Professional Practice

Professional Practice Note 7

INTELLECTUAL RIGOUR CHALLENGES ALL STUDENTS

"As students master information and skills, the result of each learning experience is not only the content they learn, but the increased ability they acquire to approach future learning tasks and to create programs of study for themselves."[1]

Joyce, Weil and Calhoun, 2015

OVERVIEW

Teachers often face the challenge of effectively engaging and catering for students of all abilities. We know that in any given year level, there can be a five to six year difference between the most advanced and the least advanced 10 per cent of students.[2] This requires teachers to build the intellectual rigour of all students using a range of strategies.

This professional practice note provides a range of high impact strategies to support school leaders and teachers to build intellectual rigour with all students, including those exceeding the expected level.

WHAT IS INTELLECTUAL RIGOUR?

Intellectual rigour is defined as clarity in thinking and an ability to think carefully and deeply when faced with new content or concepts. This involves engaging constructively and methodically when exploring ideas, theories and philosophies. It also relates to analysing and constructing knowledge with depth, insight and intellectual maturity.[3] In an educational context this means that students have the capability to employ these skills in their own learning.

WHY IS INTELLECTUAL RIGOUR IMPORTANT?

Intellectual rigour is underpinned by the belief that students have the ability to grasp and apply new concepts in their learning and become critical and creative learners.

Informed by identifying and understanding the zone for proximal development[4] for individual students, teachers are able to tailor and differentiate their teaching specifically to the needs of their students. This practice enables all students to be stretched and challenged in their learning.

In a study undertaken by the Assessment Research Centre, the authors found that, within the cohort, students at the lowest levels of proficiency were improving rapidly, while students with higher levels of proficiently failed to demonstrate significant improvement in higher order skills.[5]

Intellectual rigour applies to all students, including those that are performing at or above the expected levels – every student should have an expectation to achieve strong gain: at least a year's growth in a school year.

Students live in an information age in which technology enables information to be at their fingertips. Educational consultant Alan November talks about student belief that "if it is on the Internet, it is true". Intellectual rigour in sourcing, evaluating and using information is critical for students.

November contends that students need to develop the ability to:

- research, publish and communicate using internet and information tools
- apply knowledge in producing information and to facilitate communication
- evaluate and validate resources to understand purpose, author and meta-web language.[6]

INTELLECTUAL RIGOUR STARTS WITH CURRICULUM AND ASSESSMENT

The Victorian Curriculum outlines the content, skills and dispositions that enable students to learn. It is a road map that enables multiple entry points, routes of differing length, and routes that require additional coverage for learners. All students have their own learning journey through the curriculum, and need to be engaged in ways that enrich and extend them.

Intellectual rigour builds on the Victorian Curriculum, including the capabilities of Personal and Social Learning, Ethical Learning, Intercultural Learning and Critical and Creative Thinking.

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[1] Joyce, B, Weil, M, Calhoun, E 2015, *Models of Teaching*, Pearson, United States of America, p30

[2] Masters, G 2015, *Rethinking formative and summative assessment,* Teacher Magazine, viewed 27 February 2018, https://www.teachermagazine.com.au/columnists/geoff-masters/rethinking-formative-and-summative-assessment

[3] Southern Cross University 2018, *Graduate Attributes*. Southern Cross University, viewed 13 March 2018, https://www.scu.edu.au/staff/teaching-and-learning/graduate-attributes/ga1-intellectual-rigour/

[4] Vygotsky, LS 1986, *Thought and language*, MIT Press, Boston

[5] Griffin, P unknown, *The influence of teaching strategies on student achievement in higher order skills*, viewed 28 March 2018, https://research.acer.edu.au/cgi/viewcontent.cgi?article=1149&context=research_conference

[6] November, A 2012, *Teaching Zack to Think*, viewed 14 March 2018, http://novemberlearning.com/educational-resources-for-educators/teaching-and-learning-articles/teaching-zach-to-think/

Using the Victorian Curriculum as a road map, teachers must scaffold the learning for each student and work within their zone of proximal development. Assessment, as part of the scope and sequence of the Victorian Curriculum, is the foundation upon which teaching practice is built, as stated by Griffin and Care: (2009) "assessment is for *teaching*".[7]

It is assessment that helps teachers to identify students' points of need, and therefore, their next area of learning. Using students' formative and summative assessment, teachers can ensure that students are appropriately scaffolded to master new learning.

Formative assessment is ongoing and responsive to the next learning needs of students, and further builds and promotes student learning of the dispositions of intellectual rigour. See *Professional practice note 6: formative assessment* for more information.[8]

Formative and summative assessment of student knowledge and skill development enables this scaffolding to take place, guided by each student's zone of proximal development.

ADVICE FOR SCHOOL LEADERS

Developing a shared understanding of intellectual rigour

A positive learning community is essential to encourage and support students to take risks and demonstrate vulnerability in their learning and knowledge construction. Growth requires students to challenge their educational boundaries in a safe learning environment: "real growth often requires us to make our learners uncomfortable, and we have to help them deal with the unfamiliar situations… as well as manage their discomfort productively"[9].

The Framework for Improving Student Outcomes' (FISO) Positive Climate for Learning and the Practice Principles for Excellence in Teaching and Learning ensure the conditions to promote student learning and participation are in place. The relevant Practice Principles for Excellence in Teaching and Learning are:

- *High expectations for every student, promote intellectual engagement and self-awareness*
- *A supportive and productive learning environment promotes inclusion and collaboration*
- *Student voice, agency and leadership empower students and build school pride*

The following questions may be useful for school leaders and teachers to consider the current practices of the school in setting high expectations for all students:

- How is the curriculum viewed by the school with regard to student progression? Is it considered 'fixed' by curriculum level?
- How is the practice of teaching viewed in the school? What is the role of the teacher with regard to student progression?
- What does the school consider to be 'successful learning'? How does the school seek to engage and enhance student metacognitive strategies for learning?
- How does the school track and group learners? How does the school describe and measure student progress?
- How do assessments align with the Assessment Standards of the Curriculum?
- How does the school report on student learning? What language is used to describe student progress?[10]

ADVICE FOR TEACHERS

Teaching intellectual rigour

Building student capability to access the dispositions of intellectual rigour are part of daily pedagogical practice.

The dispositions can be seen as students becoming or learning to be inquisitive, open and fair minded, ready to try new ways, considerate of alternatives and being intellectually flexible. The dispositions of intellectual rigour include:

- **Inquisitiveness:** open to inquiry, research and asking questions; eager for knowledge; intellectually curious.
- **Reasonableness:** sound judgement; fairness.
- **Intellectual flexibility**: ability to mix, change, emerge and re-emerge within changing times and conditions. This elasticity of the mind allows conceptualisation of ideas and theories that can be verbalised, shared and implemented.[11]
- **Open and fair mindedness**: willing to consider new ideas; just; impartiality in judgement.

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[7] Griffin, P, Care, E 2009, *Assessment is for teaching*, viewed 14 March 2018, http://www.arc-ots.com/alp/resources/M1_reading.pdf

[8] https://edugate.eduweb.vic.gov.au/edrms/collaboration/PPLD/WSEU_Public_Documents/Professional_practice_note_6_formative_assessment.pdf

[9] Joyce, B, Weil, M, Calhoun, E 2015, *Models of Teaching*, Pearson, United States of America, p364

[10] Adapted from: Masters, G 2015, *Challenging out most able students*, Teacher Magazine, viewed 28 March 2018, https://www.teachermagazine.com.au/columnists/geoff-masters/challenging-our-most-able-students

[11] Association for Childhood Education International unknown, *Overview on Intellectual Flexibility*, viewed 14 March 2018, http://static1.squarespace.com/static/5295fdb1e4b0d73103364931/t/57b9ccf459cc6886da078889/1471794420767/Intellectual_Flexibility.pdf

- **Readiness to try new ways of doing things:** prepared to explore new possibilities; willing to see failure and mistakes as part of learning.
- **Open to considering alternatives**: different ways of looking at issues, solutions, strategies, experiences, world views and ways of knowing, in the process of solving problems, forming opinions, clarifying values and taking an informed position.
- **Persistence:** steady belief or efforts; withstand discouragement or difficulty; persistence.

Teachers should consider the questions they can ask students to deepen their thinking and learning, consider alternate views and perspectives, and persevere with challenging tasks.

Intellectual rigour in the classroom includes complex questions that require deep thinking as well as the use of dialogue to articulate understanding and flexibility in thinking. Opportunities to ensure students are constantly challenged in their learning include:

- anecdotal records
- written feedback and suggestions
- student reflection
- powerful questioning
- writing or co-writing complex questions
- using collaborative processes such as Fish Bowl or Think, Pair, Share

Approaches to drive intellectual rigour

The use of taxonomies of skills that scaffold student learning from recall through to more complex processes such as analysis and evaluation are an important element of intellectual rigour, and contribute to identifying and structuring the next learning focus for students.

Bloom's taxonomy[12] or Bloom's revised taxonomy[13] is an example of a high order thinking in education. It brings intellectual rigour into the classroom, and provides a structure through which students can progress as they build cognitive ability. The base of the pyramid outlines the more basic skills and scaffolds students' mastery and progression to more complex attributes. In using Bloom's revised taxonomy, teachers are to ensure that the full range of skills are repeatedly engaged and that student understanding is re-evaluated through a variety of authentic learning tasks and activities in a learning sequence.

Three story intellect (Costa's levels of questioning, which build on Bloom's taxonomy) is another example of a higher order thinking framework in which students progress from gathering to processing to applying their learning.[14]

Socratic questioning is defined as a "mode of questioning that deeply probes the meaning, justification, or logical strength of a claim", [15] and facilitates students' deeper thinking. Questioning students in a Socratic manner provides a structured way for students to investigate a new concept.

The role of the teacher in facilitating Socratic questioning is to:

- maintain a focused and intellectually-responsible discussion
- stimulate with probing questions
- regularly summarise what has been uncovered and what remains to be uncovered
- engage as many students as possible.[16]

Intellectual rigour challenges all students

Developing the student dispositions of perseverance and higher order thinking help students to manage intellectually rigorous learning.

These dispositions, once developed and fostered in students, allow students to approach their learning in an open way and deepen their knowledge and understanding of a topic and make complex connections with and between concepts.

Higher order thinking helps students to be producers of knowledge, rather than recipients of knowledge. They are encouraged to see knowledge as something that is constructed rather than fixed.[17]

Metacognition and self-regulation in learning has been established as a high impact teaching strategy, with Hattie attributing an effect size of 0.69 for metacognitive strategies, [18] and the Australian Teaching and Learning Toolkit attributing eight additional months of progress. [19]

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[12] Bloom, B 1984 *Taxonomy of Educational Objectives,* Allyn and Bacon, Boston

[13] Krathwohl, D R 2002 'A revision of Bloom's taxonomy: an overview' *Theory into practice*, vol. 41, no. 4, pp. 212-218.

[14] Costa, A Model of Intellectual Functioning in Three Levels from *Developing Minds: A Resource Book for Teaching Thinking*, accessed at https://www.sps186.org/downloads/basic/274780/Costa%20and%20Blooms.pdf

[15] The Foundation for Critical Thinking unknown, *Glossary of Critical Thinking Terms,* viewed 28 March 2018, https://www.criticalthinking.org/pages/glossary-of-critical-thinking-terms/496#glossary-s

[16] The Foundation for Critical Thinking unknown, *Socratic Teaching,* viewed 28 March 2018, http://www.criticalthinking.org/pages/socratic-teaching/606

[17] University of Queensland 2001, *The Queensland School Reform Longitudinal Study*, viewed 15 March 2018, https://www.researchgate.net/publication/37621426_The_Queensland_School_Reform_Longitudinal_Study

[18] Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Milton Park, UK: Routledge.

[19] Evidence for Learning 2017, *Meta-cognition and self-regulation,* Teaching and Learning Toolkit – Australia, viewed 12 April 2018, http://evidenceforlearning.org.au/toolkit/meta-cognition-and-self-regulation/

Teachers can ensure that all students self-regulate their learning, and think about how they learn, through practices such as:

- Issuing exit slips that ask students to identify the most challenging part of the lesson
- Students reviewing a submitted piece of work to identify areas for improvement and redrafting the work
- Allocating time at the end of the lesson or the end of the day so that student can keep a journal reflect on their learning.

For more examples, see Promoting Metacognition and Encouraging Metacognition in the Classroom.

RESOURCES TO SUPPORT TEACHERS

DET resources

- Practice Principles for Excellence in Learning and Teaching
- High Impact Teaching Strategies
- Professional Practice Note 5: using data walls to turn data into instruction
- Professional Practice Note 6: formative assessment
- Literacy and numeracy strategy
- Victorian literacy portal
- Victorian Curriculum capabilities

Other resources

- Learning Talk: Joan Dalton
- Alan November
- Michael Fullan and Maria Langworthy: *How New Pedagogies Find Deep Learning*
- Patrick Griffin and Esther Care: *Assessment is for teaching*
- Maya Bialik and Charles Fadel: *Knowledge for the Age of Artificial Intelligence*

CONTACT INFORMATION

This note is part of a series of professional practice notes to support school based staff to continue improving their practice. See Professional Practice Elements for more information. For more information, or to share your feedback on this resource, please email: professional.practice@edumail.vic.gov.au.