Information Fluency Framework – whitepaper
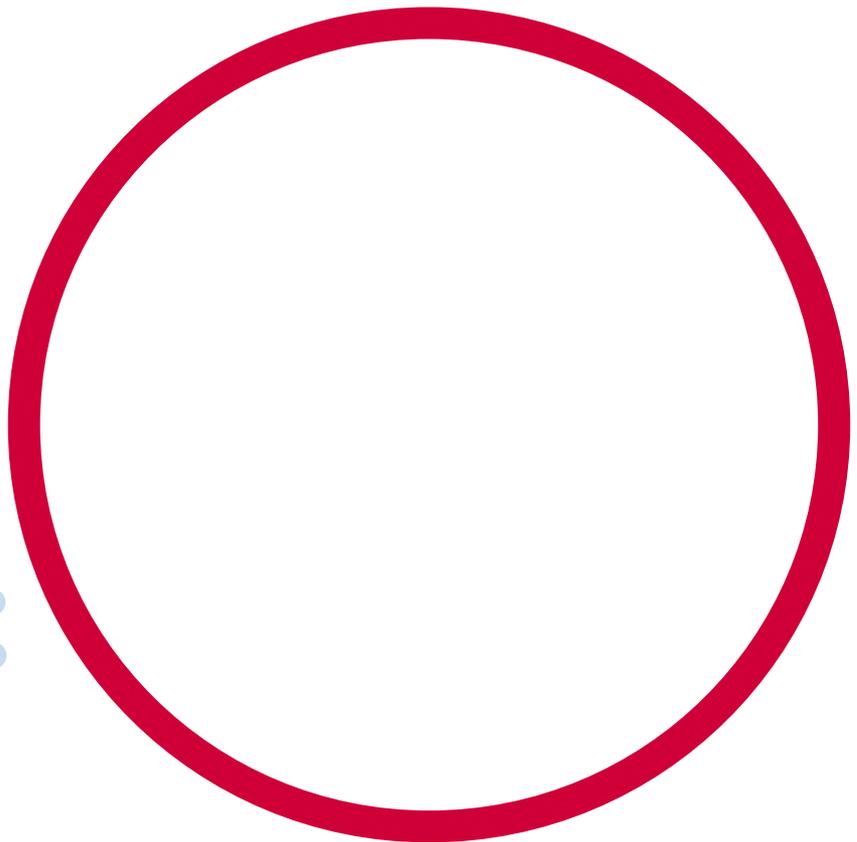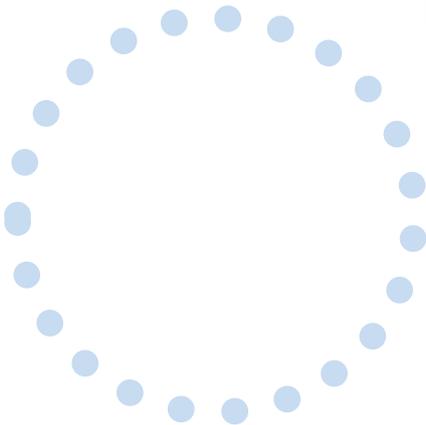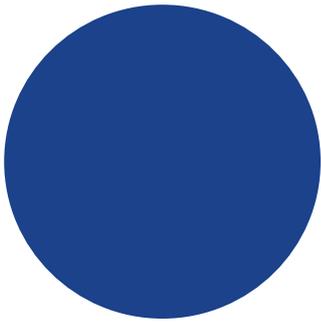
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Rationale

Design of the Information Fluency Framework (the Framework) has been prioritised as an essential piece in maximising the impact of every school library.

The Framework is designed to articulate the work of a teacher librarian so that:

- teachers can better collaborate with teacher librarians
- students know what expertise they can access from teacher librarians
- the impact of the library, and the expertise of the teacher librarian, are known and valued in the school community.

What is information fluency?

Information fluency is the ability to critically think while engaging with, creating and utilising information and technology, regardless of what platform.

It can be considered as both an overall competency and as a collection of knowledge and skills (Zhang, 2010).

The concept of information fluency builds on what we have become familiar with as information literacy.

In summary, the real difference between information literacy and fluency lies not in what searchers or consumers do, but how they do it (Reid-Smith, 2015).

Why is it important?

Information literacy has been the primary focus for all libraries and, in particular, school libraries, since 1987 (NSW Department of Education), as it enables a learning interaction, and research process with resources, that works within all curriculum areas. It is a basis for inquiry learning that underpins the Australian Curriculum. Information literacy is also embedded within all NSW curricula.

Where and how is it taught in schools?

The "where" – it is found throughout all the curricula

The skills in the Information Fluency Framework are (mainly) found in the general capabilities, which are now incorporated into every learning area syllabus.

These are presented in each curriculum as distinct skills in order to categorise and describe them. In reality, these skills are developed and used together. For example, students will use technologies and critical thinking to select information and clarify their ideas. This crosses the ICT and CCT capabilities, and is a common task students undertake when researching in a school library.

"While the importance of these skills is increasingly appreciated, they are yet to be consistently embedded across schools" Gonski (2018, p.40). The Information Fluency Framework provides a structure for teacher librarians and teachers to use so they can work collaboratively to develop these skills in students.

The "how" – in collaboration with the teacher librarian

Gonski (2018) frames the challenge for teachers:

"Teachers are expected to embed teaching of the general capabilities into learning areas. In practice, teaching and assessing the general capabilities… is a highly complex task. It requires teachers to have a sound understanding of how to teach these capabilities and to design engaging material which advances both learning areas and general capabilities. It takes deep expertise to know how best to interweave the teaching of the general capabilities into different learning areas, as general capabilities vary in their relevance to each learning area."

The teacher librarian is well placed to support this practice through co-teaching relationships (Sharratt & Fullan, 2012, p. 118). As a dual-qualified teacher and expert in many of the general capabilities, teacher librarians can work with teachers to design learning that integrates learning area content and general capabilities. The Information Fluency Framework is the tool to help guide this collaboration and ensure that learning is authentic and stage-appropriate.

To understand the relationship between information fluency (expertise of the teacher librarian) and learning area content (expertise of the teacher), consider:

- How do the outcomes of a learning area apply to the fluent use, creation and communication of information?

- How can the fluent use, creation and communication of information support development of learning area outcomes?

Syllabus outcomes
What is the student expected to learn?

Information fluency
How does information fluency support the syllabus outcome?

Assessment
How will student outcomes be monitored to inform the next steps in their learning?

Collaboration
What are the roles of the teacher and the teacher librarian in this learning?

Information Fluency Framework
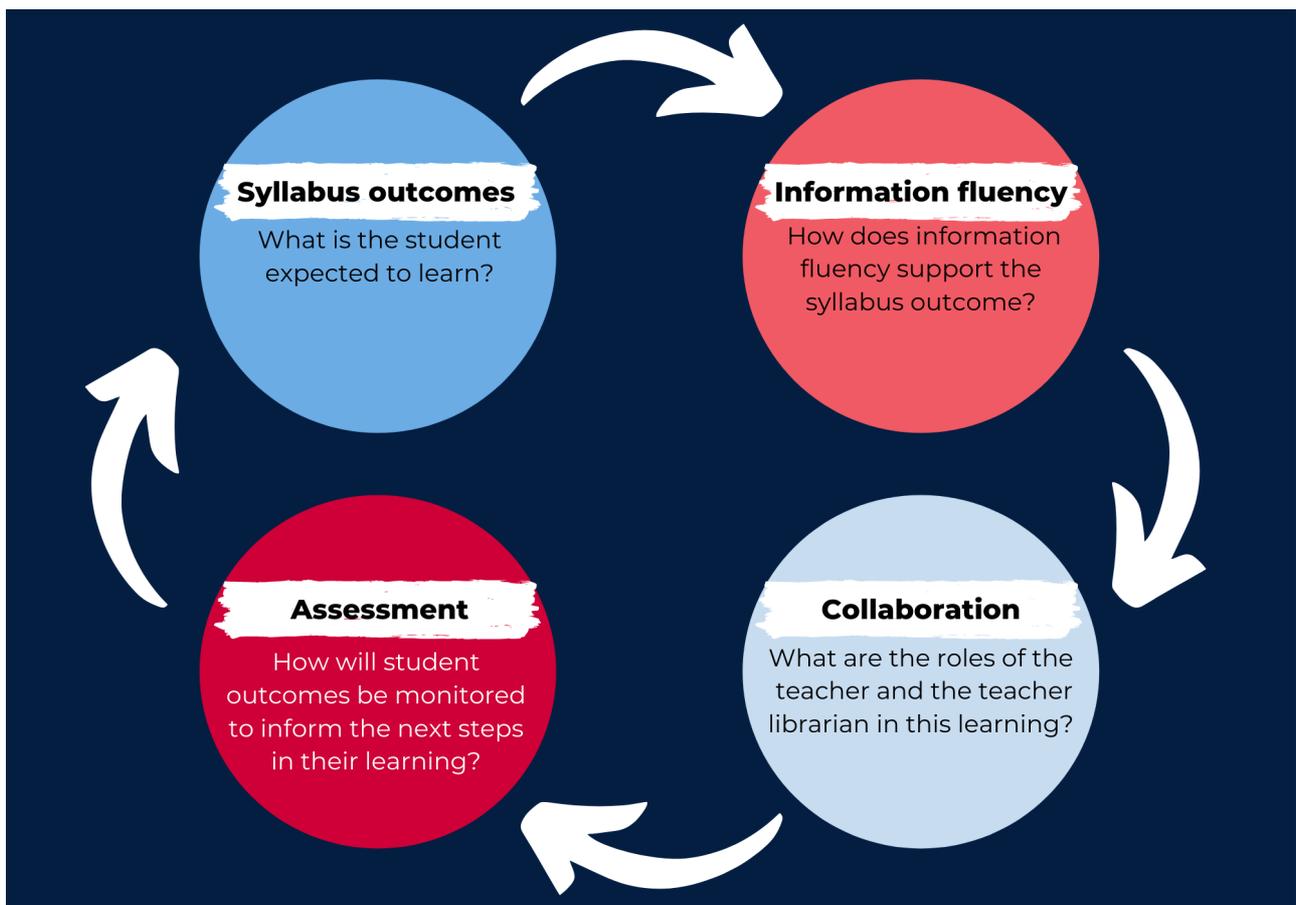
The Information Fluency Framework

Structure

Elements

Elements describe the competencies that a student with information fluency will demonstrate.

Strands

The outcomes within each element are viewed through the lens of interacting with information in two ways:

- as consumers
- as creators

Sub-elements

Sub-elements break down each element into a small number of statements that describe the development of student outcomes.

Outcomes

Statements that describe what a student should be expected to do at that learning stage.

Progression

Outcomes are presented along a progression, linked to learning stages. The outcomes are informed by the ACARA general capabilities learning continua and NESA syllabuses.
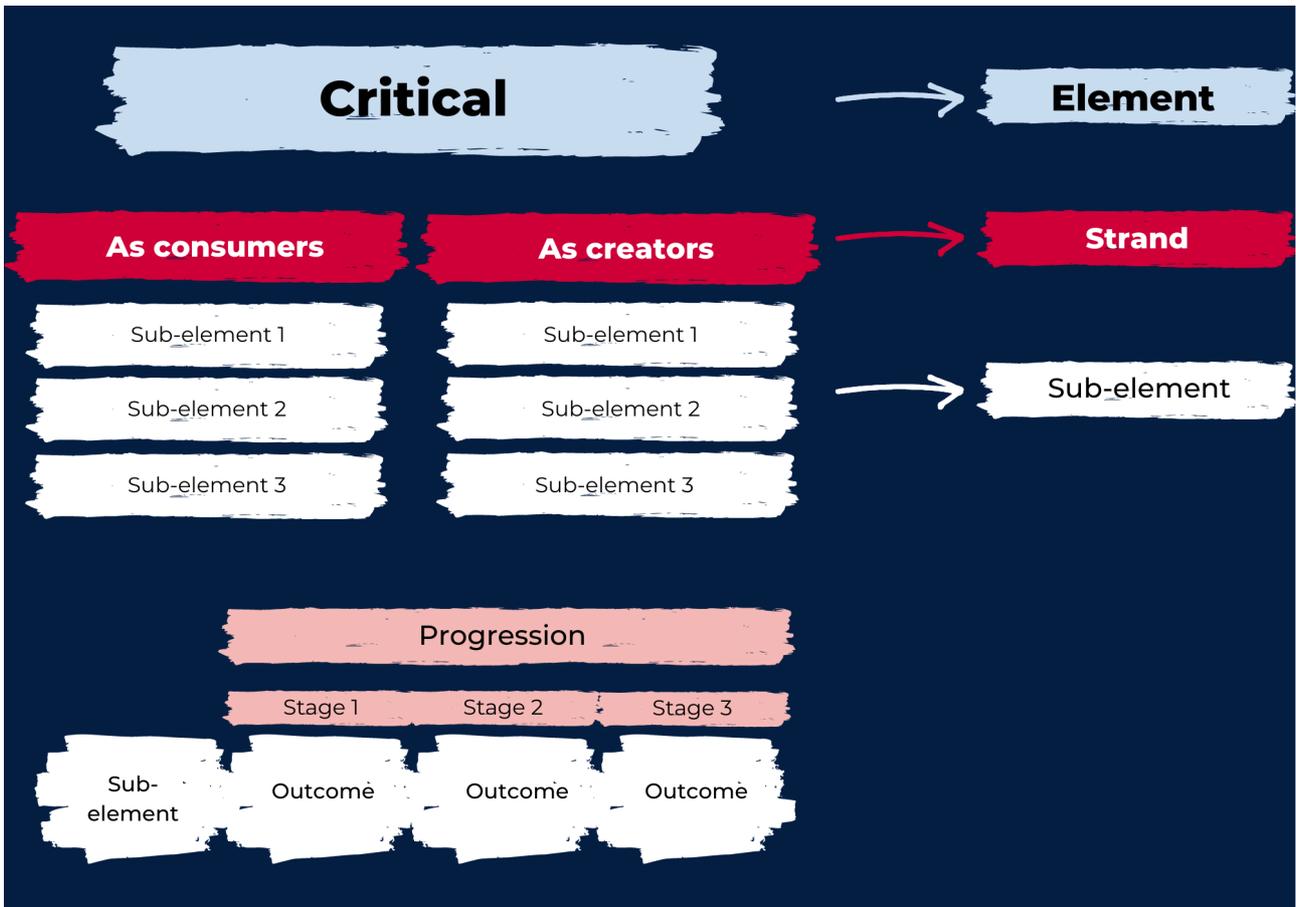
Figure 1 Overview of the Information Fluency Framework structure

Overview of the Information Fluency Framework

The red sections are the elements of the Information Fluency Framework. Blue and pink circles show the relationship of each element to the ACARA and NESA general capabilities.

Information and Communication Technology (ICT) is presented as a thread that runs through the elements – enabling students to investigate, create and communicate information fluently.
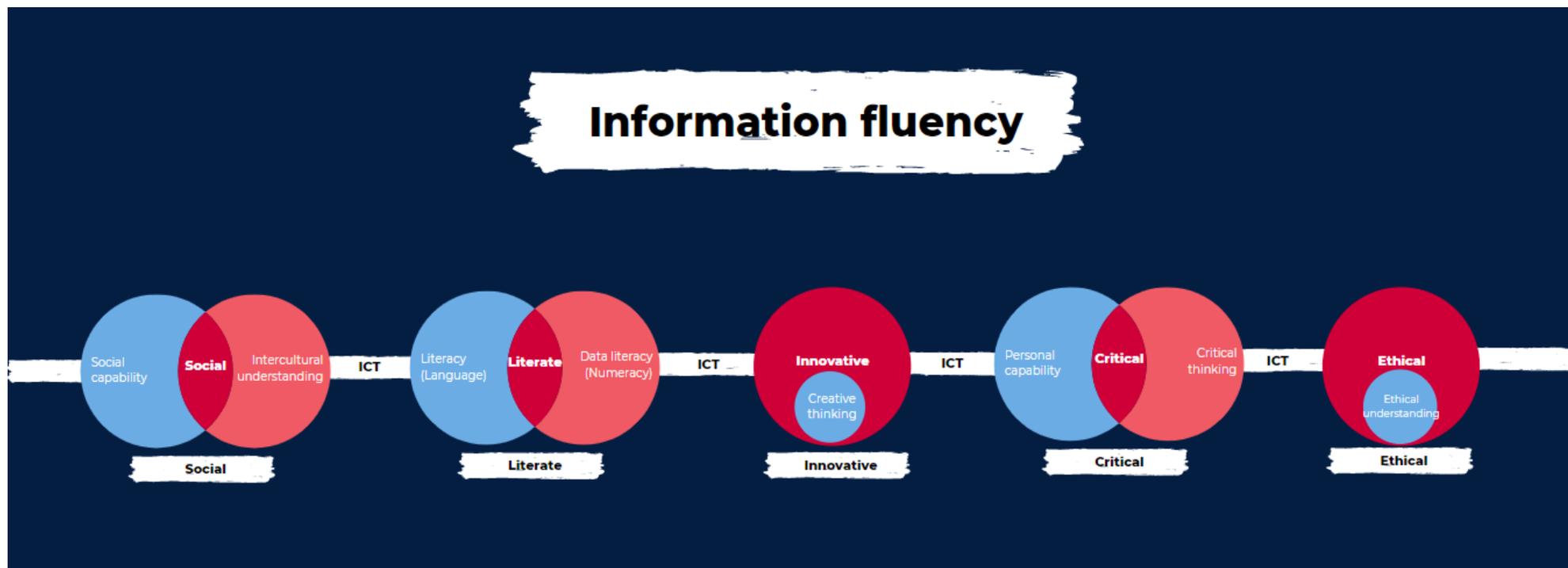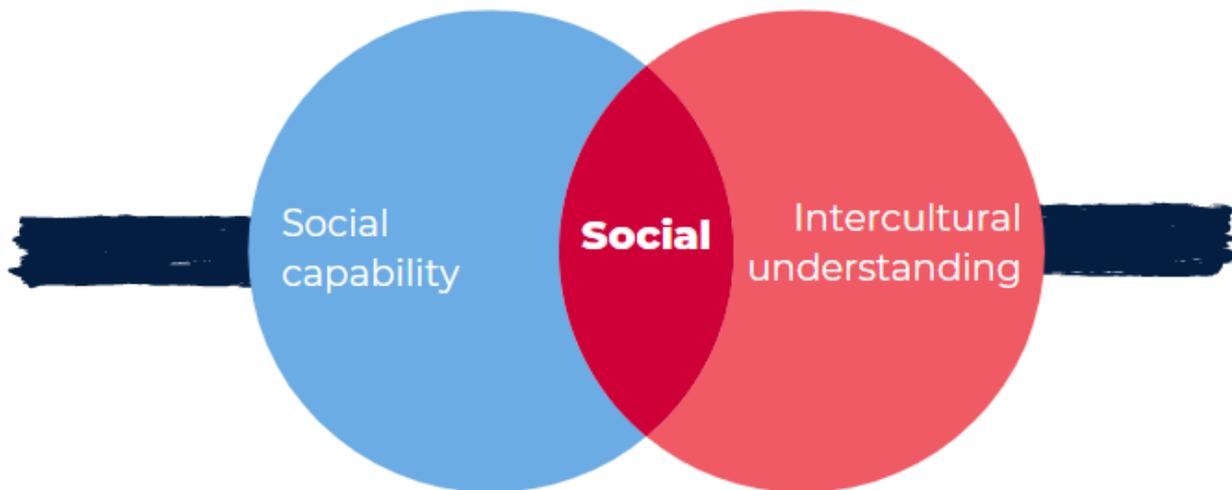
Social - Information fluency means students are social

Element statement

Students learn with, and from, diverse groups of people.

Why is this element important?

Changing demographics, as well as a range of social issues, are presenting new challenges for countries across the globe. This has led to demands for schools to focus on the development of competencies to support social cohesion, equity and inclusivity (Lambert, 2018).

Intercultural understanding is an essential part of living with others in a diverse world. It assists young people to become responsible local and global citizens, equipped through their education for living and working together in an interconnected world. Central to working with others are the interpersonal skills outlined in the personal and social capability (ACARA, n.d.).

Students must be able to make connections between their own worlds and the worlds of others, to build on shared interests and commonalities, and to negotiate or mediate difference. This requires the ability to communicate and empathise with others, to consider

their own beliefs and attitudes in a new light, and so gain insight into themselves and others.

How can we teach it?

Social-emotional learning (SEL) is a process designed to develop the skills outlined in the social element of information literacy. "Through the process of SEL students develop self-awareness, self-control, and interpersonal skills that are important for school, work and life outcomes. Social-emotional competence helps students cope with everyday challenges and improves learning and wellbeing" (NSW Department of Education, 2020.c).

SEL is a deeply-ingrained part of the way students and adults interact, both in the classroom and out of it, and it helps provide children with equitable, supportive and welcoming learning environments.

Research has shown that social and emotional development can be taught using a variety of approaches, including:
- free-standing lessons designed to enhance students' social and emotional competence explicitly
- teaching practices such as cooperative learning and project-based learning
- integration of SEL with the academic curriculum
- organizational strategies that promote SEL as a school-wide initiative that creates a climate and culture conducive to learning (CASEL, 2020).

What does it look like?

The "social" element combines interpersonal and social knowledge and skills. It involves students learning to value and view critically their own perspectives and practices and those of others through their interactions with people and information.

These skills are derived from social awareness and social management (personal and social capability) and intercultural understanding general capabilities (ACARA, n.d.).

The social element is divided into two strands of sub-elements: as consumers and as creators. Students with information fluency will consume and create information.

Sub-elements

As consumers, students:
- appreciate and resolve diverse perspectives
- understand how information is affected by cultural knowledge, beliefs and practices
- empathise across cultures
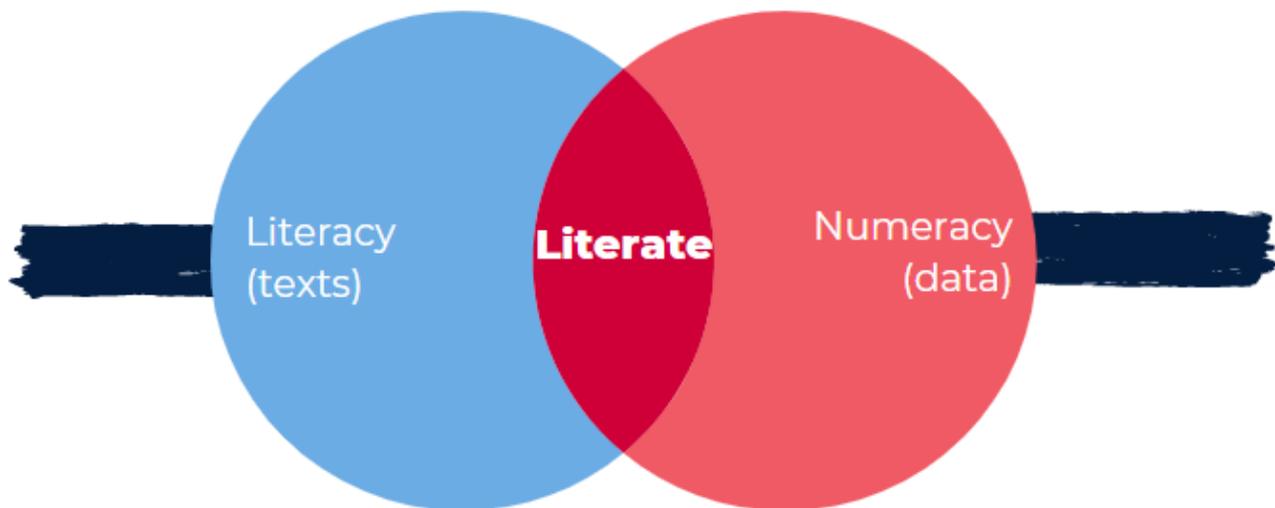
As creators, students:

- collaborate with others
- communicate information across cultures
- contribute to society

Social Learning Progression

Learning stage - social	ES1	S1	S2	S3	S4	S5	S6	Examples
As consumers, students:								
Appreciate and resolve diverse perspectives	express their opinions and listen to the opinions of others in given situations	identify the perspectives of others	identify and describe shared perspectives within and across various cultural groups	describe various perspectives on an issue	explain perspectives that differ, to expand their understanding of an issue	assess diverse perspectives and the assumptions on which they are based	present a balanced view on issues where conflicting views cannot easily be resolved	
Understand how information is affected by cultural knowledge, beliefs and practices	identify other cultures in their learning group to see how this affects information use	identify, explore and compare culturally diverse activities and languages	describe and compare the way their own and other cultures live and communicate with people in other places or times	describe and compare a range of cultural stories, events, artefacts and communication methods	describe and compare the knowledge, beliefs and practices of various cultural groups	identify factors that contribute to understanding in intercultural communication and discuss some strategies to avoid misunderstanding	analyse the complex nature of information, knowledge, beliefs and practices to understand and enhance communication	
Empathise across cultures	show an awareness of the feelings, needs and interests of others	imagine and describe their own feelings if they were put in someone else's place	imagine and describe the feelings of others in a range of unfamiliar contexts	imagine and describe the situations of others in local, national and global contexts	imagine and describe the feelings of others in situations across local, national and global contexts	imagine and describe the feelings and motivations of people in different situations	recognise the effect that empathising with others has on their own feelings, motivations and actions	

Learning stage - social	ES1	S1	S2	S3	S4	S5	S6	Examples
As creators, students:								
Collaborate with others	respond to the feelings, needs and interests of others	share experiences of cooperation in information retrieval and use	cooperatively develop information /knowledge using group expertise	independently manage group work to develop collaborative projects	contribute to groups and teams, suggesting improvements in methods used for collaborative creation	assess the extent to which individual roles and responsibilities enhance group cohesion and the achievement of personal and group objectives	critique their ability to devise and enact strategies for working in diverse teams, drawing on the skills and contributions of team members to create information	
Communicate information across cultures	identify their own point of view or idea	communicate their point of view to others and listen to the views of others	describe similarities and differences in points of view between themselves and people in their communities	discuss the value of diverse perspectives and describe a point of view that is different to their own	explain how a point of view might need to be communicated differently to different groups	explain how means of communication differ within and between communities and identify the role these play in helping or hindering understanding of others	acknowledge the values, opinions and attitudes of different groups within society when communicating a point of view	

Information Fluency Framework

Learning stage - social	ES1	S1	S2	S3	S4	S5	S6	Examples
Contribute to society	identify who helps them	describe how they contribute to their homes, school and local communities, and how others care for and assist them	identify the various communities to which they belong and what they can do to make a difference	identify a community need or problem and consider ways to take action to address it	analyse personal and social roles and responsibilities in contributing to their communities	explain how contributing information can benefit society at local, national regional and global levels	recognise the challenges and benefits of living and working in a culturally diverse society and the role that information fluency plays	

Literate - Information fluency means students are literate

Element statement

Students create and communicate an understanding of information through texts.

Why is this element important?

Texts provide the means for communication. Students need to access, understand, analyse and evaluate information, make meaning, express thoughts and emotions, present ideas and opinions, interact with others and participate in activities at school and in their lives beyond school. Success in any learning endeavour depends on being able to make meaning from information.

The definition of "texts" is taken from the literacy and numeracy progressions (ACARA, n.d.) and is encompassing of a wide range of information sources. Texts include components of print, image, sound, animated movements and symbolic representations. They can be written, spoken, visual, multimodal, and in print or digital/online forms. Multimodal texts combine language with other means of communication such as visual images, soundtrack or spoken words, as in film or computer presentation media. Texts

include all forms of Augmentative and Alternative Communication (AAC), for example gesture, signing, real objects, photographs, pictographs and braille.

This element also considers "data literacy" – the ability to recognise and use visual and numerical displays to describe data, and to critically evaluate investigations by others. Making sense of data draws on knowing the concepts and tools that are being used to describe the global features of data. A student understands how these concepts and tools make meaning of data in context, and develops the ability to think critically about any claims, either questioning or confirming them.

Lyria Bennet Moses (2019) describes the increasingly datafied world in which we live. Algorithms are trained to make inferences about users based on their location, operating system, purchasing patterns and search terms. Everyone needs to be aware of how data about them is used to select information with which they are presented, fix prices, assess entitlements and detect non-compliance. There will always be an imbalance between how well companies like Facebook or Google understand their algorithm and the understanding of ordinary consumers, but we can and should reduce that gap.

In summary, data literacy is a core skill that citizens will need to understand and navigate a world where decisions are increasingly automated, often through processing of large volumes of data.

How can we teach it?

This element is aligned with both the literacy and numeracy progressions and learning area content to support the development of each.

The literacy and numeracy progressions describe common pathways for the acquisition of literacy and numeracy development. The progressions provide a tool to:

- locate the literacy and numeracy development of students and identify the literacy and numeracy development that should follow
- facilitate a shared professional understanding of literacy and numeracy development.

The progressions do not describe what to teach; they provide a detailed map of how students become increasingly adept in particular aspects of literacy and numeracy development. Outcomes and content continue to be the focus for planning, programming, teaching, learning and assessment in relation to the NSW syllabuses (NESA, n.d.).

The information fluency learning progression, along with the literacy and numeracy progressions, support teachers and teacher librarians to collaboratively:

- understand the current level of student development
- understand the desired syllabus outcome(s)

- support achievement of syllabus outcomes through literacy, numeracy and information fluency support
- evaluate student achievement to inform next steps

What does it look like?

The literate element of the Information Fluency Framework does not attempt to replace the content or role of the classroom teacher in developing literacy. Instead, it seeks to complement both the literacy and numeracy progressions, and the content within each learning area.

The school library is an information service for students and teachers. It is a place to access and use, under the guidance of an information specialist, resources to support learning. This includes a curated literature collection, which plays an important role in inspiring and supporting the literacy development of students.

These resources, including the human resources, support the practicalities of developing the functional skills within the literacy and numeracy progressions. They provide opportunities to enrich and enhance learning experiences, particularly those related to the sub-elements below.

Sub-elements

As consumers, students:

- find and select useful information from a range of sources
- interpret texts and data to build meaning
- organise information

As creators, students:

- select and create appropriate forms of information
- communicate information effectively to different audiences
- reflect on the efficacy of communication

Literate Learning Progression

Learning stage - literate	ES1	S1	S2	S3	S4	S5	S6	Examples
As consumers, students:								
Find and select useful information from a range of sources	navigate simple texts and images and use information or narrative	read and use simple texts and images to identify and use information or story	navigate, read and view a range of texts for information purposes or literary exploration	independently locate and access information or literary texts and viewpoints	find and select relevant and irrelevant information in texts	select and cite the most appropriate information for a task or purpose	efficiently locate precise information that supports the development of new understandings	*perform an information search*
Interpret texts and data to build meaning	listen to / view texts read by an adult to discuss and build meaning	interpret and use texts to explore topics, gather information and make some obvious inferences	interpret literal information / story and make inferences to expand knowledge or understanding of the story	Interpret and analyse information and ideas, comparing texts on similar topics or themes	interpret and integrate visual, auditory and print elements of multimodal texts	analyse how language, images, sound and data in texts serve different purposes	analyse how authors manipulate language features, image, sound and data representation for a purpose	
Organise information	recount detail from a text	record details from a text	make connections within and between texts	compare and contrast information between texts	distil information from a number of sources according to task and purpose	synthesise information from a variety of texts	select and synthesise evidence from multiple and varied texts to support understanding	*use concept maps to organise information*

Learning stage - literate	ES1	S1	S2	S3	S4	S5	S6	Examples
As creators, students:								
Select and create appropriate forms of information	express an idea, drawing on familiar experiences and topics using words and pictures	select and create texts for a familiar topic	select from a range of information forms to present their information	compose texts for a range of purposes by selecting and discarding ideas to make texts suitable for audiences and purposes	compose informative, imaginative and persuasive texts using learnt ideas on a range of topics	Select and compose appropriate texts that inform, persuade, or communicate imaginative ideas. Where appropriate, use multimodal resources, data representation, references, and literary techniques.	Select appropriate forms and compose sustained texts that inform, persuade, or communicate imaginative ideas. Where appropriate, select multimodal resources, data representation, references, and literary techniques	
Communicate information effectively to different audiences	convey messages through actions or talk to retell a familiar story or share knowledge or opinion	share information in different ways (use illustrations, icons and images; innovate on familiar texts through play; use speech to dictate a written text)	deliver short presentations, incorporating some visual or multimodal elements	plan and deliver presentations, incorporating learned content and appropriate visual and multimodal elements	deliver presentations, selecting appropriate content and visual and multimodal elements to suit different audiences	deliver presentations, sequencing selected content and multimodal elements for accuracy and their impact on the audience	deliver presentations on complex issues, combining elements creatively, including effective graphical representation of data, where appropriate, to present information and engage and persuade an audience	

Information Fluency Framework

Learning stage - literate	ES1	S1	S2	S3	S4	S5	S6	Examples
Reflect on the efficacy of communication	talk about why people compose texts	talk about the purpose and audience of familiar texts	ask relevant questions to find out others' ideas, thoughts and feelings (What do you think about that?)	make judgements about how well communicated information was understood	discuss the strengths and weaknesses of a communication	implement an approach to evaluate whether an intended goal or purpose was achieved through communication	design and implement criteria to evaluate whether an intended goal or purpose was achieved through communication	
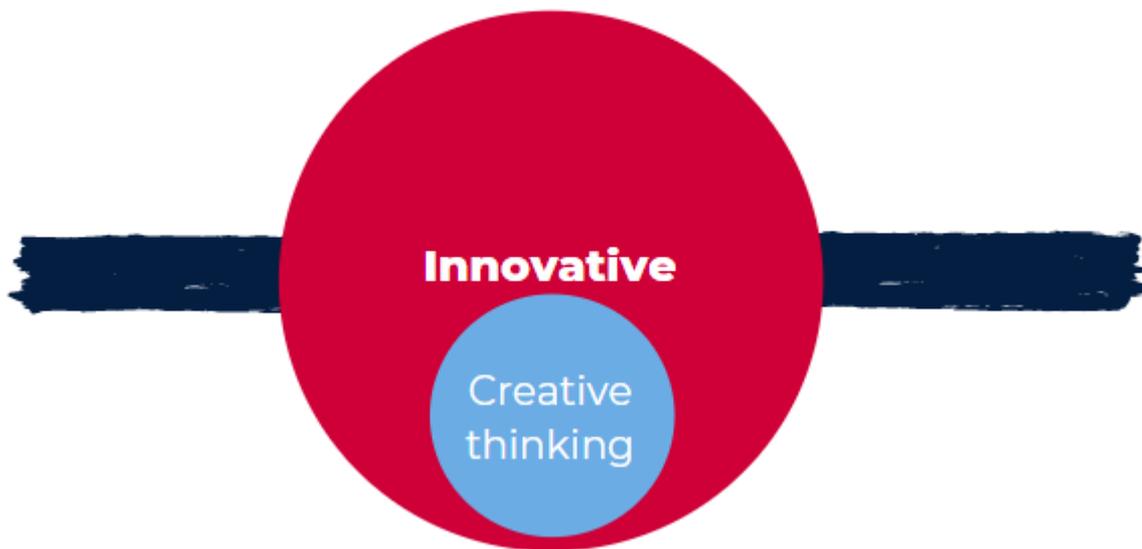
Innovative - Information fluency means students are innovative

Element statement

Students generate and implement new and useful ideas.

Why is this element important?

Thinking that is productive, purposeful and intentional is at the centre of effective learning. By applying innovative thinking, students develop an increasingly sophisticated understanding of the processes they can use whenever they encounter problems, unfamiliar information and new ideas. In addition, the practice of using thinking strategies can increase students' motivation for, and management of, their own learning. They become more confident and autonomous problem-solvers and thinkers.

Responding to the challenges of the twenty-first century – with its complex environmental, social and economic pressures – requires young people to be creative, innovative, enterprising and adaptable, with the motivation, confidence and skills to use critical and creative thinking purposefully. (ACARA, n.d.)

How can we teach it?

Creative and innovative thinking is often defined as a process. A process implies a series of phases, steps or procedures that people go through to produce creative thoughts. It is an often effortful and prolonged process, which differs from the more mysterious and instantaneous way that some people, including some people who have generated highly creative ideas, have characterised it.

The implementation of potentially creative ideas often includes setbacks, multiple iterations, and sometimes even the abandonment of highly original ideas in favour of ideas that may be less original, but actually work (Beghetto, 2016a; von Thienen et al., 2017).

Given this process, developing innovative thinking requires opportunities for students to engage in learning that encourages generation, evaluation and implementation of ideas. Inquiry processes are suited to these opportunities, as a typical inquiry process encourages students to:

- ask an answerable question or identify a researchable problem
- develop a plan and take some form of action
- gather resources; analyse and summarise information
- draw conclusions and report findings
- reflect on the process (Lupton, 2016)

What does it look like?

Innovation is the generation and implementation of creative ideas. Creative ideas are characterised as being both original and useful.

Innovative thinking involves students:

- learning to generate and apply new ideas in specific contexts
- seeing existing situations in a new way
- identifying alternative explanations
- seeing or making new links that generate a positive outcome

This includes combining parts to form something original, sifting and refining ideas to discover possibilities, constructing theories and objects, and acting on intuition. Creativity demands the generation of numerous ideas, which then requires ideas to be evaluated.

The products of creative endeavour can involve complex representations and images, investigations and performances, digital and computer-generated output, or occur as virtual reality. When these ideas are implemented under constraints, innovation is said to occur.

Sub-elements

As consumers, students:

- pose questions to be answered using information
- connect and combine ideas

As creators, students:

- generate and evaluate ideas
- implement ideas under given constraints

Innovative Learning Progression

Learning stage - innovative	ES1	S1	S2	S3	S4	S5	S6	Examples
As consumers, students:								
Pose questions to be answered using information	pose questions based on personal interests and experiences	pose questions to identify and clarify issues, and compare information	pose questions to expand their knowledge about the world and clarify information	pose questions to expand and interpret information	pose questions to probe for causes and consequences	pose questions to investigate complex issues	pose questions to analyse complex issues and abstract ideas	*Generative questioning activities to initiate an information search*
Connect and combine ideas **Sense of wonder**	draw connections between similar ideas, with guidance	use imagination or creative thinking to connect two things that seem different	build on what they know to understand information in a new way	expand on known ideas to create new ideas or understandings	combine ideas in a variety of ways and from a range of sources	draw parallels between known and new ideas to create new ways of achieving goals	create and connect complex ideas using imagery, analogies and symbolism	*Concept formation activities to compare, contrast and classify ideas, objects, and events*
As creators, students:								
Generate and evaluate ideas	share their thinking about their ideas to others	discuss the quality of ideas	create ideas and possibilities in ways that are new to them	create and refine ideas and possibilities, suggesting alternative solutions	select from a range of new ideas by applying criteria	generate a range of ideas and evaluate their utility	design criteria to evaluate self-generated ideas	*Divergent and convergent thinking activities*

Learning stage - innovative	ES1	S1	S2	S3	S4	S5	S6	Examples
Implement ideas under given constraints	predict what might happen in a given situation when putting ideas into action	investigate options and predict possible outcomes when putting ideas into action	experiment with a range of options when putting ideas into action	assess and test options to put ideas into action	explain how constraints are considered when implementing ideas	successfully navigate constraints when implementing ideas	plan for, undertake, and evaluate implementation of ideas in consideration of constraints	*Design an implementation strategy for an information creation*
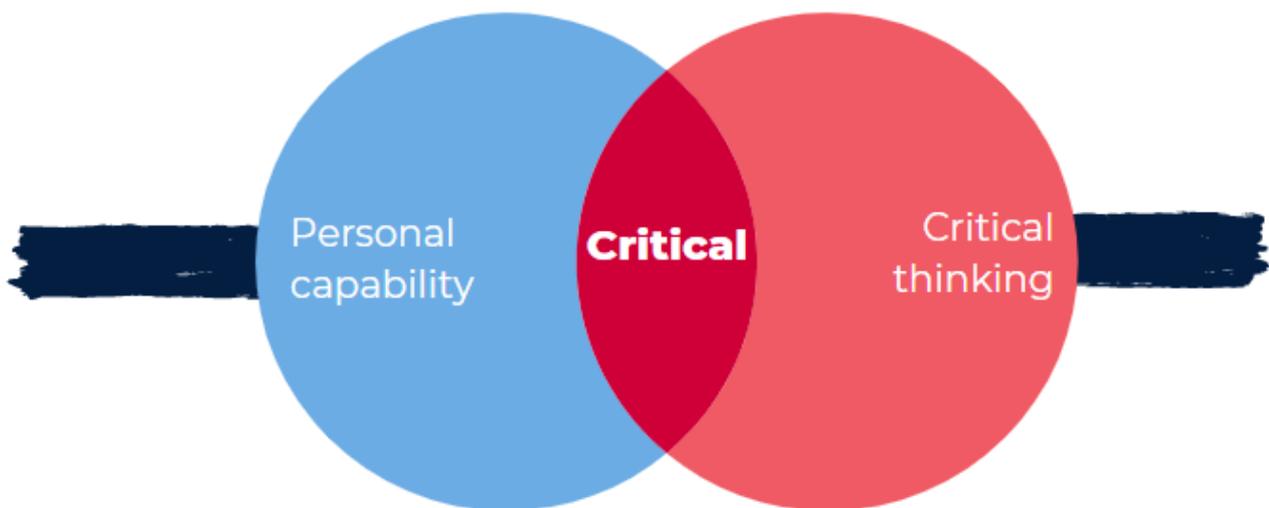
Critical - Information fluency means students are critical

Element statement

Students evaluate and use information to reflect and solve problems.

Why is this element important?

The Australian Curriculum defines critical thinking as "at the core of most intellectual activity that involves students learning to recognise or develop an argument, use evidence in support of that argument, draw reasoned conclusions, and use information to solve problems."

This definition includes behaviours such as explaining, evaluating, analysing and hypothesising. Critical thinking is also classified as a general capability. This means that it can be developed both across and within different subject domains. The position of critical thinking as a general capability highlights its importance across all key learning areas. This is likely to become increasingly important as students will need to sift through large amounts of information, understand its source, and make decisions as to its accuracy.

It is widely agreed that critical thinking is a necessary capability across all content areas, and in a rapidly changing world. "Critical thinking has, of course, long been a valuable skill for young people to master, though its importance is expected to increase as the world

becomes ever more augmented by artificial intelligence and other emerging technologies"
(Willingham, 2019).

How can we teach it?

Critical thinking begins with understanding our own thinking. This experiential aspect of
critical thinking means that certain elements of knowing how to think cannot be transmitted
by language alone. For example, I cannot teach someone how to surf by simply speaking
to them. At some stage, they must get on the board and find out for themselves what it's
like (Ellerton, 2019).

The fact that critical thinking has this experiential flavour carries with it pedagogical
implications. Ellerton (2019) argues that the skills of critical thinking can be thought of as
the skills that support effective inquiry – as inquiry begins by reflecting and casting doubt
on existing belief or knowledge. This view brings with it an incompatibility with a curriculum
that is "clear and settled, for this paralyses thought" (Lipman, 2003).

Ellerton (2019) also explores the relationship between learning area content and critical
thinking. When content is understood, it is organised into a schema in students' minds.
Activities that encourage critical thinking can help better organise content into these
schemata, supporting deeper understanding of content knowledge. When the content is
well organised, it can more easily be retrieved and used for higher order thinking.

These two observations - the experiential requirement of critical thinking, and a symbiosis
with learning content - present considerations for teaching critical thinking:

- The first is that critical thinking requires active learning, achieved through
  pedagogies such as inquiry learning (Barron & Darling-Hammond, 2010)
- The second is that critical thinking should be integrated within learning areas
  (Willingham, 2019).

The teacher librarian can collaborate with teachers to plan and lead student inquiries that
develop learning area content and critical thinking skills. This has the added benefit of the
teacher librarian coordinating an approach across learning areas and years, a
recommendation to improve learning (Willingham, 2019).

What does it look like?

The critical element contains skills from critical thinking (critical and creative thinking) and
personal capability (personal and social capability) from the general capabilities.

It's divided into two strands of sub-elements: as consumers and as creators. Students with information fluency will consume and create information by being aware of their own cognition, applying logic and carefully selected strategies to evaluate, synthesise and transfer information into new contexts.

These skills heavily overlap with the self-aware and self-management aspects of personal and social capability.

Sub-elements

As consumers, students:

- reflect on information needs, emotions, biases, thoughts and strategies when consuming information
- apply logic and reasoning to evaluate information sources
- synthesise and make sense of information from diverse sources

As creators, students:

- reflect on information needs, emotions, biases, thoughts and strategies when creating information
- apply logic and reasoning to create information
- connect information and transfer into new contexts

Critical Learning Progression

Learning stage - critical	ES1	S1	S2	S3	S4	S5	S6	Examples
As consumers, students:								
Reflect on information needs, emotions, biases, thoughts and strategies when consuming information.	talk about how emotions can influence thinking about information	identify situations where information is needed as a result of curiosity	apply persistence to locate and access information	discuss emotions and thoughts in response to different information sources	select appropriate strategies to find and use information	explain responses to different information sources	justify strategies to find and use information	*Describe approaches used to identify, select, evaluate and use information.*
Apply logic and reasoning to evaluate information sources	select an information source and explain its usefulness to the topic	link cause to effect	use evidence to choose a course of action or reach a conclusion	discern fact from opinion	identify assumptions, and sources of bias and motivation in information sources	apply criteria to judge the validity of a conclusion	evaluate premises, conclusions and assumptions within an argument	*Evaluating factors such as currency, reliability, relevance, authorship, completeness and veracity.*
Synthesise and make sense of information from diverse sources	draw meaning from an information source	organise information based on similar or relevant ideas from several sources	collect, compare and categorise facts found in a widening range of sources	identify and clarify relevant information and opinions and prioritise ideas	analyse, condense and combine relevant information from multiple sources	clarify information and ideas when exploring challenging issues	clarify complex information and reconcile diverse ideas drawn from a range of sources	*Compare two opposing arguments to reach an opinion or conclusion*

Learning stage - critical	ES1	S1	S2	S3	S4	S5	S6	Examples
As creators, students:								
Generate ideas to solve problems	create and communicate information	follow a process to create and communicate information	discuss how individual preferences and thinking affect information creation	create and modify specific information that addresses a need, reflecting on the needs of the audience	follow a process for information creation that considers bias and emotion	explain the process used to create information to address a need	justify strategies used to create information, showing how biases and emotions are addressed	*Apply and justify an inquiry process*
Hypothesise results of a problem, using logic and reasoning	make basic predictions, with guidance	create a basic hypothesis	use evidence to explain a range of results as a result of their hypotheses	use cause-effect statements to explain a claim, conclusion or outcome	identify assumptions in reaching a conclusion	assess assumptions in thinking and discuss alternative opinions	justify reasoning used in reaching a conclusion	*Create a persuasive argument*
Connect information and transfer into new contexts	connect information from one setting to another	use information from a previous experience to inform a new idea	transfer and apply information in one setting to enrich another	apply knowledge gained from one context to another unrelated context	justify reasons for decisions when transferring information to similar and different contexts	combine ideas in a variety of ways and from a range of sources	connect complex ideas and justify transference to new contexts	*Synthesise information from multiple sources to form an argument*

Ethical - Information fluency means students are ethical

Element statement

Students apply reasoning to consider the influence and impact of information on others.

Why is this element important?

Leslie Lobel, former Deputy Secretary for the department, brings awareness to new issues in ethics:

"At a time when personal data has become a commodity concentrated in the holdings of a handful of tech billionaires, and privacy is emerging as a new frontline of human rights law, equipping young people with the ability to identify the winners and losers of an unequal digital playing field is a key part of education.

While learning to think ethically imposes responsibilities on students, it also enables them to discover rights to fairness and care for themselves and others. This awareness of self and world is critical both to prevent our young people from becoming collateral victims of the proliferation of AI and big data, and to ensure technology delivers on its positive promise." (NSW Department of Education, 2020).

Ethical issues are not new, nor are they localised to technology. Robert Sternberg points to the need for people to think ethically about other big problems in society, including automation, pollution, terrorism, antibiotic resistance, income disparity and the decline of democracy (NSW Department of Education, 2020). Building ethical understanding will assist students to engage with the more complex issues that they are likely to encounter in the future, and to navigate a world of competing values, rights, interests and norms (ACARA, n.d.).

How can we teach it?

There are two basic models that education systems can use for teaching ethical reasoning:

- **separate instruction** – as a standalone subject such as ethics or philosophy
- **integrated instruction** – using learning area contexts to explore ethical thinking (NSW Department of Education, 2020)

While either (ideally both) models can be desired, the Framework deals only with integrated instruction. In this model, the teacher librarian collaborates with teachers to find opportunities within the content of the learning area to explore ethical thinking. Through this partnership, teachers are supported by the teacher librarian to teach ethics through core content in the syllabus (NSW Department of Education, 2020).

What does it look like?

This element contains skills from the ethical understanding general capability.

Ethical reasoning is a type of critical thinking that uses ethical principles and frameworks. It is a process of identifying ethical issues and weighing multiple perspectives to make informed decisions. Ethical reasoning is not about knowing right from wrong, but being able to think about and respond to a problem fairly, justly and responsibly (NSW Department of Education, 2020.b).

The ethical element of information fluency is divided into two strands of sub-elements: consumers and creators. Students with information fluency will consume and create information by first identifying situations that require an ethical consideration, then considering the impact of different actions from various perspectives.

Sub-elements

As consumers, students:

- understand ethical decisions that are embedded in information

- apply reasoning to consider consequences and make decisions about the use of information
- consider the information rights and responsibilities of different groups when consuming information

As creators, students:

- understand ethical issues when creating information
- apply reasoning to consider consequences and make decisions about the creation of information
- consider the information rights and responsibilities of different groups when creating information

Ethical Learning Progression

Learning stage - ethics	ES1	S1	S2	S3	S4	S5	S6	Examples
As consumers, students:								
Understand ethical decisions that are embedded in information	describe familiar situations that involve ethical decisions	discuss ethical decisions within a range of familiar contexts	discuss ethical decisions within a range of unfamiliar contexts	explain what constitutes an ethical decision and how it might be reached	distinguish between ethical and non-ethical dimensions of issues in information	analyse ethical reasoning and decisions	infer, from a range of resources, ethical decisions inherent in the creation of information	*Evaluate sources for bias*
Apply reasoning to consider consequences and make decisions about the use of information	identify how people make decisions based on emotions, wants and needs	describe the effects that feelings, emotions and dispositions have on how people use information	explain the links between emotions, dispositions and intended and unintended consequences of actions on others within a research process or in literature	discuss the consequences of different actions in relation to information use	apply ethical information use protocols to new situations	explain the links between the ethical use of information and a range of possible actions and consequences	assess ethical protocols in concrete situations to consider the consequences of using information in different ways	*Respect intellectual property*
Consider information rights and responsibilities of different groups when consuming information	share examples of rights and responsibilities in given situations	identify their rights and responsibilities in relation to information use	investigate their role in regard to intellectual property and copyright when using information	acknowledge sources when using information	monitor consistency between rights and responsibilities and information sources	analyse rights and responsibilities in relation to ethical use of information	evaluate information sources for ethical consideration of rights and responsibilities of different groups	*Assess ethical information behaviour of individuals and organisations*

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Learning stage - ethics	ES1	S1	S2	S3	S4	S5	S6	Examples
As creators, students:								
Understand ethical decisions when creating information	recognise their own work and the work of others	consider ethical decisions for information projects	ensure ethical decisions are used when creating information	identify what constitutes an ethical decision and how it might be reached when creating information	distinguish between ethical and non-ethical dimensions of issues in information	discuss ethical decisions when creating information	explain the importance of ethical decisions when creating information	*Propose ethical considerations*
Apply reasoning to consider consequences and make decisions about the creation of information	understand how people make decisions based on emotions, wants and needs	understand the effects that feelings, emotions and dispositions have on how people create information	discuss the consequences on other people of new information or ideas	identify the consequences of ethical decision-making in relation to information creation	demonstrate reasoning when creating information by applying ethical information protocols to new situations	relate ethical decisions to different potential consequences	justify ethical decisions in information creation, demonstrating reasoning	*Communicate processes for ethical decision making*
Consider information rights and responsibilities of different groups when creating information	share examples of rights and responsibilities in the use of personal information or ideas	identify their rights responsibilities and those of their classmates when creating information	investigate copyright and intellectual property in relation to information creation	monitor consistency in applying rights and responsibilities when creating information	discuss the rights and responsibilities of information creators and people affected by information creation	analyse rights and responsibilities in relation to ethical creation of information	justify decisions on rights and responsibilities of different groups when creating information	*Respects the privacy of others*

Information Fluency Framework

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Appendix

Analysis of information fluency frameworks

The table below is a summary of five information fluency frameworks. Elements have been arranged by the framework (vertically) and grouped by affinity across frameworks (horizontally).

1	2.	3.	4.	5.
Technology	Computer literacy		Digital	
	Critical thinking	Critical thinking	Evaluation/ critical thinking	Reflection and curiosity
Access information Synthesise, evaluate information	Information literacy		Search, Access, Use information	
Create				Design thinking Action
Communication Collaboration		Presentation Participation		Communication Multimedia literacy
			Language	
		Domain knowledge	Learn	Inquiry
			Ethical and social	Ethics and citizenship/ cultural understanding

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