to create products, that are valued within one or more cultural settings". In a later work, Gardner (1995) further suggests that "it represents a capacity, with its component processes, that is geared to a specific content in the world". In rationalising the notion of multiple intelligences, Gardner and Moran (2006) conceptualize intelligences as human intellectual competencies that enable individuals to:

> resolve genuine problems or difficulties that he or she encounters and, when appropriate, to create an effective product — and must also entail the potential for finding or creating problems — and thereby laying the groundwork for the acquisition of new knowledge (p. 227).

This multimodal view of intelligence is still subject to debate in terms of whether the label 'intelligences' is better referred to as abilities or aptitudes. Nevertheless, many authors and thinkers use the epithet 'intelligence' to describe particular cognitive capabilities such as emotional intelligence (Salovey and Mayer 1990) and ethical intelligence (Wickham and O'Donohue 2012), suggesting a general acceptance of a degree of plurality.

In *The Intelligent School*, MacGilchrist, Myers and Reed (2004) drew upon Gardner's work on multiple intelligences for inspiration in their critique of the 'mechanistic' interpretations of the school improvement paradigm. In doing so, they define intelligence as:

> a range of collective capacities schools have that enable them to achieve their goals successfully. It involves the use of wisdom, insight, intuition and experience as well as knowledge, skills and understanding (p. 104).

Conceptualizing intelligence at the institutional level, and deriving a set of intelligences for adoption holistically within institutions, clearly raises questions for school leaders. It is, after all, leaders who are responsible for demonstrating and promoting these intelligences and creating a school culture that values them. An approach that identifies a range of cognitive capacities needed to navigate through complex educational landscapes will undoubtedly resonate with leaders in current IB World Schools.

It is important to highlight the view of Feuerstein et al (2002) that intelligence itself is not static and can be changed or modified. Perkins (1995) also argues that intelligence is a dynamic and developing capacity that can be "cultivated and acquired" with experience and reflection. Drawing on the ideas of Alberto Machado, a minister of State in Venezuela, Perkins argues that the cultivation of intelligence was essential when understanding the complex nature of society and, in turn necessary, when creating a more productive society.

The idea that people can learn to think and act much more intelligently and that intelligence is itself 'learnable' is an important principle that would appear to resonate equally for school leaders as for other members of school communities. As IB leaders broaden and learn from their experiences, their intelligences in terms of being able to engage with new and competing opportunities, problems and challenges, evolve and crystalize into deeper areas of cognition characterized by "wisdom, insight, intuition" (MacGilchrist et al 2004).

In drawing upon the idea that intelligence can be viewed as a series of intellectual capacities that contribute to cognitive complexity, the IB takes the view, articulated by others such as Riggio et al (2001), that leadership intelligence can similarly be conceptualized as a multi-dimensional concept. An intelligence scaffold that incorporates seven intelligences is a useful overarching framework. IB leaders will need to develop and draw

upon these intelligences and harness them in positive and creative ways when confronting the opportunities and challenges associated with leading IB schools.

Leadership activity	Intelligence
Developing and operationalizing strategy	Strategic
Optimising relationships and community building	Relational
Cultural engagement and learning	Cultural
Innovation, effecting change, and creative problem solving	Entrepreneurial
Critical reflection and reflexion	Reflective
Enabling effective teaching and learning	Pedagogical
Decision making under pressure	Heuristic

The IB leadership intelligences framework

Whilst the IB articulates seven intelligences as the basis of a framework for describing the range of cognitive capacities, it is important to acknowledge that are these are not conceived to be a definitive list. As with Gardner (1995), MacGilchrist et al (2004) add a caveat to their respective lists of intelligences that "there may well be others". The framework of intelligences will inevitably evolve as research and experience deepens and broadens the knowledge base about IB leadership and about the contexts in which IB schools operate.

Thinking of these cognitive capacities as leadership intelligences positions learning at the heart of leading. When faced with new situations and when making decisions, leaders must be committed learners willing to not only draw upon these intelligences but also look to develop them further. Providing rich and stimulating learning opportunities where emphasis is placed on powerful professional inquiry, problem solving and deep reflection would appear to be critical elements of any IB leadership training and development program.

Having presented the intelligence framework, each of the intelligences will now be examined and their relevance to IB contexts explored.

An examination of the leadership intelligences

STRATEGIC INTELLIGENCE

Leading IB world schools in a complex globalized world requires school leaders to think and act strategically and to establish effective ways of putting the strategy into practice.

Maccoby and Scudder's (2011) interpretation of strategic intelligence will resonate with many leaders of IB schools. They conceptualize it around the following four qualities:
1. Foresight; 2. Visioning with systems thinking; 3. Partnering; and 4. Motivating and empowering. They argue that:

> each of these four elements of strategic intelligence depend on both leadership philosophy and personality intelligence. Deep self-knowledge, knowledge of others, and a clearly articulated purpose, set of values, principles, and beliefs prepare leaders to look into the future, focus on relevant trends, and create a systemic vision (p 34).

Boal and Bryson (1988) stress the importance of alignment and motivation of people and organization "behind a set of shared values and vision". In educational contexts, many would argue that a 'shared' vision is instrumental in establishing effective professional learning communities (Stoll et al 2006; Dufour and Eaker 2009).

The *IB Programme Standards and Practices* (1BO 2014) place considerable emphasis on the role of leaders shaping and communicating a vision that is aligned with the IB philosophy and motivating those within the organization to embrace and promote it. Further, the notion of a professional learning community is one that the IB promotes and that many IB World Schools embrace on account of the strong commitment to learning at the student, professional and institutional level. In such communities, vision is not imposed but arrived at under the guidance of school leaders through creating a more collaborative organizational culture.

Kakabadse et al (1998) and Boal and Hooijberg (2001) argue that the importance of creating the strategy with others rather than just communicating it to others. Maccoby and Scudder (2011) also argue that leaders have a responsibility to bring:

> vision to reality by recruiting and developing strategic and operational partners who complement their skills, support the vision, and share their philosophy. Through personality intelligence, they apply an understanding of the values of those partners and can motivate and empower them to collaborate and achieve a shared purpose (p. 35).

IB leaders draw upon their strategic intelligence when creating an organizational culture with a strong sense of purpose and future that is underpinned by the IB philosophy. They have a capacity to see the big picture and engage in systems thinking to ensure that the whole school community is committed to the values, standards and practices of the IB. Where necessary, leaders recognise the importance of working with others in the wider community to ensure that the vision and purpose of the school are translated into action (Maccoby 2012). The importance of working collaboratively with internal and external stakeholders and with the IB community at large is a consistent theme within the *IB Programme Standards and Practices* (IBO 2014).

Maccoby (2012) offers the following cautionary observation in relation to a shared philosophy:

> A collaborative culture appears to depend on everyone in the organization sharing a meaningful purpose and living a philosophy that embodies the practical values essential to achieving it. When the philosophy is lost, the culture regresses into a bureaucracy of individuals competing against each other (p. 60).

MacGilchrist et al (2004) conclude succinctly that strategic intelligence is about "responding appropriately to the present, creating the future and anticipating the consequences" (p. 106).

CULTURAL INTELLIGENCE

In a globalized world, diversity and complexity within IB schools arises not only from the international mobility of students, teachers and leaders but also from the "crossing of ideas across frontiers" or national boundaries (Hayden and Thompson 1996). As a consequence, IB leaders are continually interacting with people, institutions and ideas from different cultural traditions to their own.

Open mindedness is an attribute of the *IB Learner Profile* (IBO 2013) that acknowledges the value and importance of different ideas and perspectives. The IB's stated aim is to "promote intercultural understanding and respect, not as an alternative to a sense of cultural and national identity, but as an essential part of life in the 21st century" (IBO 2015).

Leaders therefore play a pivotal role in inculcating a set of values that actively promotes intercultural understanding and respect when interacting with others from different cultural backgrounds and traditions. The work of Ang and Van Dyne (2008) and Livermore (2009) suggest four key questions that leaders should be reflecting upon when engaging with others from different cultural traditions and in different cultural contexts:

1. What are the intrinsic and extrinsic motivations governing how we lead in culturally diverse contexts?
2. What knowledge about the differences and similarities of different cultures do we, as leaders, need to be aware of, particularly in terms of their political, economic and religious arrangements, their rules and norms governing social interaction, and their linguistic rules and conventions?
3. What is the current state of our cultural knowledge, the assumptions that underpin this awareness, and how does it prepare us for interactions in culturally diverse environments?
4. How flexible and adaptive is our behaviour to make it appropriate to diverse cultures in the different situations that we may face as leaders?

Developing their cultural intelligence through engaging with these questions will enable IB leaders to harness the human potential within their respective diverse school communities and to create a shared culture that not only respects and celebrates cultural diversity but also sees it as essential for intercultural learning.

ENTREPRENEURIAL INTELLIGENCE

Entrepreneurship can be defined as:

> building commitment through active, creative and discovery-driven engagement with the opportunities presented by the environment, and making a virtue of focusing on customers, products, achieving results, and wealth creation (Vi Gupta and MacMillan 2004: 304).

Giles et al (2012) argue that the philosophical differences between educational and business cultures make the use of the term entrepreneurship within educational contexts problematic, suggesting that "a moral imperative energises the work of educational leaders where the whole fundamentals of business are centred around the critical pursuit of emancipatory praxis" (p. 21). This view is contested (Tooley 2005).

Irrespective of whether tensions exist between educational and business goals, there are many successful IB schools operating within both the private-for-profit and not-for-profit sectors and the government sector. However, it is the commitment to active, creative and discovery-driven engagement that particularly resonates with IB school leaders and should be apparent in all IB World Schools. This suggests that the associated cognitive abilities of entrepreneurial intelligence are a valuable part of an IB leader's intellectual arsenal.

The inclusion of risk taking as an attribute of the *IB Learner Profile* also offers some pointers as to how entrepreneurial intelligence might be interpreted in IB contexts:

> Learners approach unfamiliar situations and uncertainty with courage and forethought, and have the independence of spirit to explore new roles, ideas and strategies. They are brave and articulate in defending their beliefs (IBO 2013).

In the context of IB leadership, entrepreneurship should perhaps be conceived more broadly and linked to a leader's capacity to lead organizations in creative ways through the changes that schools inevitably experience. The complex environments in which IB schools operate demand that schools and their leaders should expect change and respond in creative ways. Csikszentmihalyi (1996) argues that creative individuals are able to "adapt to different situations and to manage with whatever is needed to reach their goals".

The decision to become authorized to implement one or more IB programmes is itself an example of educational change that requires leaders to be creative and to take intellectual and professional risks. In the face of externally driven change, the ability to innovate, develop, communicate, promote, and evaluate new ideas and practices, as well as build and sustain vibrant professional learning communities founded on IB philosophy and practice, suggest considerable entrepreneurial intelligence is needed.

Sternberg's (1988) view of entrepreneurial intelligence perhaps best illustrates how the concept might relate to those capabilities required of IB leaders. He suggests that entrepreneurial intelligence combines three essential elements

- A **creative element** that is concerned with the capacity to create new ideas, reconfigure problems and to persuade people to engage with new ideas.
- An **analytical element** that is concerned with the processes of solving problems, including the recognition and defining *of* problems, the deployment of solutions, the monitoring of solution strategies and the evaluation of solutions.
- A **practical element** that is concerned with the capacity to find an effective alignment between yourself and the demands of your environment, draw upon your acquired knowledge and to contextualize problems in the real-world.

Sternberg contends that intelligence requires a functional balance to be achieved among these three elements – his so-called triarchy of abilities.

Clearly, in IB World Schools contexts, the commitment that leaders demonstrate to synthesising these three elements are important, particularly when innovating and leading schools through the many changes they initiate or have to respond to.

RELATIONAL INTELLIGENCE

IB World Schools are organizations with many and diverse internal stakeholders who hold both shared and conflicting visions, goals and aspirations. While the long-term success of the school and the provision of a high quality education are likely to be a common goal to each stakeholder grouping (such as administrators, teachers, students, parents and ancillary staff), all have their own personal, professional and cultural perspectives about what is important and how the school should go about achieving successful outcomes.

Building a school culture based on trust and respect, and developing a strong set of ethical principles governing how people within the school are treated and treat each other, are critical tasks if the school is to sustain effective collaborative working practices and decision making. The quality of relationships depends upon the extent to which leaders consider it important to build relationships that are inclusive and based on shared and respected ethically sound values.

Further, IB World Schools involve many different external stakeholders who also have a stake in the success of the school and therefore place additional demands upon school leaders, e.g. suppliers, contractors, professional development providers, programme providers. The school is at the centre of a network of interdependent

individuals and groups, all of whom are capable of exerting pressure on leaders. Leaders will be constantly balancing the various demands, interests and perspectives of these different groups.

It is not surprising, then, that Giles et al (2012) regard leadership as "a relational endeavour that is experienced locally in situ, and in the complex and dynamic demands of context" (p. 14). They argue that "relational leadership and relational sensibilities cannot be considered separately". Indeed, the following assertions would suggest that relational intelligence is pivotal in creating a collaborative and productive organizational culture:

> In the experience of leading, relational leaders show a range of sensibilities. It would appear that wise leaders who have developed practical wisdom from previous experiences more readily show sensibilities that include tact, nous, improvisation, attunement, moral judgement and the like. Leaders who show a contextual sensitivity appear to appreciate the subtleties within their immediate setting. Leaders who are aware of the contextual complexity of the education sector appreciate the macro and micro subtleties of the local political, economic., cultural and ideological influences on education. A leader's ability to repurpose and re-culture an organization is contingent upon their abilities and sensibilities to the immediate and multi-layered context (p. 15).

Maak and Pless (2006) use the term 'relational intelligence' to highlight an essential quality of leaders in terms of relating to internal and external stakeholders. They argue that "leadership takes place in relationships – they are the centre of leadership''. Leaders must therefore look to "build and cultivate sustainable and trustful relationships" within and between the different stakeholder groupings inside and outside the school in order to achieve the school's vision and objectives in a way that guarantees its sustainability and legitimacy.

Establishing a trusting and supportive climate and ethos is not only essential for creating and sustaining a collaborative culture, it is also instrumental in promoting risk taking. In IB World Schools where intellectual and professional risk taking is encouraged as part of the academic learning process, building trust is also essential. Innovation and creativity sometimes involve error and non-optimal decision making. Whilst the aim is to minimise these through planning and critical evaluation, they are an integral part of a learning culture. As noted by Wickham and O'Donohue (2012):

> Successful management of human error will be dependent on the extent to which inquiry, reflection and feedback, trust between employees and managers, individual and group learning, and positive behavioural change are accepted and supported as norms within the organization (p. 17).

The school improvement literature establishes clear links between the quality of relationships within schools and the quality of educational outcomes. Robinson et al (2009) reviewed educational literature on effective leadership and its impacts on student outcomes. They identified "creating educationally powerful connections" and "good relationship building" as key drivers of positive student outcomes. Fullan (2001) argues that "the single factor common to every successful change initiative is that relationships improve", and for this reason he considers that "leaders must be consummate relationship builders with diverse people and groups" (p. 5). In their conceptualisation of a school's 'professional capital', Fullan and Hargreaves (2012) emphasise the importance of "the collaborative power of the group" as a critical characteristic of good schools that have a positive impact on student outcomes.

A challenge for IB leaders in terms of cultivating effective personal, professional and institutional relationships (such as promoting collaborative working practices and leading teams), and one where relational intelligence is central, is what Maak and Pless (2006) describe as the need to:

> integrate people with different styles and cultural background into teams, include different voices into the dialogue, understand issues from different perspectives, solve conflicts of interests with different people and reconcile intercultural and interpersonal dilemmas (p. 105).

Relational intelligence is therefore closely associated with cultural intelligence and the capacity of leaders to engage with individuals, groups and organizations who have different values, interests and needs. Relational intelligence resonates closely with MacGilchrist et al's (2004) conceptualization of spiritual intelligence, that is, "fundamentally valuing the lives of all members of a school community, that they all matter and have something to contribute" (p. 109).

REFLECTIVE INTELLIGENCE

The ability to reflect is a key attribute of IB learners. The *IB Learner Profile* states that reflective learners:

> thoughtfully consider the world and their own ideas and experience. They work to understand their strengths and weaknesses in order to support their learning and personal development (IBO 2013).

Stallter (2009) uses the term reflective intelligence to describe the "the cognitive abilities for problem solving". Leading within complex and changing environments invariably means that leaders are constantly faced with new problems, conflicts and dilemmas. The ability to engage with these matters as learners requires leaders to draw upon their reflective intelligence.

Hibbert et al (2010) suggest reflective intelligence represents "the intellectual skills, and the thinking strategies used, when reviewing and problematizing their own practice". In the context of leadership, reflection can be seen to be questioning individual and institutional practice with a view to furthering understanding.

In drawing upon the work of Perkins (1995), Herasymowych (1996) maintains that using reflective intelligence is necessary if individuals are to increase their capacity for "solving complex problems, making informed decisions, and generating new knowledge about the complicated world in which we live".

A key component of reflective intelligences is the ability to think in evaluative terms, specifically, critically analysing what practices are taking place and assessing their effectiveness in terms of achieving their objectives. In educational contexts, these evaluation skills typically relate to the positive influences of student learning and progress. School leaders need to be continually working with their staff to evaluate the impact of all contributors to student progression. This has become a central plank of the school improvement agenda and has now has become orthodoxy in many countries.

Fullan (2014) suggests that school leaders who have the strongest measured impact on student learning are those that lead the learning and development of teachers while learning alongside them to determine what works and what doesn't. Similarly, Hattie (2015) advocates that:

> schools need to become incubators of programs, evaluators of impact and experts at interpreting the effects of teachers and teaching on all students... In short, we need to develop an evaluation climate in our education system (p. 15).

A further element of reflective intelligence is the capacity for leaders to be reflexive as well as reflective. Reflexivity is the process of exposing or questioning one's own ways of doing things, with the possibility of changing practice. Reflexion involves leaders considering their own behaviour and abilities on how the school is operating and their impact on student learning, followed by an assessment of whether they need to change their leadership practices. The importance of leaders being self-aware of the impact they have on the various processes and relationships within a school, and the need to develop their own thinking about what it means to be a leader, are essential capabilities for their own professional success and the success of the school. Leaders who fail to use their reflective intelligence run the risk of making hasty decisions that may be imprudent. Taking actions without considering their implications, failing to challenge erroneous assumptions, and reaching conclusions that fail to take into account key evidence are each and all examples of poor reflective intelligence.

Reflective intelligence is, however, more that the ability to assess the impact and consequences of new problems and challenges. Perkins (1995) argues that reflective intelligence also helps us to "think contrary to certain natural trends". It is the implicit recognition that knowledge is contestable and should be open to scrutiny and, if necessary, challenged. This resonates with values and the attributes of the *IB Learner Profile* (1BO 2013), specifically those that make explicit reference to critical thinking and reflection. The emphasis the IB programmes place on criticality, the acknowledgement of multiple perspectives and a constructivist view of knowledge creation requires leaders to be comfortable in creating an organizational culture that places critical reflection and learning at its core.

As with relational intelligence, creating a school culture that values reflection and reflexivity places an onus of leaders to "create a trusting environment where staff can challenge and debate the effect they have and use the information to devise future innovations" (Hattie 2015).

HEURISTIC INTELLIGENCE

Fullan and Hargreaves (2012) argue that a key element of the professional capital of an educator is their decisional capital. This is concerned with the ability to "make decisions in complex situations on innumerable occasions with different problems and cases". How leaders approach decision making, in light of this, is critical.

Csikszentmihalyi (1996) extols the virtues of "making sensible judgments and decisions, recognizing similarities across different categories, using induction and logical reasoning and insight as critical elements of the creative process." Csikszentmihalyi further argues that:

> creative individuals do not rush to define the nature of problems. They look at the situation from various angles first and leave the formulation undetermined for a long time. They consider different causes and reasons. Because they pause to consider a greater range of possible explanations for what happens to them, creative people have a wider and less predictable range of options to choose from (p. 12).

Creative decision-making is therefore a highly systematic and considered process. According to Csikszentmihalyi, such decision-making requires individuals to have a clear understanding of the domain in which they operate. In terms of school leadership, the domain would represent the symbols, rules and procedures pertaining to the school environment and organizational culture. Csikszentmihalyi asserts that "it is impossible to be creative without having first internalized a domain or culture. And a person must believe in the importance of such a domain in order to learn its rules" (p. 4).

Faced with the reality of running a school, leaders do not always have the luxury of time for deep reflection and analysis. Often complex problems need to be responded to immediately and a systematic assessment of alternative solutions is not always possible. Leaders need the ability to make difficult and pressurized decisions in the face of demanding situations, and within exacting time frames. In such cases, leaders often need to resort to heuristic approaches. These involve adopting experience-based techniques for problem solving that may lead to a satisfactory outcome rather than an optimal one.

Imbrogno (2014) defines heuristics as "simple, efficient rules, learned or 'hard-coded' by evolutionary processes, that have been proposed to explain how people make decisions, come to judgments, and solve problems typically when facing complex problems or incomplete information". In the medical domain, these intelligences would be akin to those required by medics when undertaking triage decision-making. Triage involves "clinical judgements that have to be made within a short span of time. Triage decisions are dependent on the knowledge and experiences of emergency nurses and are made after patient information is gathered and evaluated" (White et al 1992).

In IB schools, leaders will have to make decisions that, whilst not necessary life threatening, may conceivably change the course of a teacher's career and a student's education. One commonplace example where leaders typically have to draw upon heuristic techniques is in the area of teacher recruitment. In many interviews, there is limited time to gain sufficient evidence for assessing the effectiveness of candidates. Leaders must use their intuition and gut feeling about the suitability of a candidate for a particular position. Heuristic intelligence is therefore concerned with how leaders develop, use and reflect upon their own heuristic techniques, and their role and effectiveness in problem solving and gaining insight when making decisions.

Over time, leaders develop their own mental shortcuts that enable them to address the complex issues that they face. These include techniques such as using production rules or rules of thumb, generalizing, stereotyping, drawing upon intuition, and applying common sense. Kuipers et al (1988) clearly identify prior experiences as pivotal in the process of developing these heuristic techniques. They argue that decision-making processes can draw on this form of existing knowledge, rather than constructing each decision from scratch.

Using short cuts and production rules is not without its problems. Heuristic techniques can involve risks and create tensions that may in turn lead to poor decision-making and unsatisfactory outcomes. For example, in a

diverse and cosmopolitan IB school community, using national stereotypes to make generalizations about how people and groups from other cultures might behave is highly problematic and simplistic. Common sense in one cultural context may not be the same in another. Intuition can be valuable, but it must be in tune with the context and the sensibilities of the school community.

One common heuristic technique adopted by some school leaders is to make generalizations about how a school operates based on their experiences gained at other schools. They assume that leading in a new school can be based on strategies used in a previous school. Decisions based on these techniques are often flawed. Kahneman and Klein (2009) suggest that experts' intuition is certainly not infallible, nonetheless, they go on to conclude that "intuition works, with the right type of expertise, in the right situation".

The challenge for leaders of IB schools is to ensure that they take the right action at the right time. They need to know when to pause, reflect, consult and consider problems from different perspectives prior to making a well-considered decision. They also need to know how and when to develop and deploy heuristic techniques that are consistent with the values and philosophy of the IB and the school context in which they are working. Their heuristic intelligences prepare them to make these crucial judgements. Heuristic intelligence cannot be underestimated as an important capability of IB leaders.

PEDAGOGICAL INTELLIGENCE

The *IB Programmes Standards and Practice* (IBO 2014) are explicit in recognizing the importance of pedagogical leadership. They state clearly that school leaders "are expected to demonstrate pedagogical leadership aligned with the philosophy of the programme(s)".

Pedagogical leadership is based on the idea that schools are communities of learners and leaders are responsible for "leading or guiding the study of the teaching and learning process" (Coughlin and Baird 2010:1). Schools are places where knowledge and meaning are constructed rather than simply being transmitted between those who know and those who don't.

The commitment that IB schools make to promoting the attributes of the *IB Learner Profile* (IBO 2013), inquiry-based learning, professional learning and collaborative working practices reflects this approach. Sergiovanni (1998) argues that the role of leadership should focus on "developing human capital by helping schools become caring, focused and inquiring communities within which teachers work together as members of a community of practice". Specifically, he identifies the need for leaders to build the school community's capacity by "developing the social and academic capital for students, and intellectual and professional capital for teachers" (p. 37).

It is building and strengthening the learning community that will have the most significant effect on student learning and the students' capacity to construct meaning. Hattie (2015) argues that "leaders need to create a trusting environment where staff can debate the effect they have and use the information to devise future innovations" (p. 15). He goes on to suggest that:

> school leaders must have the expertise to create opportunities, develop trust, provide the resources needed to understand the impact on students of all the teachers (and their own impact as school leaders) and to lead these discussions among the teachers (p. 24).

In supporting this view, Robinson et al's (2009) research concludes that a pedagogical style of leadership has a far greater impact on pupil outcomes than other styles of leadership. The need for leaders to develop and demonstrate pedagogical intelligence is therefore critical to the effective functioning of the school as a community of learners, particularly if leaders are to understand and apply what Male and Palaiologou (2012) refer to as the "habits developing among the learners and how they develop relationships between education and the growth of knowledge". Developing such understandings takes time and, according to Rubin (1989), takes place through the process of confronting pedagogical dilemmas. It requires "a consummate understanding of the classroom milieu".

In terms of the IB programmes, pedagogical intelligence involves a leader's capacity to understand and interpret the IB programme's curriculum and the approaches to teaching and learning that are most effective in implementing it. In addition, what is most critical is the intellectual capacity involved in understanding how to

develop a supportive community of learners in which “teachers are empowered to make decisions regarding the development and implementation of the programmes” (Hattie 2015).

Alongside this, pedagogical intelligence involves understanding how teachers can be held to account by articulating specific, achievable and time-limited goals and then motivated to achieve these. Fullan and Quinn (2016) conclude that schools improve when they have gone through a process which includes deliberation over professional standards teachers’ practices. It is this capacity to deliberate and make decisions about the educational processes within the school that perhaps best sums up the notion of pedagogical intelligence.

Conclusion

A framework of seven intelligences has been presented as the basis for addressing areas in which cognitive complexity needs to be developed and applied.

In reality, the boundaries around these categories of intelligences are also blurred. They are interdependent and inevitably overlap. Indeed, it is the interdependence and interrelated nature of leadership intelligences that make it such a rich area for further research and discussion. During the course of their careers IB leaders will develop and refine these intelligences as they solve problems and take advantages of new opportunities in different school contexts. Much of the development, by necessity, must therefore take place in situ within authentic IB environments.

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